# MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE

#### (An Autonomous College)

Affiliated to Periyar University, Salem | Accredited by NAAC with 'A' Grade Recognized by UGC under Section 2(f) & 12 (B)



# DEGREE OF BACHELOR OF SCIENCE

Learning Outcomes - Based Curriculum Framework - Choice Based Credit System

# Syllabus for B.C.A., Computer Application (Semester Pattern)

(For Candidates admitted from the academic year 2023-2024 and onwards)





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## Regulation and Syllabus for B.C.A



(With effect from the Academic Year 2023-24)

#### Vision:

To redefine the scope of higher education by infusing into each of our pursuits, initiatives that will encourage intellectual, emotional, social and spiritual growth, there by nurturing a generation of committed, Knowledgeable and socially responsible citizens.

#### **Mission**:

\*To Ensure State of the world learning experience

\*To espouse value based Education

\*To empower rural education

\*To instill the sprite of entrepreneurship and enterprise

\*To create are source pool of socially responsible world citizens

#### **QUALITY POLICY**

To Seek–To Strive–To Achieve greater heights in Arts and Science, Engineering, Technological and Management Education without compromising on the Quality of Education.

#### **DEPARTMENT OF COMPUTER APPLICATION**

#### Vision:

\* To attain global recognition in the computer science and applications, research And training to meet the growing needs of an Industry and Society.

#### Mission:

- \* To impart quality education
- \* To develop Industry-Academia relationship
- \* To provide State-of-art research facility
- \* To train various technologies in the thrust areas of computer science and applications.





#### **PREAMBLE**

Bachelor of Computer Applications (BCA) is a 3 – Year under Graduate Programme Spread over six semesters. The Course is designed to bridge the gap between IT industries and Academic institutes by incorporating the latest development, into the Curriculum and to give students a complete understanding within a structured framework. The Course helps the students to build-up a successful Career in Computer Science and for pursuing higher studies in Computer Science. This Bachelor of Computer Applications (B.C.A.) course is designed to provide the student with a comprehensive understanding of computer applications, covering a wide array of foundational concepts and practical skills. In the B.C.A. program, students will explore the fundamental principles of Computer Science, Programming Languages, Database Management, Software Development, and more. This curriculum is crafted to equip the students with the knowledge and skills necessary to excel in the everevolving field of computer applications. From building a strong foundation in programming to gaining insights into system analysis and design, the B.C.A. program will prepare the students for a successful career in the dynamic and diverse world of IT.

#### **PROGRAMME LEARNING OUTCOME**

- i) To design, implement, and evaluate computer-based system, process, component, or program to meet desired needs by critical understanding, analysis and synthesis.
- ii) Identify applications of Computer Science in other fields in the real world to enhance the career prospects.
- iii) Realize the requirement of lifelong learning through continued education and research.
- iv) Use the concepts of best practices and standards to develop user interactive and abstract application.
- v) Understand the professional, ethical, legal, security, social issues and responsibilities.

#### NATURE AND EXTENT OF THE PROGRAMME

The undergraduate programme in BCA is the first level of college or university degree in the country as in several other parts of the world. After obtaining this degree, a Computer technician may enter into the job market or opt for undertaking further higher studies in the subject. After graduation the students may join IT industry, BPO Sector, or Banking Sector and play their role as Software Engineer in a





useful manner contributing their knowledge to the welfare of the society. Thus the undergraduate level degree in BCA must prepare the students for all these objectives. The LOCF curriculum has been developed encompassing all the diversified aspects of Computer Application with reasonable depth of knowledge and skills as to specialize them in the various aspects of the subject. It also equips them with the expected professional expertise.

#### AIM OF THE PROGRAMME

The aim of the undergraduate degree in BCA is to make students knowledgeable about the various basic concepts in a wide ranging context which involve the use of knowledge and skills of Computer Application. Their understanding, knowledge and skills in Computer field needs to be developed through a thorough teaching learning process in the class, practical skills through the laboratory work, their presentation and articulation skills, exposure to industry and interaction with industry experts.

#### **GRADUATE ATTRIBUTES**

Bachelor of Computer Applications (BCA) encompass a comprehensive skill set tailored to meet the demands of the digital age. BCA graduates are equipped with foundational knowledge in computer science, including programming languages such as C, C++, Java, and Python. They possess a strong understanding of data structures, algorithms, and software development methodologies, enabling them to design and develop efficient and scalable applications. Proficiency in database management systems (DBMS) and web technologies equips them to handle data effectively and develop dynamic web applications. Ethical considerations are integral to their education, with an understanding of professional ethics in software development and data management. They are prepared to navigate ethical challenges in technology, ensuring responsible use of information and adherence to legal standards. Furthermore, BCA programs emphasize continuous learning and adaptation to evolving technologies, instilling a mindset of lifelong learning. Graduates are poised to contribute effectively to the IT industry, equipped with the skills and attributes needed to thrive in various roles such as software developers, system analysts, and technology consultants.

GA 1 Analytical ReasoningGA 2 Critical ThinkingGA 3 Problem Solving SkillsGA 4 Communication Skills

GA 5 Leadership Quality GA 6 Team work GA 7 Lifelong Learning





#### **PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):**

- PEO1: Graduates will be able to promote learning environment to meet the industry expectation
- PEO2: Graduates will be incorporated the critical thinking with Good Communication and Leadership skills to become a self-employed
- PEO3: Graduates will be up hold the human values and environmental sustenance for The betterment of the society.

#### PROGRAMME OUTCOMES (POs)

- PO1: Graduates will acquire dynamic skills through proper perception of the course Objectives that leads to scientific and analytical comprehension of the concepts.
- PO2: Graduates will focus on sustainable goals that might bring about spherical developments
- PO3: Graduates will infuse a spirit converging on bricking a team work, interpersonal and administrative skills to think critically and execute effectively
- PO4: Graduates will apply reasoning appropriately to scale the humps in learning And solute them to the core.
- PO5: Graduates will engage the skills obtained in independent and collaborative Learning as a perennial process.

#### PROGRAMME SPECIFIC OUTCOMES (PSOs)

- PSO-1: To Recognize the Students career with necessary skills in the area related to Computer Applications.
- PSO-2: To Exemplifying the emerging technologies and provide innovative solutions to reallife Applications.
- PSO-3: To Execute the career in corporate sectors.





To organize a concrete foundation and enrich the abilities to qualify for Employment,

- PSO-4: Higher Studies and Research in Computer Application and Data science with ethical values.
- PSO-5: To Build the student Career in Public sector, Government organizations and Educational Sectors.

#### **REGULATIONS (2023 - 2024)**

#### **1. DURATION OF THE PROGRAME**

- **1.1.** Three years(six semesters)
- **1.2.** Each academic year shall be divided into two semesters. The odd semesters shall consist of the period from June to November of each year and the even semesters from December to May of each year.
- **1.3.** There shall be not less than 90 working days for each semester.

#### 2. ELIGIBILITY FOR ADMISSION

**2.1.** A candidate who has passed in Higher Secondary Examination with Mathematics or Information Technology or computer Technology or Business Mathematics or Computer Science or Statistics or Computer Applications (Academic stream or Vocational stream) as one of the subject under Higher Secondary Board of Examination, Tamilnadu as per norms set by the Government of Tamilnadu.

#### **3. CREDIT REQUIRMENTS AND ELIGIBILITY FORAWARD OF DEGREE**

**3.1.** A Candidate shall be eligible for the award of the Degree only if he/she has undergone the prescribed course of study in a College affiliated to the University for a period of not less than three academic years and passed the examinations of all the Six Semesters prescribed earning a minimum of 140 credits as per the distribution given in Regulation for Part I, II, III, IV & V and also fulfilled such other conditions as have been prescribed thereof.





#### 4. COURSE OF STUDY, CREDITS AND SCHEME OF EXAMINATION

**4.1.** The Course Components and Credit Distribution shall consist of the following:(Minimum Number of Credits to be obtained)

| Part Wise<br>Distribution | Study Components                              | Credit Distribution |
|---------------------------|---|---------------------|
| PART I                    | Tamil or Other Languages                      | 12                  |
| PARTII                    | English                                       | 12                  |
| PARTIII                   | Core, Allied, Elective and Project<br>Courses | 91                  |
| PART IV                   | i. Basic Tamil/Advanced<br>Tamil/NME          | 04                  |
|                           | ii. Soft Skill Courses/SBEC                   | 10                  |
|                           | iii. Environmental Studies                    | 02                  |
|                           | iv. Value Education                           | 02                  |
|                           | v. Internship                                 | 02                  |
|                           | vi. Foundation Course                         | 02                  |
|                           | vii. Professional Competency Skills           | 02                  |
| PART V                    | Extension Activity                            | 01                  |
| Total Credits             |   | 140                 |

#### 4.2 DETAILS OF COURSE OF STUDY OF PARTS I–V

- **4.2.1 PART I:** Tamil and Other Languages Hindi or French at the option of candidates and according to the syllabus and text-books prescribed from time to time.
- **4.2.2 PART II:** English: According to the syllabus and text-books prescribed from time to time.





**4.2.3 PART III:** Core, Allied Project and Elective Courses: As prescribed by the concerned Board of Studies

#### 4.2.4 **PARTIV**:

#### i. Basic Tamil/Advanced Tamil/NME:

- a. Students who have not studied Tamil up to XII STD and have taken any Language other than Tamil in Part I shall take Basic Tamil comprising of Two Courses (level will be at 6<sup>th</sup>Standard).
- b. Students who have studied Tamil up to XII STD and have taken any Language other than Tamil in Part – I shall take Advanced Tamil comprising of Two Courses.
- c. Students who have studied Tamil up to XII STD and also have taken Tamil in Part–I shall take Non-Major Elective comprising of Two Courses.
  - i. Soft Skill Courses/SBEC
  - ii. Environmental Studies
  - iii. Value Education
  - iv. Internship
  - v. Foundation Course
  - vi. Professional Competency Skills(Online)

#### 4.2.5 PART V: Extension Activity:

Students shall be awarded a maximum of 1 Credit for Compulsory Extension Service. All the Students shall have to enroll for NSS /NCC/ NSO (Sports & Games) Retract / Youth Red Cross or any other Service Organizations in the College and shall have to put in compulsory minimum attendance of 40 hours which shall be duly certified by the Principal of the College before 31st March in a year. If a student lacks 40 hours attendance in the first year, he or she shall have to compensate the same during the subsequent years.

Those students who complete minimum attendance of 40 hours in one year will get 'half-a- credit and those who complete the attendance of 80 or more hours in Two Years will get 'one credit'. Literacy and Population Education and Field Work shall be compulsory components in the above extension service activities.





# **4.3.** Inclusion of the Massive Open Online Courses (MOOCs) available on SWAYAM and NPTEL

**4.3.1** Students can choose the MOOC Course Available on SWAYAM and NPTEL under Core, Elective or Soft skill category. He/ she will be awarded degree only after producing valid certificate of the MOOC course for credit Mobility.

#### **5. REQUIREMENTS FOR PROCEEDING TO SUBSEQUENT SEMESTER**

**5.1 Eligibility:** Students shall be eligible to go to subsequent semester only if they earn sufficient attendance as prescribed by the Periyar University.

**5.2.** Attendance: All Students must earn 75% and above of attendance for appearing for the End Semester Examination (Theory/Practical).

**5.3. Condonation of shortage of attendance:** If a Student fails to earn the minimum attendance (Percentage stipulated), the Principals shall con done the shortage of attendance up to a maximum limit of 10% (i.e. between 65% and above and less than75%) after collecting the prescribed fee for Theory/Practical examination separately, towards the condonation of shortage of attendance. Such fees collected and should be remitted to the University.

**5.4.** Non-eligibility for condonation of shortage of attendance: Students who have secured less than 65% but more than 50% of attendance are NOT ELIGIBLE for condonation of shortage of attendance and such Students will not be permitted to appear for the regular examination, but will be allowed to proceed to the next year/next semester of the program and they may be permitted to take next University examination by paying the prescribed condonation fee.

**5.5. Detained students for want of attendance:** Students who have earned less than 50% of attendance shall not be permitted to proceed to the next semester and to complete the Program of study. Such Students shall have to repeat the semester, which they have missed by rejoining after completion of final semester of the course, by paying the fee for the break of study as prescribed by the College from time to time.

**5.6.** Condonation of shortage of attendance for married women students: In respect of married women students undergoing UG programs, the minimum attendance for condonation (Theory/Practical) shall be relaxed and prescribed as 55% instead of 65% if they conceive during their academic career. Medical certificate from the Doctor (D.G.O) from the Government Hospital and the prescribed fee along with attendance details shall be forwarded to the college to consider the condonation of attendance mentioning the category.





**5.7. Zero Percent (0%) Attendance:** The Students, who have earned 0% of attendance, have to repeat the program (by rejoining) without proceeding to succeeding semester and they have to obtain prior permission from the College/University immediately to rejoin the program.

**5.8 Transfer of Students and Credits:** The strength of the credits system is that it permits inter Institutional transfer of students. By providing mobility, it enables individual students to develop their capabilities fully by permitting them to move from one Institution to another in accordance with their aptitude and abilities by obtaining necessary permission from the university.

**5.8.1** Transfer of Students is permitted from one Institution to another Institution for the same program with same nomenclature.

Provided, there is a vacancy in the respective program of Study in the Institution where the transfer is requested.

Provided the Student should have passed all the courses in the Institution from where the transfer is requested.

**5.8.2** The marks obtained in the courses will be converted and grades will be assigned as per the College norms.

**5.8.3** The transfer students are eligible for classification.

**5.8.4** The transfer students are not eligible for Ranking, Prizes and Medals.

**5.8.5** Students who want to go to foreign Universities up to two semesters or Project Work with the prior approval of the Departmental/College Committee are allowed to get transfer of credits and marks which will be converted in to Grades as per the University norms and are eligible to get CGPA and Classification; they are not eligible for Ranking, Prizes and Medals.

**5.9** Students are exempted from attendance requirements for online courses of the College and MOOC's.

#### 6. EXAMINATION AND EVALUATION

**6.1. Register for all subjects:** Students shall be permitted to proceed from the First Semester up to Final Semester irrespective of their failure in any of the Semester Examination. For this purpose, Students shall register for all the arrear subjects of earlier semesters along with the current (subsequent) Semester Subjects.





#### 6.2. Marks for Internal and End Semester Examinations for PART I, II, III, and IV

| Category                 | Theory | Practical |
|--------------------------|--------|-----------|
| Internal Assessment      | 25     | 40        |
| End semester Examination | 75     | 60        |

#### 6.3. Procedure for Awarding Internal Marks Internal Examination Marks–Theory

| Components      | Marks |
|-----------------|-------|
| CIAI&II         | 15    |
| Attendance      | 5     |
| Assignment/Quiz | 5     |
| Total           | 25    |

#### 6.4 Awarding Marks for Attendance(out of 5)

| Percentage of Attendance | Marks  |
|--------------------------|--------|
| Below 60%                | 0marks |
| 60% to 75%               | 3marks |
| 75% to 90%               | 4marks |
| Above 90%                | 5marks |

#### 6.5 Components for Practical CIA.

| Components              | Mark |
|-------------------------|------|
|                         | S    |
| CIA–I                   | 15   |
| CIA- II                 | 15   |
| <b>Observation Note</b> | 05   |
| Attendance              | 5    |
| Total                   | 40   |





#### 6.6 Components for Practical ESE.

| Components    | Mark |
|---------------|------|
|               | S    |
| Completion of | 50   |
| Experiments   | 50   |
| Record        | 05   |
| Viva voce     | 05   |
| Total         | 60   |

#### 6.7 Guidelines for Value Education Yoga and Environmental Studies(Part IV)

**6.7.1.** The Course Value Education Yoga is to be treated as 100% CIA course which is offered in V Semester for I year UG students.

**6.7.2.** The Course Environmental Studies is to be treated as 100% CIA course which is offered in IV Semester for I year UG students.

6.7.3 Total Marks for the Course =100

| Components             | Mark |
|------------------------|------|
|                        | S    |
| Two Tests(2x30)        | 60   |
| Field visit and report | 20   |
| (10+10)                | 20   |
| Two Assignments(2x10)  | 20   |
|                        |      |
| Total                  | 100  |

The passing minimum for this course is 40%

**6.7.3** In case, the candidate fails to secure 40% passing minimum, he/she may have to reappear for the same in the subsequent odd/even semesters.





#### 6.8 Internship/Industrial Training, Mini Project and Major Project Work

| Internship/ Indust | rial Training | Mini Project | Major                                    | Project Wor         | k     |
|--------------------|---------------|--------------|--|---------------------|-------|
| Components         | Marks         | Marks        | Components Ma                            |                     | Marks |
| CIA*2              |               |              | CIA                                      |                     |       |
| Work Diary         | 25            | -            | a)Attendance                             | 10Marks             | 40    |
| Report             | 50            | 50           |  |                     | 40    |
| Viva–voce          | 25            | 50           | <b>b)</b> Review                         | 30Marks             |       |
| Examination        |               |              | /Work                                    |                     |       |
|                    |               |              | Diary*1                                  |                     |       |
| Total              | 100           | 100          | ESE*2                                    |                     |       |
|                    |               |              | a) Final R<br>40Marksb)Viva –<br>20Marks | eport -<br>- voce - | 60    |
|                    |               |              | Total                                    |                     | 100   |
|                    |               |              |  |                     |       |
|                    |               |              |  |                     |       |

\*1. Review is for Individual Project and Work Diary is for Group Projects (Group consisting of minimum 3 and maximum 5)

\*2. Evaluation of report and conduct of viva voce will be done jointly by Internal and External Examiners

#### 6.9 Guide lines for Professional Competency Skill-Online Mode(Part IV)- Online Exam 3 hours

| Components         | Marks |
|--------------------|-------|
| 100 Objective Type | 100   |
| Questions          |       |
| 100*1=100 Marks    |       |

Objective type Questions from Question Bank.

- The passing minimum for this paper is 40%
- In case, the candidate fails to secure 40% passing minimum, he/she may have to reappear for the same in the subsequent semesters.





| QUESTION PAPER PATTERN FOR CIA I, II AND ESE                      |                                 |  |  |
|---|---------------------------------|--|--|
| (3 HOURS ) MAXIMUM:75 Marks                                       |                                 |  |  |
| SECTION-A ( <b>Objective Type)</b>                                |                                 |  |  |
| Answer ALL Questions  |                                 |  |  |
| ALL Questions Ca  | rry EQUAL Marks (10x1=10 marks) |  |  |
| SECTION-B (Either or Type)  |                                 |  |  |
| Answer ALL Questions  |                                 |  |  |
| ALL Questions Car   | ry EQUAL Marks (5x5=25 marks)   |  |  |
| SECTION-C (Eithe  | r or Type)                      |  |  |
| Answer ALL Questions  |                                 |  |  |
| ALL Questions Ca  | rry EQUAL Marks (5x8=40 marks)  |  |  |
| (Syllabus for CIA - I 2.5 Unit, Syllabus for CIA – II All 5 Unit) |                                 |  |  |

#### 6.10 PASSING MINIMUM

**6.10.1.** There shall be no passing minimum for Internal.

**6.10.2.** For external examination, passing minimum shall be 40% [Forty Percentage] of the maximum marks prescribed for the course for each Course/ Practical/ Project and Viva-Voce.

**6.6.2** In the aggregate[External/Internal] the passing minimum shall be of 40%.

**6.6.3** He /She shall be declared to have passed the whole examination, if He /she passes in all the Courses and Practical wherever prescribed as per the scheme of the examinations by earning 140 CREDITS in Part I, II, III, IV& V. He/she shall also fulfill the extension activities prescribed earning a minimum of 1 credit to qualify for the Degree.

#### **6.11 SUPPLIMENTARY EXAMINATION:**

Supplementary Examinations is conducted for the students who appeared in the final semester examinations. Eligible criteria for appearing in the Supplementary Examinations are as follows:

**6.11.1.Eligibility:** A Student who is having arrear of only one theory course in any of the semester or two theory course in the Final semester of the UG degree programme alone is eligible for Supplementary Examinations.





**6.11 .2 Non-eligibility for those completed the program:** Students who have completed their Program duration but having arrears are not eligible to appear for Supplementary Examinations.

#### 6.12 **RETOTALLING, REVALUATION AND PHOTOCOPY OF THE ANSWER SCRIPTS:**

**6.12.1. Re-totaling:** All UG Students who appeared for their Semester Examinations are eligible for applying for re-totaling of their answer scripts.

**6.12.2. Revaluation:** All current batch Students who have appeared for their Semester Examinations are eligible for Revaluation of their answer scripts. Passed out candidates are not eligible for Revaluation.

**6.12.3. Photo copy of the answer scripts:** Students who have applied for revaluation can apply for the Photocopy of answer scripts by paying prescribed fee.

#### RANGE OF GRADE LETTER GRADE DESCRIPTION MARKS POINTS 90-100 9.0 - 10.0 0 Outstanding 80-89 8.0 - 8.9 D+ Excellent 75-79 7.5 - 7.9 D Distinction 7.0 - 7.4 70-74 A+ Very Good 60-69 6.0 - 6.9 А Good В 50-59 5.0 - 5.9 Average 40-49 4.0 - 4.9 С Satisfactory U 00-39 0.0 **Re-appear** ABSENT 0.0 AAA ABSENT

#### 7. CLASSIFICATION OF SUCCESSFUL STUDENTS

7.1 Computation of Grade Point Average (GPA) in a Semester, Cumulative Grade Point Average (CGPA) and Classification GPA for a Semester:=∑iCiGi,∑iCi

That is, GPA is the sum of the multiplication of grade points by the credits of the courses divided by the sum of the credits of the courses in a semester.





CGPA for the entire programme: =  $\sum n \sum iCniGni$ ,  $\sum n \sum iCni$  That is, CGPA is the sum of the multiplication of grade points by the credits of the entire programme divided by the sum of the credits of the courses of the entire programme.

Where,

Ci = Credits earned for course I in any semester,

Gi = Grade Points obtained for course in any semester =Semester in which such courses were credited.

#### 7.2 Letter Grade and Classification

| CGPA                        | GRAD<br>E | CLASSIFICATION<br>OFFINAL RESULT |
|-----------------------------|-----------|----------------------------------|
| 9.5 - 10.0                  | 0+        | First Class Eventales            |
| 9.0 and above but below 9.5 | 0         | First Class - Exemplary          |
| 8.5 and above but below 9.0 | D++       |                                  |
| 8.0 and above but below 8.5 | D+        | First Class with                 |
| 7.5 and above but below 8.0 | D         | Distinction*                     |
| 7.0 and above but below 7.5 | A++       |                                  |
| 6.5 and above but below 7.0 | A+        | First Class                      |
| 6.0 and above but below 6.5 | А         |                                  |
| 5.5 and above but below 6.0 | B+        | Second Class                     |
| 5.0 and above but below 5.5 | В         | Second Class                     |
| 4.5 and above but below 5.0 | C+        | Third Class                      |
| 4.0 and above but below 4.5 | С         |                                  |
| 0.0 and above but below 4.0 | U         | Re-appear                        |

• The Students who have passed in the first appearance and within the prescribed semester of the UG Programme (Major, Allied and Elective courses only) are eligible.

#### 8. RANKING

Students who pass all the examinations prescribed for the Program in the FIRST APPEARANCE IT SELF ALONE are eligible for Ranking I, II and III.





#### 9. MAXIMUM PERIOD FOR COMPLETION OF THE PROGRAM TO QUALIFY FOR ADEGREE

**9.1.** A Student who for whatever reasons is not able to complete the program within the normal period (N) or the Minimum duration prescribed for the programme, may be allowed two years period beyond the normal period to clear the backlog to be qualified for the degree.(Time Span=N+2 years for the completion of programme ).



## BCA - Abstract under LOCF-CBCS Pattern with effect from 2023-2024 Onwards



### Structure of Credit Distribution as per the TANSCHE / UGC Guidelines

| S No | Study   | Part | Ser             | n I    | Sen             | n II   | Sem             | 111    | Sem             | n IV   | Sem             | ١V     | Sem             | VI     | No.of<br>Courses | Total<br>Credit |
|------|---|------|-----------------|--------|-----------------|--------|-----------------|--------|-----------------|--------|-----------------|--------|-----------------|--------|------------------|-----------------|
|      | Components  |      | No.of<br>Course | Credit |                  |                 |
| 1    | LANGUAGE - I  | I.   | 1               | 3      | 1               | 3      | 1               | 3      | 1               | 3      |                 |        |                 |        | 4                | 12              |
| 2    | LANGUAGE - II   | Ш    | 1               | 3      | 1               | 3      | 1               | 3      | 1               | 3      |                 |        |                 |        | 4                | 12              |
| 3    | DISCIPLINE<br>SPECIFIC<br>COURSE<br>(DSC)-THEORY  | 111  | 1               | 5      | 1               | 5      | 1               | 5      | 1               | 5      | 2               | 10     | 2               | 10     | 8                | 40              |
| 4    | DSC -<br>PRACTICAL  | Ш    | 1               | 3      | 1               | 2      | 1               | 3      | 1               | 3      | 2               | 4      | 1               | 3      | 7                | 18              |
| 5    | GENERIC<br>ELECTIVE<br>COURSES(GEC)-<br>THEORY  | 111  | 1               | 3      | 1               | 3      | 1               | 3      | 1               | 3      |                 |        |                 |        | 4                | 12              |
| 6    | GEC PRACTICAL   | 111  |                 |        |                 |        |                 |        |                 |        |                 |        |                 |        | 0                | 0               |
| 7    | DISCIPLINE<br>SPECIFIC<br>ELECTIVE<br>COURSES(DSE)                                      | 111  |                 |        |                 |        |                 |        |                 |        | 2               | 8      | 2               | 9      | 4                | 17              |
| 8    | PROJECT WORK  | 111  |                 |        |                 |        |                 |        |                 |        |                 |        | 1               | 4      | 1                | 4               |
| 9    | INTERNSHIP  | IV   |                 |        |                 |        |                 |        |                 |        | 1               | 2      |                 |        | 1                | 2               |
| 10   | PROFESSIONAL<br>COMPETENCY<br>SKILL   | IV   |                 |        |                 |        |                 |        |                 |        |                 |        | 1               | 4      | 1                | 4               |
| 11   | SKILL<br>ENHANCEMENT<br>COURSES(SEC)-<br>SBEC   | IV   |                 |        | 1               | 2      | 1               | 2      | 2               | 4      |                 |        |                 |        | 4                | 8               |
| 12   | NON MAJOR<br>ELECTIVE<br>COURSES<br>(NMEC)  | IV   | 1               | 2      | 1               | 2      |                 |        |                 |        |                 |        |                 |        | 2                | 4               |
| 13   | ABILITY<br>ENHANCEMENT<br>COMPULSORY<br>COURSES(AECC)<br>-EVS                           | IV   |                 |        |                 |        |                 |        | 1               | 2      |                 |        |                 |        | 1                | 2               |
| 14   | ABILITY<br>ENHANCEMENT<br>COMPULSORY<br>COURSES(AECC)<br>- VALUE<br>EDUCATION -<br>YOGA | IV   |                 |        |                 |        |                 |        |                 |        | 1               | 2      |                 |        | 1                | 2               |
| 15   | FOUNDATION  | IV   | 1               | 2      |                 |        |                 |        |                 |        |                 |        |                 |        | 1                | 2               |
| 16   | EXTENSION<br>ACTIVITY   | V    |                 |        |                 |        |                 |        |                 |        |                 |        | 1               | 1      | 1                | 1               |
|      | Cumulative<br>Credits   |      | 7               | 21     | 7               | 20     | 6               | 19     | 8               | 23     | 8               | 26     | 8               | 31     | 44               | 140             |

| Total No. of<br>Subjects | 44   |
|--------------------------|------|
| Marks                    | 4300 |

| PART        | No. of<br>Credits |
|-------------|-------------------|
| PART - I    | 12                |
| PART - II   | 12                |
| PART - III  | 91                |
| PART - IV   | 24                |
| PART - V    | 1                 |
| Grand Total | 140               |

| Extra<br>Credit(2+2) | 4   |
|----------------------|-----|
| Grand Total          | 144 |



#### Scheme of Examinations LOCF – CBCS Pattern



#### (for the Students Admitted from the Academic Year:2023-2024 Onwards)

#### Programme: BCA

| S.No | PART | STUDY                 | COURSE CODE                   |  | Hrs./W |     | CREDIT | м   | AX.MA | RKS   |
|------|------|-----------------------|-------------------------------|--|--------|-----|--------|-----|-------|-------|
|      |      | COMPONENTS            |                               | COURSE   | Lect   | Lab | POINTS | CIA | ESE   | TOTAL |
|      |      | _                     |                               | SEMESTER - I   |        |     |        |     |       |       |
| 1    | Ι    | LANGUAGE-I            | 23M1UFTA01                    | TAMIL - I  | 6      | -   | 3      | 25  | 75    | 100   |
| 2    | II   | LANGUAGE-II           | 23M1UFEN01                    | ENGLISH - I  | 6      | -   | 3      | 25  | 75    | 100   |
| 3    | Ш    | DSC THEORY - I        | 23M1UCAC01                    | PYTHON<br>PROGRAMMING                                      | 5      | -   | 5      | 25  | 75    | 100   |
| 4    | 111  | GEC THEORY - I        | 23M1UMAA03                    | DISCRETE<br>MATHEMATICS -<br>I                             | 4      | -   | 3      | 25  | 75    | 100   |
| 5    | 111  | DSC PRACTICAL - I     | 23M1UCAP01                    | PRACTICAL :<br>PYTHON<br>PROGRAMMING                       | -      | 5   | 3      | 40  | 60    | 100   |
| 6    | IV   | NMEC - I              |                               |  | 2      | -   | 2      | 25  | 75    | 100   |
| 7    | IV   | FC - I                | 23M1UCAFC1                    | STRUCTURED<br>PROGRAMMING<br>IN C                          | 2      | -   | 2      | 25  | 75    | 100   |
|      |      |                       |                               | TOTAL  | 25     | 5   | 21     | 190 | 510   | 700   |
|      |      |                       |                               | SEMESTER - II  |        |     |        |     |       |       |
| 1    | I    | LANGUAGE - I          | 23M2UFTA02                    | TAMIL - II   | 6      | -   | 3      | 25  | 75    | 100   |
| 2    | П    | LANGUAGE - II         | 23M2UFEN02                    | ENGLISH - II   | 6      | -   | 3      | 25  | 75    | 100   |
| 3    | 111  | DSC THEORY - II       | 23M2UCAC02                    | OBJECT<br>ORIENTED<br>PROGRAMMING<br>CONCEPTS<br>USING C++ | 5      | -   | 5      | 25  | 75    | 100   |
| 4    | 111  | GEC THEORY - II       | 23M2UMAA04<br>/<br>23M2UMAA08 | DISCRETE<br>MATHEMATICS –<br>II/<br>NUMERICAL<br>METHODS   | 4      | -   | 3      | 25  | 75    | 100   |
| 5    | 111  | DSC PRACTICAL -<br>II | 23M2UCAP02                    | PRACTICAL :<br>PROGRAMMING<br>IN C++                       | -      | 5   | 2      | 40  | 60    | 100   |
| 6    | IV   | NMEC - II             |                               |  | 2      | -   | 2      | 25  | 75    | 100   |
| 7    | IV   | SEC THEORY - I        |                               |  | 2      | -   | 2      | 25  | 75    | 100   |
|      |      |                       |                               | TOTAL  | 25     | 5   | 20     | 190 | 510   | 700   |

|   |               |                                     |            | SEMESTER - III  |    |   |    |     |     |     |
|---|---------------|-------------------------------------|------------|---|----|---|----|-----|-----|-----|
| 1 | I             | LANGUAGE - I                        | 23M3UFTA03 | TAMIL - III   | 6  | - | 3  | 25  | 75  | 100 |
| 2 | 11            | LANGUAGE - II                       | 23M3UFEN03 | ENGLISH - III   | 6  | - | 3  | 25  | 75  | 100 |
| 3 | 111           | DSC THEORY - III                    | 23M3UCAC03 | DATA<br>STRUCTURES<br>AND<br>ALGORITHMS                   | 5  | - | 5  | 25  | 75  | 100 |
| 4 | 111           | GEC THEORY - III                    | 23M3USTA08 | STATISTICAL<br>METHODS AND<br>ITS<br>APPLICATIONS - I     | 5  | - | 3  | 25  | 75  | 100 |
| 5 | 111           | DSC PRACTICAL -<br>III              | 23M3UCAP03 | PRACTICAL :<br>DATA<br>STRUCTURES<br>USING C++            | -  | 5 | 3  | 40  | 60  | 100 |
| 6 | IV            | SEC THEORY - II                     |            |   | 3  | - | 2  | 25  | 75  | 100 |
|   |               |                                     |            | TOTAL   | 25 | 5 | 19 | 165 | 435 | 600 |
|   | SEMESTER - IV |                                     |            |   |    |   |    |     |     |     |
| 1 | I             | LANGUAGE - I                        | 23M4UFTA04 | TAMIL - IV  | 6  | - | 3  | 25  | 75  | 100 |
| 2 | П             | LANGUAGE - II                       | 23M4UFEN04 | ENGLISH - IV  | 6  | - | 3  | 25  | 75  | 100 |
| 3 | 111           | DSC THEORY - IV                     | 23M4UCAC04 | PROGRAMMING<br>IN JAVA                                    | 5  | - | 5  | 25  | 75  | 100 |
| 4 | 111           | GEC THEORY - IV                     | 23M4USTA09 | STATISTICAL<br>METHODS AND<br>ITS<br>APPLICATIONS -<br>II | 4  | - | 3  | 25  | 75  | 100 |
| 5 | 111           | DSC PRACTICAL -<br>IV               | 23M4UCAP04 | PRACTICAL :<br>PROGRAMMING<br>IN JAVA                     | -  | 5 | 3  | 40  | 60  | 100 |
| 6 | IV            | SEC THEORY - III                    |            |   | 2  | - | 2  | 25  | 75  | 100 |
| 7 | IV            | SEC THEORY - IV                     |            |   | 2  | - | 2  | 25  | 75  | 100 |
| 8 | IV            | AECC -<br>ENVIRONMENTAL<br>STUDIES* | 23M4UEVS01 | ENVIRONMENTA<br>L STUDIES                                 | -  | - | 2  | 100 | -   | 100 |
|   |               | *SELF STUDY                         |            | TOTAL   | 25 | 5 | 23 | 290 | 510 | 800 |

|   |     |                                     |            | SEMESTER - V   |     |    |     |      |      |      |
|---|-----|-------------------------------------|------------|--|-----|----|-----|------|------|------|
| 1 | Ш   | DSC THEORY - V                      | 23M5UCAC05 | RDBMS  | 5   | -  | 5   | 25   | 75   | 100  |
| 2 | 111 | DSC PRACTICAL -<br>V                | 23M5UCAP05 | PRACTICAL:<br>RDBMS USING<br>SQL                             | -   | 4  | 2   | 40   | 60   | 100  |
| 3 | III | DSC THEORY - VI                     | 23M5UCAC06 | ASP .NET<br>PROGRAMMING                                      | 5   | -  | 5   | 25   | 75   | 100  |
| 4 | Ш   | DSE THEORY - I                      |            | ELECTIVE - I:  | 5   | -  | 4   | 25   | 75   | 100  |
| 5 | 111 | DSE THEORY - II                     |            | ELECTIVE - II:   | 5   | -  | 4   | 25   | 75   | 100  |
| 6 | 111 | DSC PRACTICAL -<br>VI               | 23M5UCAP06 | PRACTICAL : ASP<br>.NET<br>PROGRAMMING                       | -   | 4  | 2   | 40   | 60   | 100  |
| 7 | IV  | AECC - VALUE<br>EDUCATION           | 23M5UVED01 | YOGA   | 2   | -  | 2   | 100  | -    | 100  |
| 8 | IV  | INTERNSHIP                          | 23M5UCAIS1 | INTERNSHIP   | -   | -  | 2   | 100  | -    | 100  |
|   |     |                                     |            | TOTAL  | 22  | 8  | 26  | 380  | 420  | 800  |
|   | r   | -                                   |            | SEMESTER - VI  | r   | 1  |     | T    |      |      |
| 1 | 111 | DSC THEORY - VII                    | 23M6UCAC07 | COMPUTER<br>NETWORKS   | 5   | -  | 5   | 25   | 75   | 100  |
| 2 | 111 | DSC THEORY - VIII                   | 23M6UCAC08 | DATA ANALYTICS<br>USING R<br>PROGRAMMING                     | 5   | -  | 5   | 25   | 75   | 100  |
| 3 |     | DSE THEORY - III                    |            | ELECTIVE - III   | 5   | -  | 5   | 25   | 75   | 100  |
| 4 | III | DSE THEORY - IV                     |            | ELECTIVE - IV  | 5   | -  | 4   | 25   | 75   | 100  |
| 5 | 111 | DSC PRACTICAL -<br>VII              | 23M6UCAP07 | PRACTICAL : R<br>PROGRAMMING                                 | -   | 6  | 3   | 40   | 60   | 100  |
| 6 | Ш   | PROJECT WORK                        | 23M6UCAPR1 | PROJECT WORK   | 4   | -  | 4   | 40   | 60   | 100  |
| 7 | IV  | PROFESSIONAL<br>COMPETENCY<br>SKILL | 23M6UCAOE1 | COMPUTER<br>APPLICATION<br>FOR<br>COMPETITIVE<br>EXAMINATION | -   | -  | 4   | 100  | -    | 100  |
| 8 | V   | EXTENSION<br>ACTIVITY               | 23M6UEXA01 | EXTENSION<br>ACTIVITY  | -   | -  | 1   | -    | -    | -    |
|   |     |                                     |            | TOTAL  | 24  | 6  | 31  | 280  | 420  | 700  |
|   |     |                                     |            | OVERALL TOTAL  | 146 | 34 | 140 | 1495 | 2805 | 4300 |
|   |     | EXTRA                               |            | EXTRA CREDIT<br>SWAYAM/MOOC<br>ONLINE                        | -   | -  | 2   | -    | -    | -    |
|   |     |                                     |            | VALUE ADDED<br>COURSE  | -   | -  | 2   | -    | -    | -    |

HOD

#### MEMBER SECRETARY ACADEMIC COUNCIL PRINCIPAL





|             | BCA Syllabus LOO  | CF - CBCS with effect f  | from 202   | 23-2024 0  | Dnwa  | ards |   |    |  |  |  |  |  |
|-------------|---|--|--|--|---|------|---|----|--|--|--|--|--|
| Course Code | Course Title  | Course Type  | Sem  | Hours  | L   | т    | Р | С  |  |  |  |  |  |
| 23M1UCAC01  | PYTHON<br>PROGRAMMING   | DSC THEORY - I   | I  | 5  | 5   |      | - | 5  |  |  |  |  |  |
| Objectives  | Students Learn the in PYTHON program  | Students Learn the basic concepts of Python programming. To apply the OOPs n PYTHON programming.   |  |  |   |      |   |    |  |  |  |  |  |
| Unit        |   |  | Knowle<br>Lev  | edge<br>rels   | Sessions  |      |   |    |  |  |  |  |  |
| I           | Basics of Python P<br>of Python - Litera<br>– Keywords-Built-<br>Input Statements-<br>Expressions - Type<br>Processing Arrays –   | Asics of Fython - Literal – Constants - Variables – Identifiers         F Python - Literal – Constants - Variables – Identifiers         Keywords-Built- in Data Types-Output Statements – K1         nput Statements-Comments – Indentation- Operators-         xpressions - Type conversions. Python Arrays: Defining and         Processing Arrays – Array methods. |  |  |   |      |   |    |  |  |  |  |  |
| II          | <b>Control Statement</b><br>statements: if, if-<br>statements. Iterativ<br>suite in loop and<br>continue and pass s   | Control Statements: Selection / Conditional Branching<br>statements: if, if-else, nested if and if- else if - else<br>statements. Iterative Statements: while loop, for loop, else<br>suite in loop and nested loops. Jump Statements: break,<br>continue and pass statementsK212  |  |  |   |      |   |    |  |  |  |  |  |
| 111         | Functions: Function<br>and its Lifetime -<br>Required Argument<br>and Variable Lengt<br>String operations- In<br>and Functions -<br>statement- The Py<br>and Namespace – D              | Definition – Function<br>Return Statement. F<br>s, Keyword Argument<br>h Arguments- Recurs<br>mmutable Strings - Bu<br>String Comparison<br>thon module – dir()<br>efining our own modu  | Call – Va<br>Function<br>s, Defaul<br>sion. Pyt<br>iilt-in Str<br>. Modu<br>functior<br>iles.        | riable Sco<br>Argume<br>It Argume<br>It Argum | ope<br>nts:<br>ents<br>ngs:<br>ods<br>oort<br>ules  | КЗ   |   | 12 |  |  |  |  |  |
| IV          | Lists: Creating a lis<br>Lists- Nested lists -E<br>Creating, Accessing,<br>– Nested tuples -<br>Dictionaries: Creat<br>Elements in a Dictio<br>- Difference betwee<br>Python File Handl | t -Access values in Li<br>Basic list operations - I<br>Updating and Deletin<br>- Difference betwee<br>ing, Accessing, Upd<br>onary – Dictionary Fu<br>en Lists and Dictionari<br>ing: Types of files in  | st-Updat<br>List Meth<br>Ing Eleme<br>In lists<br>Iating a<br>Inctions a<br>Inctions a<br>Inctions a | ing value<br>nods. Tup<br>nts in a tu<br>and tup<br>nd Delet<br>nd Meth  | es in<br>les:<br>uple<br>les.<br>ting<br>ods        | К4   |   | 12 |  |  |  |  |  |
| V           | and Closing files-<br>writelines() method<br>readlines() methods<br>methods - File Posi   | Reading and Writing<br>ls - append() met<br>s –with keyword – S<br>tions - Renaming and  | g files:<br>hod –<br>plitting<br>deleting  | write()<br>read()<br>words –<br>files.   | vrite() and<br>read() and<br>vords – File<br>files. |      |   |    |  |  |  |  |  |
|             | <b>CO1:</b> Define the b python, Learn how  | asics of python, Do<br>to use an array.  | simple   | program  | s on  | К1   |   |    |  |  |  |  |  |

|                    | I-Lecture  | T-Tutorial  | P-Practical  | C-Cre                         | dit         |  |  |  |  |  |
|--------------------|--|---|--|-------------------------------|-------------|--|--|--|--|--|
|                    | 2. https://www.guru<br>3. https://www.w3sc   | 99.com/python-t<br>hools.com/pythc  | utorials.html<br>n/python_intro.asp  |                               |             |  |  |  |  |  |
| Website Link       | 1 https://www.programiz.com/python-programming   |   |  |                               |             |  |  |  |  |  |
| Reference<br>Books | <ol> <li>Mark Lutz,   Learn</li> <li>Adam Stewarts, –</li> <li>Fabio Nelli, —Pyth</li> <li>Kenneth A. Laml<br/>Publication</li> </ol>              | ing Python∥, Orie<br>-Python Program<br>oon Data Analytic<br>pert, —Fundame     | entals of Python – First   | t Programs  ,                 | CENGAGE     |  |  |  |  |  |
| Text<br>Books      | <ol> <li>ReemaThareja, —</li> <li>Edition, 2017, Oxford</li> <li>Dr. R. Nageswara</li> <li>Dream tech Publishe</li> <li>Vamsikurama — P</li> </ol> | Python Program<br>d University Press<br>Rao, —Core Pyt<br>rs.<br>Python Program | ning using problem solvin<br>hon Programming  , First                          | g approach  ,<br>Edition, 201 | First<br>7, |  |  |  |  |  |
|                    | <b>CO5:</b> Discover files files, creating progra  | in python, Conce<br>ms using files.<br>Learning Res                             | pt of reading and writing<br>ources  | К4                            |             |  |  |  |  |  |
|                    | <b>CO4:</b> Inspect with Liusing list, tuples and  | К4  |  |                               |             |  |  |  |  |  |
| Course<br>Outcome  | <b>CO3:</b> Apply the Co<br>Implementing the<br>Significance of Moo<br>modules.  | oncept of functi<br>concept strings<br>dules, Work wit                          | on, function arguments,<br>in various application,<br>n functions, Strings and | К2                            |             |  |  |  |  |  |
|                    | <b>CO2:</b> Illustrate the p<br>with Looping and ju<br>and jump statements   | ection statement, Work<br>Do programs on Loops                                  | К3   |                               |             |  |  |  |  |  |

|                           | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |                   |             |   |                     |                        |                      |                    |            |        |        |     |  |  |  |
|---------------------------|---|-------------------|-------------|---|---------------------|------------------------|----------------------|--------------------|------------|--------|--------|-----|--|--|--|
| Course Cod                | e   | Cou               | rse Tit     | le  | Course              | е Туре                 | Sem                  | Hours              | L          | т      | P C    |     |  |  |  |
| 23M1UCAC0                 | )1<br>PI  | PYTH<br>ROGRA     | ION<br>MMIN | G C   | SC THE              | ORY - I                | I                    | 5                  | 5          | -      | -      | 5   |  |  |  |
|                           |   |                   |             |   | CO                  | PO Mapp                | oing                 |                    |            |        |        |     |  |  |  |
| CO Number                 | P01   | P02               | P03         | P04   | P05                 | PSO1                   | PSO2                 | PSO3               | PSO4       | PSO5   | 5      |     |  |  |  |
| CO1                       | Μ   | S                 | М           | S   | S                   | L                      | L                    | S                  | S          | S      |        |     |  |  |  |
| CO2                       | Μ   | S                 | S           | S   | S                   | S                      | М                    | S                  | S          | S      |        |     |  |  |  |
| CO3                       | S   | S                 | S           | S   | S                   | S                      | S                    | S                  | S          | S      |        |     |  |  |  |
| CO4                       | S   | S                 | М           | S   | S                   | S                      | М                    | S                  | S          | S      |        |     |  |  |  |
| CO5                       | Μ   | S                 | Μ           | L   | L                   | S                      | S                    | S                  | S          | S      |        |     |  |  |  |
| Level o<br>betwee         | f Corre<br>en CO a  | elation<br>and PO |             |   | L-LOW M-MEDIUM      |                        |                      |                    |            |        | S-STRO | ONG |  |  |  |
| <b>Tutorial Sched</b>     | ule   |                   |             | Group Discussion, Quiz program, Model preparation |                     |                        |                      |                    |            |        |        |     |  |  |  |
| Teaching and L<br>Methods | .earnir   | ng                |             | Audio \<br>Present                                | 'ideo le<br>ation a | cture, Cha<br>nd Video | alk and I<br>present | Board cla<br>ation | ass, Assig | nment, | РРТ    |     |  |  |  |
| Assessment M              | ethod   | s                 |             | Class Te  | est, Uni            | t Test, As             | signmei              | nt, CIA-I,         | CIA-II and | d ESE  |        |     |  |  |  |
| Des                       | Designed By   |                   |             |   |                     | rified By              |                      |                    | Ар         | proved | Ву     |     |  |  |  |
| Mr.K.V                    | Нс  | D – Dr.           | V.Vijayad   | eepa  | Mem                 | nber Secr              | etary – I            | Dr.S.Shal          | hitha      |        |        |     |  |  |  |





|             | BCA Syllabus LOCF - CB                                | CS with effect from 2023           | 3-2024 On  | wards    |                     |        |     |  |  |  |  |  |
|-------------|---|------------------------------------|------------|----------|---------------------|--------|-----|--|--|--|--|--|
| Course Code | Course Title  | Course Type                        | Sem        | Hours    | 5 L                 | Р      | с   |  |  |  |  |  |
| 23M1UCAP01  | PYTHON<br>PROGRAMMING                                 | DSC PRACTICAL - I                  | I          | 5        | -                   | 5      | 3   |  |  |  |  |  |
| Objective   | Students Understand th<br>decision statements in      | e concept Python applic<br>Python. | ations. Be | e able t | o create l          | oops a | and |  |  |  |  |  |
| S.No        | List of Exp   | periments / Programmes             | 5          | К        | Knowledge<br>Levels |        |     |  |  |  |  |  |
| 1           | Program using variable<br>Python.                     | es, constants, I/O statem          | ents in    |          |                     | 5      |     |  |  |  |  |  |
| 2           | Program using Operators in Python. K1                 |                                    |            |          |                     |        |     |  |  |  |  |  |
| 3           | Program using Conditional Statements. K2              |                                    |            |          |                     |        |     |  |  |  |  |  |
| 4           | Program using Loops. K2                               |                                    |            |          |                     |        |     |  |  |  |  |  |
| 5           | Program using Functio                                 | ns.                                |            |          | К3                  |        | 4   |  |  |  |  |  |
| 6           | Program using Recursion                               | on.                                |            |          | K3                  |        | 4   |  |  |  |  |  |
| 7           | Program using Arrays.                                 |                                    |            |          | К4                  |        | 4   |  |  |  |  |  |
| 8           | Program using Strings.                                |                                    |            |          | К4                  |        | 4   |  |  |  |  |  |
| 9           | Program using Lists.                                  |                                    |            |          | K4                  |        | 4   |  |  |  |  |  |
| 10          | Program using Tuples.                                 |                                    |            |          | K4                  |        | 5   |  |  |  |  |  |
| 11          | Program using Dictiona                                | iries.                             |            |          | K4                  |        | 5   |  |  |  |  |  |
| 12          | Program for File Handl                                | ing.                               |            |          | K4                  |        | 4   |  |  |  |  |  |
|             | <b>CO1:</b> To Recall the synt variables, data types. | ax rules for numerical co          | onstants a | nd       | K1                  |        |     |  |  |  |  |  |

|                    | CO2: To Identify  | the problem and s   | olve using PYTHON |         |    |  |  |  |
|--------------------|---|---|-------------------|---------|----|--|--|--|
|                    | programming te  | chniques.   |                   | K2      |    |  |  |  |
| Course             | CO3: To Identify suitable programming constructs for K3 problem solving.  |   |                   |         |    |  |  |  |
| Outcome            | <b>CO4:</b> To Analyze solve the proble   | <b>CO4:</b> To Analyze various concepts of PYTHON language to solve the problem in an efficient way.  |                   |         |    |  |  |  |
|                    | <b>CO5:</b> To Develop<br>and test for its c  | К4  |                   |         |    |  |  |  |
|                    | Learning Resources  |   |                   |         |    |  |  |  |
| Text<br>Books      | <ol> <li>ReemaThareja, —Python Programming using problem solving approach  ,</li> <li>First Edition, 2017, Oxford University Press.</li> <li>Dr. R. NageswaraRao, —Core Python Programming  , First Edition, 2017,</li> </ol> |   |                   |         |    |  |  |  |
|                    | Dream tech Pub  | lishers.  |                   |         |    |  |  |  |
| Reference<br>Books | Education.<br>2. Mark Lutz,   Le<br>3. Adam Stewart<br>4. Fabio Nelli, —<br>5. Kenneth A. La<br>CENGAGE Public  | <ol> <li>Vamsikurama, —Python Programming: A Modern Approachil, Pearson<br/>Education.</li> <li>Mark Lutz,   Learning Python  , Orielly.</li> <li>Adam Stewarts, —Python Programming  , Online.</li> <li>Fabio Nelli, —Python Data Analytics  , APress.</li> <li>Kenneth A. Lambert, —Fundamentals of Python – First Programs  ,<br/>CENCACE Publication</li> </ol> |                   |         |    |  |  |  |
| Website Link       | 1. https://www.programiz.com/python-programming<br>2. https://www.guru99.com/python-tutorials.html  |   |                   |         |    |  |  |  |
|                    | L-Lecture   | T-Tutorial  | P-Practical       | C-Credi | it |  |  |  |

|                           | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |                |            |                         |         |            |       |                                  |          |         |       |    |   |
|---------------------------|---|----------------|------------|-------------------------|---------|------------|-------|----------------------------------|----------|---------|-------|----|---|
| Course Code               | (   | Course         | Title      |                         | Οοι     | ırse Type  | •     | Sem                              | Hours    | 5 L     | т     | Р  | С |
| 23M1UCAP01                | P<br>PROG   | YTHON<br>GRAMN | N<br>⁄IING | DSC PRACTICAL- I I 5    |         |            | 5     | 3                                |          |         |       |    |   |
| CO-PO Mapping             |   |                |            |                         |         |            |       |                                  |          |         |       |    |   |
| CO<br>Number              | P01   | P02            | P03        | P04                     | P05     | PSO1       | P     | SO2                              | PSO3     | PSO4    | PSC   | 95 |   |
| CO1                       | М   | S              | М          | S                       | S       | L          | ſ     | М                                | S        | S       | S     |    |   |
| CO2                       | М   | S              | S          | S                       | S       | S          | ſ     | М                                | S        | S       | S     |    |   |
| CO3                       | S   | S              | S          | S                       | S       | S          |       | S                                | S        | S       | S     |    |   |
| CO4                       | S   | S              | М          | S                       | S       | S          | ſ     | М                                | S        | S       | S     |    |   |
| CO5                       | М   | S              | М          | L                       | L       | S          |       | S                                | S        | S       | S     |    |   |
| Level of (<br>between     | Correlat<br>CO and  | tion<br>I PO   |            | L-LOW M-MEDIUM S-STRONG |         |            |       |                                  |          |         | ١G    |    |   |
| Tutorial Schedule         |   |                |            | Sampl                   | le Prog | grams to   | the   | relate                           | ed topic | S       |       |    |   |
| Teaching and Lear         | ning Mo   | ethods         | 1          | Handl                   | ing Pra | actical Se | essio | on Thr                           | ough Pr  | ojector |       |    |   |
| Assessment Metho          | ods   |                |            | Obser                   | vation  | , Model    | Pra   | ctical'                          | S        |         |       |    |   |
| Desig                     | ned By  |                |            |                         | Ve      | rified By  |       |                                  |          | Арр     | roved | Ву |   |
| Mrs.N.Padı<br>Mr.K.Vijayı | navath<br>akumai  | i              |            | HoD – Dr.V.Vijayadeepa  |         |            |       | Member Secretary – Dr.S.Shahitha |          |         |       |    |   |





|             | BCA Syllabus LOCF-C  | BCS with effect fro   | m 202                                     | 3-2024 O   | nwai | rds                           |    |          |  |  |  |  |
|-------------|--|---|---|--|------|-------------------------------|----|----------|--|--|--|--|
| Course Code | Course Title   | Course Type   | Sem                                       | Hours  | L    | т                             | Р  | С        |  |  |  |  |
| 23M2UCAC02  | OBJECT ORIENTED<br>PROGRAMMING<br>CONCEPTS USING C++   | DSC THEORY - II   | 11  | 5  | 5    | -                             | -  | 5        |  |  |  |  |
| Objective   | Students Learn the proced classes, functions, data an  | lural and object ori<br>d objects.  | ented                                     | paradigm   | with | vith concepts of streams,     |    |          |  |  |  |  |
| Unit        | Cou  | irse Content  |   |  | K    | nowled <sub>a</sub><br>Levels | ge | Sessions |  |  |  |  |
| I           | Introduction to C++<br>Oriented Programming –<br>Languages – I/O in C-<br>Structures: - Decision Mal<br>go to, break, continue, Sv<br>in C++:for, while, do - for<br>Function Overloading. | Introduction to C++ - key concepts of Object-<br>Oriented Programming - Advantages - Object Oriented<br>Languages - I/O in C++ - C++ Declarations. Control<br>Structures: - Decision Making and Statements: If-else, jump,<br>go to, break, continue, Switch case statements - Loops<br>in C++:for, while, do - functions in C++ - inline functions -K1 |   |  |      |                               |    |          |  |  |  |  |
| II          | Classes and Objects: Decl<br>Member Functions – Statio<br>– array of objects –friend f<br>functions – Bit fields and<br>Constructor and destructo  | aring Objects – De<br>c Member variable<br>functions – Overloa<br>classes –<br>r with static memb   | efining<br>s and f<br>ding m<br>ers.      | unctions<br>nember                                       |      | К2                            |    | 12       |  |  |  |  |
| III         | <b>Operator Overloading:</b> Ov<br>– Overloading Friend<br>Inheritance: Types of<br>Multilevel, Multiple, H<br>path inheritance – Virtual  | verloading unary, b<br>functions —type<br>of Inheritance<br>ierarchal,<br>I base Classes — Abs  | inary (<br>conv<br>–<br>Hybri<br>stract ( | operators<br>ersion –<br>Single,<br>d, Multi<br>Classes. |      | КЗ                            |    | 12       |  |  |  |  |
| IV          | Pointers – Declaration –<br>pointer – Pointers to derive<br>– Characteristics – array o<br>and delete operators<br>Polymorphism and Virtual  | Pointer to Class<br>ed classes and Base<br>of classes – Memor<br>– dynamic obje<br>Functions.   | , Obje<br>classe<br>y mode<br>ct –        | ect – this<br>s – Arrays<br>els – new<br>Binding,        | 5    | К3                            |    | 12       |  |  |  |  |
| v           | Files – File stream classes -  | – file modes – Sequ   | iential                                   | Read /   |      | K4                            |    | 12       |  |  |  |  |

| L-Le               | cture                                | T-Tutorial  | P-Practical   | C-Cre                 | edit       |
|--------------------|--------------------------------------|---|---|-----------------------|------------|
| Website<br>Link    | https:/                              | //alison.com/course/introd  | uction-to-c-p/us-plus-prog                                    | ramming               |            |
| Reference<br>Books | 1.Asho<br>Turbo<br>2.Mari            | ok N Kamthane, —Object-<br>C++,Pearson Education 200<br>a Litvin& Gray Litvin, —C+-                             | Oriented Programming w<br>03.<br>+ for you, Vikas publication | vith ANSI and n 2002. |            |
| Text<br>Books      | E. Bala                              | agurusamy, —Object-Orien  | ted Programming with C+                                       | +, TMH 2013, 7t       | h Edition. |
|                    |                                      | Learning  | Resources   |                       |            |
|                    | CO5: I<br>with a                     | Discover the Code, debug ppropriate test cases.   | К4  |                       |            |
|                    | CO4: I<br>Time p                     | nspect the programming problems.  | К4  |                       |            |
| Course<br>Outcome  | CO3: A<br>proble                     | Apply the programming priners.  | ciples learnt in real time                                    | К3                    |            |
|                    | CO2: I<br>Types,<br>structu          | llustrate the programming<br>operators, branching and l<br>ures, pointers and files).                           | principles in C (data<br>ooping, arrays, functions,           | К2                    |            |
|                    | CO1: I and se                        | Define the program struction mantics.   | ure of C with its syntax                                      | K1                    |            |
|                    | Write<br>Access<br>String<br>Attribu | operations – Binary and<br>Operation – Templates<br>– Declaring and Initializing<br>utes – Miscellaneous functi |   |                       |            |

|   | B       | CA Sylla               | abus                  | LOCF -  | CBCS \                | with effe             | ect from             | 2023-20            | 024 Onwa    | ards  |       |       |   |
|---|---------|------------------------|-----------------------|---|-----------------------|-----------------------|----------------------|--------------------|-------------|-------|-------|-------|---|
| Course Cod                                | le      |                        | Cou                   | rse Titl  | e                     | Cour                  | se Type              | Sem                | Hours       | L     | т     | Р     | С |
| 23M2UCAC0                                 | )2      | OBJEC<br>PROG<br>ONCEF | T OR<br>GRAN<br>PTS U | RIENTED<br>MMING DSC THEORY - II I<br>USING C++ |                       |                       | 1 11                 | 5                  | 5           | -     | -     | 5     |   |
| CO-PO Mapping                             |         |                        |                       |   |                       |                       |                      |                    |             |       |       |       |   |
| CO Number                                 | P01     | P02                    | P03                   | P04   | P05                   | PSO1                  | PSO2                 | PSO                | 3 PSO       | 4     | PSO5  |       |   |
| CO1                                       | Μ       | S                      | М                     | S   | S                     | L                     | М                    | М                  | S           |       | S     |       |   |
| CO2                                       | Μ       | S                      | S                     | S   | S                     | S                     | М                    | S                  | S           |       | S     |       |   |
| CO3                                       | S       | S                      | S                     | S   | S                     | S                     | S                    | М                  | S           |       | S     |       |   |
| CO4                                       | S       | S                      | М                     | S   | S                     | S                     | М                    | S                  | S           |       | S     | 1     |   |
| CO5                                       | М       | S                      | Μ                     | L   | L                     | S                     | М                    | М                  | S           |       | S     |       |   |
| Level of<br>Correlation<br>between CO and |         |                        |                       |   | L-LOW M-MEDIUM S-STRO |                       |                      |                    |             |       |       | FRONG |   |
| Tutorial Schee                            | dule    |                        |                       | Group l   | Discus                | sion, Qu              | iz progr             | am, Moo            | del prepa   | ratic | n     |       |   |
| Teaching and<br>Methods                   | Learni  | ng                     |                       | Audio V<br>Present                              | /ideo l<br>ation      | ecture, (<br>and Vide | Chalk an<br>eo prese | d Board<br>ntation | class, As   | signı | nent, | PPT   |   |
| Assessment N                              | /lethod | ls                     |                       | Class Te  | est, Ur               | nit Test,             | Assignn              | nent, CIA          | A-I, CIA-II | and   | ESE   |       |   |
| Designed By                               |         |                        |                       | Verified By                                     |                       |                       |                      | Approved By        |             |       |       |       |   |
| Mrs.N.Padmavathi<br>Mr.K.Vijayakumar      |         |                        |                       |   | ayadeep               | a                     | Membe                | er Secreta         | nry –       | Dr.S. | Shah  | itha  |   |





|             | BCA Syllabus LOCF - CBCS wi  | th effect from 2023-202  | 4 Onwa  | ards      |   |   |   |  |  |
|-------------|--|--------------------------|---------|-----------|---|---|---|--|--|
| Course Code | Course Title   | Course Type              | Sem     | Hours     | L | Р | С |  |  |
| 23M2UCAP02  | PROGRAMMING IN C++   | DSC PRACTICAL - II       | II      | 5         | - | 5 | 2 |  |  |
| Objective   | Students Develop the C++ pro   | ogramming concepts usi   | ng Clas | ses objec |   |   |   |  |  |
| S.No.       | List of Experiments / Programmes Knowledge<br>Levels                                 |                          |         |           |   |   |   |  |  |
| 1           | Write a C++ program to demo<br>overloading.  | onstrate function        |         | К1        |   | ļ | 5 |  |  |
| 2           | Write a C++ program to demo  | onstrate Class and Objec | cts.    | K1        |   | ļ | 5 |  |  |
| 3           | Write a C++ program to demonstrate the concept of<br>Passing Objects to Functions.K2 |                          |         |           |   |   |   |  |  |
| 4           | Write a C++ program to demonstrate Constructor and K2<br>Destructor.                 |                          |         |           |   |   |   |  |  |
| 5           | Write a C++ program to demo<br>a) Single Inheritance<br>b) Multiple Inheritance      | onstrate:                |         | K2        |   | ( | 6 |  |  |
| 6           | Write a C++ program to mani  | pulate a Text File.      |         | КЗ        |   | ( | 5 |  |  |
| 7           | Write a C++ program to perfo<br>Operations on a file.                                | orm Sequential I/O       |         | КЗ        |   | ( | 5 |  |  |
| 8           | Write a C++ program to find t<br>Command Line Arguments.                             | he Biggest Number usin   | g       | КЗ        |   | 5 |   |  |  |
| 9           | Write a C++ program to demo  | onstrate Class Template. |         | К3        |   | l | 5 |  |  |
| 10          | Write a C++ program to demo  | onstrate Function Temp   | late.   | К4        |   | 1 | 5 |  |  |

| 11   | Write a C++ program to demonstrate Exception Handling.  | v                                      | К4   | 6     |  |  |  |  |
|--|---|--|--|-------|--|--|--|--|
|  | <b>CO1:</b> Remember the program structure of C with its syntax an semantics.   | <b>CC</b><br>se                        | K1   |       |  |  |  |  |
|  | <b>CO2:</b> Illustrate the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files).   | сс<br>ор<br>st                         | К2   |       |  |  |  |  |
| Course<br>Outcome                                      | <b>CO3:</b> Apply the programming principles learnt in real time problems.  | rse C<br>ome p                         | КЗ   |       |  |  |  |  |
|  | <b>CO4:</b> Analyze the various methods of solving a problem and choose the best method.  | <b>c</b>                               | К4   |       |  |  |  |  |
|  | <b>CO5</b> : Create Code, debug and test the programs with appropriate test cases.  |  |  |       |  |  |  |  |
| Learning Resources                                     |   |  |  |       |  |  |  |  |
|  | Learning Resources  |  |  |       |  |  |  |  |
| Text<br>Books  | Learning Resources<br>E. Balagurusamy - Object-Oriented Programming with C++",  | xt<br>oks                              | MH 2013, 7 th Edi  | tion. |  |  |  |  |
| Text<br>Books<br>Reference<br>Books                    | Learning Resources         E. Balagurusamy - Object-Oriented Programming with C++", "         1. Ashok N Kamthane, - Object-Oriented Programming with A         C++", Pearson Education 2003.         2. Maria Litvin & Gray Litvin, - C++ for you∥, Vikas publication  | xt<br>oks<br>E<br>ence<br>oks          | MH 2013, 7 th Edi<br>VSI and Turbo                               | tion. |  |  |  |  |
| Text<br>Books<br>Reference<br>Books<br>Website<br>Link | Learning ResourcesE. Balagurusamy - Object-Oriented Programming with C++", "1. Ashok N Kamthane, - Object-Oriented Programming with A<br>C++", Pearson Education 2003.2. Maria Litvin & Gray Litvin, - C++ for you  , Vikas publicationNPTEL & MOOC courses titled Object oriented programming<br>1.https://nptel.ac.in/courses/106/105/106105151/<br>2.http://www.learn-cpp.org/ | xt<br>oks<br>Ence<br>oks<br>Site<br>nk | MH 2013, 7 th Edi<br>VSI and Turbo<br>2002.<br>oncepts using C++ | tion. |  |  |  |  |

|                                      |                 | BCA Syl                 | labus I       | .OCF | -CBCS wi   | th effect fro  | m 2023   | -2024 Onv   | var | ds   |          |      |
|--------------------------------------|-----------------|-------------------------|---------------|------|------------|----------------|----------|-------------|-----|------|----------|------|
| Course Co                            | ode             | Cou                     | rse Tit       | le   | C          | ourse Type     | Sen      | n Hours     | L   | т    | Р        | С    |
| 23M2UCA                              | P02             | PROGRA<br>IN C          | MMIN<br>C++   | G    | DSC PRA    | ACTICAL - II   | II       | 5           | 5   |      | 5        | 2    |
|                                      |                 |                         | CO-PO Mapping |      |            |                |          |             |     |      |          |      |
| CO<br>Number                         | <b>P0</b> :     | 1 P02                   | P03           | P04  | 4 P05      | PSO1           | PSO2     | PSO3        |     | PSO4 | PSO5     |      |
| CO1                                  | Μ               | S                       | М             | S    | S          | L              | М        | S           |     | S    | S        |      |
| CO2                                  | Μ               | S                       | S             | S    | S          | S              | М        | S           |     | S    | S        |      |
| CO3                                  | S               | S                       | S             | S    | S          | S              | S        | S           |     | S    | S        |      |
| CO4                                  | S               | S                       | М             | S    | S          | S              | М        | S           |     | S    | S        |      |
| CO5                                  | Μ               | S                       | М             | L    | L          | S              | S        | S           |     | S    | S        |      |
| Leve<br>betw                         | l of C<br>een C | orrelation<br>CO and PO |               |      | L-LC       | w              |          | M-ME        | DIU | M    | S-ST     | RONG |
| Tutorial Sch                         | edule           | !                       |               | Sam  | ple Progr  | ams to the r   | elated t | topics      |     |      |          |      |
| Teaching an                          | d Lea           | rning Metl              | hods          | Hand | dling Prac | ctical Sessior | n Throu  | gh Projecto | or  |      |          |      |
| Assessment                           | Meth            | nods                    |               | Obse | ervation,  | Model Pract    | ical's   |             |     |      |          |      |
| D                                    | esign           | ed By                   |               |      | Ve         | erified By     |          |             |     | Аррі | roved By |      |
| Mrs.N.Padmavathi<br>Mr K Vijavakumar |                 |                         |               |      | – Dr.S.Sh  | ahitha         |          |             |     |      |          |      |





|             | BCA Syllabus LOCF - (                                     | CBCS with effect fro                         | m 2023   | -2024 On              | ward  | s            | -        |    |  |
|-------------|---|--|--|-----------------------|-------|--------------|----------|----|--|
| Course Code | Course Title  | Course Type                                  | Sem  | Hours                 | L     | Т            | Р        | С  |  |
| 23M3UCAC03  | DATA STRUCTURES<br>AND ALGORITHMS                         | DSC THEORY - III                             | Ш  | 5                     | 5     | -            | -        | 5  |  |
| Objective   | Students learn the co<br>implement the variou             | ncepts of linear and<br>us searching and sor | l non-lir<br>ting tec  | iear data<br>hniques. | struc | tures        | and      |    |  |
| Unit        |   | Course Content                               |  |                       | Kr    | nowl<br>Leve | Sessions |    |  |
|             | Algorithms: Problem                                       | solving – Top-Dow                            | n and B  | ottom- uj             | D     |              |          |    |  |
|             | approaches to algor                                       | ithm design – Use                            | of algo  | orithms i             | n     |              |          | 13 |  |
|             | problem solving - Eff                                     | iciency analysis of a                        | algorithr  | ns: Space             | ,     |              |          |    |  |
|             | Time complexity and                                       | Frequency count.                             |  |                       |       |              |          |    |  |
| I           | Data Structure: Intr                                      | oduction - Definit                           | ions –   | Overview              |       | K1           |          |    |  |
|             | Arrays: Definition – T                                    |  |  |                       |       |              |          |    |  |
|             | Abstract Data Type  | ł  |  |                       |       |              |          |    |  |
|             | implementation - link                                     |  |  |                       |       |              |          |    |  |
|             | Stack ADT - Op  | erations - Applie                            | cations-   | Evaluatin             | 3     |              |          |    |  |
|             | arithmetic expressio                                      | ns – Conversion c                            | of infix   | to postfi             | ×     |              |          |    |  |
|             | expression.   |  |  |                       |       |              |          |    |  |
|             | Queue ADT - Operati                                       | -  |  |                       |       |              |          |    |  |
| II          | de Queue - applicatio                                     | ons of queues.                               |  |                       |       | K2           |          | 12 |  |
|             | Linked list: singly link                                  | y  |  |                       |       |              |          |    |  |
|             | linked lists - application                                | ons of lists - Polyno                        | mial Ma  | nipulatio             | ۱     |              |          |    |  |
|             | - All operations Insert                                   | tion - Deletion - Me                         | So of linear and non-linear data structures and<br>ching and sorting techniques.Knowledge<br>LevelsSesse ContentKnowledge<br>LevelsSessg - Top-Down and Bottom- up<br>design - Use of algorithms in<br>( analysis of algorithms: Space,<br>ency count.<br>ion - Definitions - Overview.<br>ology - Types.K11ion - Definitions - Overview.<br>ology - Types.K11rts) - List ADT - array-based<br>implementation.K11ns- Applications-Evaluating<br>Conversion of infix to postfixK21rcular Queue - Priority Queue -<br>queues.<br>ts - circular linked lists - doubly<br>lists - Polynomial Manipulation<br>Deletion - Merge - Traversal.K21- Binary Tree ADT - expression<br>es - binary search tree ADT -<br>L Trees - BTree - B+Tree - HeapK31 |                       |       |              |          |    |  |
|             | Tree ADT - tree trave                                     | ersals - Binary Tree                         | ADT - e  | expressio             | n 🛛   |              |          |    |  |
|             | trees - applications                                      | of trees - binary s                          | earch t  | ree ADT               | -     |              |          |    |  |
| Ш           | Threaded Binary Trees - AVL Trees - BTree - B+Tree – Heap |  |  |                       |       |              |          | 11 |  |
|             | -Applications of heap                                     |  |  |                       |       |              |          |    |  |
|             |   |  |  |                       |       |              |          |    |  |
| IV                  | <b>Graph:</b> Definition -<br>of graph - Breadt<br>traversal - Topologi<br>vertex Euler circuits                                   | Representation of<br>h first traversal -<br>cal sort - Bi - conr<br>-Applications of gr   | Graph - Types<br>- Depth first<br>nectivity – Cut<br>aphs.  | К4   | 12                  |  |  |  |
|---------------------|--|---|---|--|---------------------|--|--|--|
| V                   | Searching: Linear s<br>Bubble sort Selection<br>- Radix sort - Has<br>chaining - Open Add<br>Hashing.<br>Current Trends- *Lo       | earch - Binary sea<br>on sort - Insertion so<br>hing - Hash functi<br>dressing - Rehashin<br><b>ocality Sensitive Ha</b>          | rch - <b>Sorting:</b><br>ort - Shell sort<br>ions Separate<br>g - Extendible<br><b>shing (LSH)*</b> | К5   | 12                  |  |  |  |
|                     | *.   |   |   |  |                     |  |  |  |
|                     | <b>CO1:</b> Recall the cor Problem solving.  | s and   | K1  |  |                     |  |  |  |
|                     | <b>CO2:</b> Summarize th like arrays, stacks.  | a structures  | K2  |  |                     |  |  |  |
| Course Outcome      | <b>CO3:</b> Apply the Tec list.  | and linked  | K3  |  |                     |  |  |  |
|                     | <b>CO4:</b> Examine the or graphs, trees, and h  | different problems<br>eaps.   | related to  | К4   |                     |  |  |  |
|                     | <b>CO5:</b> Assess the has collision and its reso  | h function and the<br>plution methods.  | concepts of   | K5   |                     |  |  |  |
|                     | Lear   | rning Resources   |   |  |                     |  |  |  |
| Text<br>Books       | 1.Sathish Jain, Shas<br>BPB Publications, N<br>2.Debasis Samanta<br>New Delhi, July 200<br>3.Mark Allen Weiss<br>C++,Pearson Educa | hi Singh - Data Stru<br>ew Delhi, 2006.<br>- Classic Data Struc<br>9.<br>- Data Structures a<br>ation 2014, 4 <sup>th</sup> Editi | cture Made Simp<br>tures, second Ed<br>nd Algorithm An<br>ion.                                      | ole, First Ec<br>ition, PHI L<br>alysis in | lition,<br>earning, |  |  |  |
| Reference<br>Books  | <ol> <li>Reema Thareja -<br/>Press2014,2nd Edit</li> <li>Aho, Hopcroft an<br/>Education2003.</li> </ol>                            | Data Structures Us<br>ion.<br>d Ullman - Data Str   | ing C, Oxford Uni<br>uctures and Algo   | versities<br>prithms, Pe                   | arson               |  |  |  |
| Website<br>Link     | https://www.javatpoint.com/data-structure-tutorial   |   |   |  |                     |  |  |  |
| Self-Study Material | https://www.pinecone.io/learn/series/faiss/locality-sensitive-has  |   |   |  |                     |  |  |  |
|                     | L-Lecture  | P-Practical   | C-C   | redit                                      |                     |  |  |  |

|   | l               | BCA Sy        | llabu         | s LOCF          | - CBCS w               | vith effec            | t fron           | <mark>ז 202</mark> ו | 3-2024   | Onwa     | rds    |        |       |     |
|---|-----------------|---------------|---------------|-----------------|------------------------|-----------------------|------------------|----------------------|----------|----------|--------|--------|-------|-----|
| Course Code   |                 | Course        | e Title       | e               | Cou                    | rse Type              |                  | Sem                  | Hour     | s L      | Т      | 1      | >     | С   |
| 23M3UCAC03  | DA<br>AN        | TA STR        | UCTU<br>ORITH | JRES<br>HMS     | DSC TI                 | HEORY - I             | II               | ш                    | 5        | 5        | -      |        | -     | 5   |
|   |                 |               |               |                 | CO-                    | PO Mapp               | oing             |                      |          |          |        |        |       |     |
| CO Number   | r               | PO1           | PO            | 2 PO            | 3 PO4                  | PO5                   | PSO              | 1 P                  | SO2      | PSO3     | PSO4   | I PS   | 05    |     |
| CO1   |                 | М             | S             | Μ               | S                      | S                     | Μ                |                      | М        | S        | S      |        | S     |     |
| CO2   |                 | М             | S             | S               | S S S S M S S S        |                       |                  |                      |          |          |        |        |       |     |
| CO3   |                 | S             | S             | S               | S S S S S S S S        |                       |                  |                      |          |          |        |        | _     |     |
| CO4   |                 | S             | S             | M               | S                      | S                     | S                |                      | М        | S        | S      |        | S     |     |
| CO5   |                 | М             | S             | Μ               | М                      | М                     | S                |                      | S        | S        | S      |        | S     |     |
| Level of Co<br>between C                            | orrela<br>CO an | ition<br>d PO |               |                 | L-LOW                  |                       |                  | N                    | I-MEDI   | UM       |        | S-9    | STR   | ONG |
| Tutorial Schedu                                     | ule             |               |               | Group           | Discussio              | on, Quiz p            | orogra           | m, N                 | lodel p  | repara   | tion   |        |       |     |
| Teaching and L<br>Methods                           | earni           | ng            |               | Audio<br>Presen | Video lec<br>tation ar | ture, Cha<br>Id Video | alk and<br>prese | d Boa<br>ntatio      | rd clas  | s, Assig | gnmen  | t, PPT | •     |     |
| Assessment Me                                       | ethod           | ls            |               | Class T         | est, Unit              | Test, As              | signm            | ent, (               | CIA-I, C | IA-II ar | nd ESE |        |       |     |
| Designed By         Verified By         Approved By |                 |               |               |                 |                        |                       |                  | l By                 |          |          |        |        |       |     |
| Mr.K.Vija   | mar             |               | HoD           | - Mr.G.         | Selvakum               | ar                    | N                | /lembe               | er Secre | etary -  | Dr.S.  | Sha    | hitha |     |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |  |                     |                      |              |       |      |          |  |  |  |
|---|---|--|---------------------|----------------------|--------------|-------|------|----------|--|--|--|
| Course Code   | Course Title  | Course Type  | Sem                 | Hours                | L            | Т     | Ρ    | С        |  |  |  |
| 23M3UCAP03  | DATA STRUCTURES<br>USING C++  | DSC PRACTICAL - III  | ш                   | 5                    | -            | -     | 5    | 3        |  |  |  |
| Objective   | Students Develop the Graphs, as well as vari  | data structure concep<br>ous searching and sortin  | ts, inclung tech    | uding Sta<br>niques. | ack          | and ( | Queu | e Trees, |  |  |  |
| S.No.   | List of Exper   | iments / Programmes  |                     | Knov<br>Le           | wled<br>vels | ge    | Ses  | sions    |  |  |  |
| 1   | Implement the List AD   | T using Arrays.  |                     | K1                   |              | 5     |      |          |  |  |  |
| 2   | Construct the code for<br>linked list.<br>i) Stack ADT<br>li) Queue ADT.                                  | r following terms and us   | e singly            | 1                    | K2           |       |      | 5        |  |  |  |
| 3   | Develop the code to re<br>converts the expression<br>evaluates the postfix e                              | ead an infix expression,<br>on to postfix form and th<br>expression (use stack AD                          | nen<br>)T).         |                      | K1           |       |      | 5        |  |  |  |
| 4   | Implement the priority  | y queue ADT.   |                     |                      | К2           |       |      | 5        |  |  |  |
| 5   | Construct the code for<br>i) Insert an element in<br>ii) Delete an element f<br>Iii) Search for a key ele | the following operation<br>to a binary search tree<br>from a binary search tre<br>ement in a binary search | ns:<br>e<br>1 tree. |                      | K3           |       |      | 5        |  |  |  |
| 6   | Implement the code for<br>i) Insertion into an AVI<br>Ii) Deletion from an AV                             | or the following operation<br>L-tree<br>/L-tree.   | ons:                |                      | K4           |       |      | 5        |  |  |  |
| 7   | Implementation of BFS   | S and DFS for a given gra  | aph.                |                      | K4           |       | 5    |          |  |  |  |
| 8   | Construct the code for the following searching<br>methods:<br>i) Linear search<br>ii) Binary search.K35   |  |                     |                      |              |       |      |          |  |  |  |
| 9   | Develop the code for t<br>i) Selection sort   | he following sorting me<br>ii) Insertion sort  | ethods:             |                      | K5           |       |      | 5        |  |  |  |

| 10   | Construct the code for<br>i) Bubble sort  | the following sorting i<br>ii) Radix sort   | methods:  | К5  | 5   |  |  |  |  |  |  |
|--|---|---|---|---|---|--|--|--|--|--|--|
|  | <b>CO1:</b> Define the concep   | ot of data types, and a   | lgorithms.  | К1  |   |  |  |  |  |  |  |
|  | <b>CO2:</b> Identify the basic lists, stacks and queues   | data structures such a  | as arrays, linked   | К2  |   |  |  |  |  |  |  |
| Course<br>Outcome                                      | <b>CO3:</b> Determine the co resolution methods.  | ncepts of hash functio  | on and its  | КЗ  |   |  |  |  |  |  |  |
|  | CO4: Categorize the various problems involving trees, heaps<br>and graphs.  |   |   |   |   |  |  |  |  |  |  |
|  | <b>CO5:</b> Design the Algorit and Sorting.   | ms of Searching   | К5  |   |   |  |  |  |  |  |  |
|  |   |   |   |   |   |  |  |  |  |  |  |
|  |   | Learning Resour   | ces   |   |   |  |  |  |  |  |  |
| Text<br>Books  | 1. MarkAllen Weiss, – I<br>2014,4th Edition.<br>2. Reema Thareja, – Da  | Learning Resour<br>Data Structures and A<br>ta Structures Using C,  | ces<br>Igorithm Analysis in C+-<br>Oxford Universities Pre  | -,Pearson E<br>ss2014,2n                            | Education<br>d Edition.                           |  |  |  |  |  |  |
| Text<br>Books  | <ol> <li>MarkAllen Weiss, — I</li> <li>2014,4th Edition.</li> <li>Reema Thareja, — Da</li> <li>Thomas H.Cormen, C</li> <li>to Algorithms, McGraw</li> </ol>   | Learning Resour<br>Data Structures and A<br>ta Structures Using C,<br>Chales E.Leiserson, Rou<br>Hill 2009,3rd Edition.                         | ces<br>Igorithm Analysis in C+-<br>Oxford Universities Pre<br>nald L.Rivest, Clifford St                            | -,Pearson E<br>ss2014,2n<br>ein,—Intro              | Education<br>d Edition.<br>oduction               |  |  |  |  |  |  |
| Text<br>Books<br>Reference<br>Books                    | <ol> <li>MarkAllen Weiss,— I<br/>2014,4th Edition.</li> <li>Reema Thareja,—Da</li> <li>Thomas H.Cormen, C<br/>to Algorithms,McGraw</li> <li>Aho,Hopcroft and UI</li> </ol>  | Learning Resour<br>Data Structures and A<br>ta Structures Using C,<br>Chales E.Leiserson, Roi<br>Hill 2009,3rd Edition.<br>Iman,—Data Structure | ces<br>Igorithm Analysis in C+-<br>Oxford Universities Pre<br>nald L.Rivest, Clifford St<br>es and Algorithms, Pear | -,Pearson E<br>ss2014,2n<br>ein,—Intro<br>son Educa | Education<br>d Edition.<br>oduction<br>tion 2003. |  |  |  |  |  |  |
| Text<br>Books<br>Reference<br>Books<br>Website<br>Link | <ol> <li>MarkAllen Weiss,— I<br/>2014,4th Edition.</li> <li>Reema Thareja,—Da</li> <li>Thomas H.Cormen, O<br/>to Algorithms,McGraw</li> <li>Aho,Hopcroft and UI</li> <li><u>https://www.javatpoint.o</u></li> </ol> | Learning Resour<br>Data Structures and A<br>ta Structures Using C,<br>Chales E.Leiserson, Roi<br>Hill 2009,3rd Edition.<br>Iman,—Data Structure | lgorithm Analysis in C+-<br>Oxford Universities Pre<br>nald L.Rivest, Clifford St<br>es and Algorithms, Pear        | -,Pearson E<br>ss2014,2n<br>ein,—Intro<br>son Educa | Education<br>d Edition.<br>oduction<br>tion 2003. |  |  |  |  |  |  |

|                           | l                               | BCA Sy          | llabı       | us LO           | CF -            | CBCS wi   | ith effect | t fror | n 20  | 23-202  | 24 0  | Dnwa  | rds    |   |          |       |
|---------------------------|---------------------------------|-----------------|-------------|-----------------|-----------------|-----------|------------|--------|-------|---------|-------|-------|--------|---|----------|-------|
| Course Code               |                                 | Course          | e Tit       | le              |                 | Cours     | se Type    |        | Sem   | Ηοι     | ırs   | L     | Т      |   | Р        | С     |
| 23M3UCAP03                | DA                              | TA STR<br>USING | UCT<br>G C+ | URES<br>+       | <b>с</b>        | DSC PRA   | CTICAL -   | ш      | III   | 5       | 1     | -     | -      |   | 5        | 3     |
|                           |                                 |                 |             |                 |                 | CO-P      | О Марр     | ing    |       |         |       |       |        |   |          |       |
| CO Numbe                  | r                               | PO1             | РС          | )2 F            | PO3             | PO4       | PO5        | PSC    | D1    | PSO2    | PS    | 503   | PSO    | 4 | PSO5     |       |
| CO1                       |                                 | М               | S           |                 | M S S M M S S S |           |            |        |       |         |       |       |        |   |          |       |
| CO2                       |                                 | М               | S           |                 | S S S S M S S   |           |            |        |       |         |       |       | S      |   |          |       |
| CO3                       |                                 | S               | S           |                 | S S S S S S S   |           |            |        |       |         |       |       | S      |   |          |       |
| CO4                       |                                 | S               | S           | 5 M S S S M S S |                 |           |            |        |       | S       |       |       |        |   |          |       |
| CO5                       |                                 | М               | S           |                 | Μ               | М         | М          | S      |       | S       |       | S     | S      |   | S        |       |
| Level of Co<br>between C  | orrela<br>CO an                 | ition<br>d PO   |             |                 |                 | L-LOW     |            |        | ſ     | M-MEI   | וטוכ  | М     |        |   | S-STRC   | ONG   |
| Tutorial Schedu           | ule                             |                 |             | Sam             | ple I           | Program   | s to the   | relat  | ed to | pics    |       |       |        |   |          |       |
| Teaching and L<br>Methods | earni                           | ng              |             | Han             | dling           | g Practic | al Sessio  | n Thi  | rougl | n Proje | ecto  | or    |        |   |          |       |
| Assessment Me             | ethod                           | ls              |             | Obse            | erva            | tion, Mo  | odel Prac  | tical' | s     |         |       |       |        |   |          |       |
| Designed By Verified By   |                                 |                 |             |                 |                 | d By      |            |        |       |         | Арр   | orove | d B    | у |          |       |
| Mr.K.Vija                 | Designed By<br>Mr.K.Vijayakumar |                 |             |                 |                 | Mr.G.S    | elvakum    | ar     |       | Meml    | oer : | Secre | tary - | D | r.S.Shał | nitha |





|             | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards  |   |  |  |  |                                   |                    |          |  |  |  |  |  |
|-------------|--|---|--|--|--|-----------------------------------|--------------------|----------|--|--|--|--|--|
| Course Code | Course Title   | Course Type   | Sem  | Hours  | L  | т                                 | Р                  | С        |  |  |  |  |  |
| 23M4UCAC04  | PROGRAMMING<br>IN JAVA   | DSC THEORY - IV   | IV   | 5  | 5  | -                                 | -                  | 5        |  |  |  |  |  |
| Objective   | Students Learn the controls, Event han   | e OOPs concepts a<br>dling and Swing for  | and get<br>GUI.  | insight I  | real wo  | rld ap                            | olications         | with AWT |  |  |  |  |  |
| Unit        |  | Course Conte  | nt   |  |  | Kı                                | nowledge<br>Levels | Sessions |  |  |  |  |  |
| I           | Introduction: Revie<br>Java - Java buzzwor<br>– Scope and lifetim<br>statements – type<br>– constructors – n<br>Method String and  | of<br>es<br>ol<br>m<br>tic  | K1   | 12   |  |                                   |                    |          |  |  |  |  |  |
| II          | Inheritance: Basic<br>access rules - Us<br>Overloading – Met<br>method dispatch -<br>Packages: Definitio<br>Interfaces: Definitio<br>Exception Handling<br>in exceptions – Cre | concepts - Types<br>age of this and S<br>thod overriding - A<br>Usage of final keywo<br>n – Access Protectio<br>on – Implementatio<br>g: try – catch - throw<br>ating own Exception | of Inhe<br>Super ko<br>Sord.<br>on – Imp<br>n – Exte<br>v – throw<br>n classes   | ritance -<br>eyword -<br>classes -<br>porting Pa<br>ending Int<br>ws – final<br>s.   | Memb<br>Metho<br>Dynam<br>Ickages.<br>erfaces.<br>ly – Buil      | er<br>od<br>nic<br>t -            | К2                 | 12       |  |  |  |  |  |
| 111         | Multithreaded Pro<br>– Synchronization<br>synchronized stat<br>Deadlock. I/O Stre<br>Byte and Character<br>Console output – Fi   | gramming: Thread<br>– Using synchro<br>ement – Inter-th<br>ams: Concepts of s<br>r stream –Reading<br>ile Handling.   | Class –<br>onized<br>nread (<br>treams<br>console  | Runnable<br>methods<br>Communi<br>– Stream<br>Input an   | interfa<br>– Usin<br>cation<br>classes<br>d Writin               | ce<br>ng<br>–<br>ng               | К3                 | 12       |  |  |  |  |  |
| IV          | AWT Controls: T<br>components – Labe<br>Check Box Group -<br>- Scroll Bar. Workir<br>managers. Event<br>Listeners - Event De<br>Keyboard Events - A                            | he AWT class hie<br>els – Button – Text<br>Choice - List Box - P<br>ng with Frame class<br><b>Handling:</b> Events<br>elegation Model (EE<br>Adapter classes - Ini                  | erarchy<br>Compor<br>'anels –<br>- Color<br>– Ever<br>DM) – Ha<br>ner class  | <ul> <li>user</li> <li>nents - Ch</li> <li>Scroll Par</li> <li>Fonts a</li> <li>ant source</li> <li>andling N</li> <li>ses.</li> </ul> | interfa<br>neck Box<br>ne - Mer<br>nd Iayo<br>s –Eve<br>Iouse ar | ce<br>< -<br>nu<br>ut<br>nt<br>nd | К4                 | 12       |  |  |  |  |  |
| V           | Swing: Introduction<br>Containers – Top le<br>JPanel - JButton -<br>JLabel, JTextField –<br>Current Trends: *S   | n to Swing –Hierar<br>evel containers – Jfr<br>JToggleButton – Jo<br>JtextArea – Jlist – Jo<br><b>pring Boot*</b>   | g –Hierarchy of swing components.<br>iners – Jframe - JWindow - JDialog -<br>Itton – JcheckBox – JradioButton - K5<br>– Jlist – JcomboBox - JScrollPane.<br>t* |  |  |                                   |                    |          |  |  |  |  |  |
|             | ** Self Study  |   |  |  |  |                                   |                    |          |  |  |  |  |  |

|                        | <b>CO1:</b> Use the syntax and Language and basic conc                                     | amming  | К1                      |                          |  |  |  |  |  |  |
|------------------------|--|---|-------------------------|--------------------------|--|--|--|--|--|--|
|                        | <b>CO2:</b> Develop reusable prince, polymorphis   | rograms using the conc<br>m, interfaces and packa   | epts of<br>ages.        | К2                       |  |  |  |  |  |  |
| Course<br>Outcome      | <b>CO3:</b> Apply the concepts Handling to develop effic                                   | of Multithreading and lient and error free code   | Exception               | К3                       |  |  |  |  |  |  |
|                        | <b>CO4:</b> Design event driver<br>Which mimics the real we                                | O4: Design event driven GUI and web related applicationsK4Vhich mimics the real word scenario.K4O5: Build the internet-based dynamic applications using theK5 |                         |                          |  |  |  |  |  |  |
|                        | <b>CO5:</b> Build the internet-b<br>Concept of applets and s                               | ased dynamic applicati<br>wing.   | ons using the           | К5                       |  |  |  |  |  |  |
|                        |  | Learning Resources  |                         |                          |  |  |  |  |  |  |
| <b>T</b>               | Herbert Schildt, The Cor   | nplete Reference Java 2   | 2, Tata McGraw Hill, Ne | w Delhi, 7 <sup>th</sup> |  |  |  |  |  |  |
| l ext<br>Books         | Edition, 2010.   |   |                         |                          |  |  |  |  |  |  |
| DOOKS                  | Gary Cornell, Core Java2   | 2 Volume I – Fundamen   | tals, Addison Wesley, 1 | 999.                     |  |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Head First Java, O' Rie</li> <li>Y.Daniel Liang, Introd</li> <li>2010.</li> </ol> | elly Publications.<br>uction to Java Program  | ming, 7thEdition, Pears | on Education India,      |  |  |  |  |  |  |
| Website<br>Link        | https://javabeginnerst<br>http://docs.oracle.com<br>https://www.coursera.                  | utorial.com/core-java-t<br>ı/javase/tutorial/<br>.org/  | utorial                 |                          |  |  |  |  |  |  |
| Self-Study<br>Material | https://spring.io/projects/spring-boot   |   |                         |                          |  |  |  |  |  |  |
|                        |  |   |                         |                          |  |  |  |  |  |  |

|  | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |                 |               |                         |              |                        |                          |                        |                  |         |       |         |     |
|--|---|-----------------|---------------|-------------------------|--------------|------------------------|--------------------------|------------------------|------------------|---------|-------|---------|-----|
| Course Code  |   | Cours           | e Title       |                         |              | Course                 | Туре                     | Sem                    | Hours            | L       | т     | Р       | С   |
| 23M4UCAC04   | P   | ROGRAN<br>JA    | /MING I<br>VA | N                       | 1            | DSC THE                | ORY - IV                 | IV                     | 5                | 5       | -     | -       | 5   |
|  |   |                 |               | C                       | CO-F         | PO Mapp                | ing                      |                        |                  |         |       |         |     |
| CO Number  | PO1   | PO2             | PO3           | PC                      | )4           | PO5                    | PSO1                     | PSO2                   | PSO3             | PSO     | 94    | PSO5    | 1   |
| CO1  | S   | S               | М             | N                       | Λ            | М                      | S                        | Μ                      | L M M            |         |       |         |     |
| CO2  | М   | S               | S             | Ν                       | M M S L M L  |                        |                          |                        |                  |         | Μ     |         |     |
| CO3  | S   | М               | S             | N                       | M S L L M M  |                        |                          |                        |                  |         | Μ     |         |     |
| CO4  | М   | S               | М             | N                       | Λ            | S                      | М                        | М                      | M M              |         |       |         |     |
| CO5  | S   | М               | S             | 5                       | 5            | S                      | L                        | М                      | М                | М       |       | Μ       |     |
| Level o<br>betwe   | of Corre<br>en CO a   | lation<br>nd PO |               |                         |              | L-LOW                  |                          | М                      | -MEDIUN          | Л       |       | S-STRC  | )NG |
| <b>Tutorial Schedu</b>   | le  |                 |               | Gro                     | bup          | Discussic              | on, Quiz pr              | ogram, N               | lodel pre        | epara   | tion  |         |     |
| Teaching and Le<br>Methods   | arning  |                 |               | Auc<br>Pre              | dio \<br>sen | /ideo lec<br>tation an | ture, Chal<br>Id Video p | k and Boa<br>resentati | ard class,<br>on | Assig   | gnmo  | ent, Pl | ۶Τ  |
| Assessment Me  | thods   |                 |               | Cla                     | ss To        | est, Unit              | Test, Assi               | gnment,                | CIA-I, CIA       | A-II ar | nd ES | SE      |     |
| De   | signed  | Ву              |               | Verified By Approved By |              |                        |                          |                        |                  |         |       |         |     |
| Mrs.N.Padmapriya HoD - Mr.G.Selvakumar Member Secreta<br>Dr.S.Shahitha |   |                 |               |                         |              |                        |                          | etary -<br>itha        |                  |         |       |         |     |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |  |   |  |                               |                        |               |        |  |  |  |  |
|---|---|--|---|--|-------------------------------|------------------------|---------------|--------|--|--|--|--|
| Course Code   | Course Title  | Course Type  | Sem   | Hours  | L                             | т                      | Р             | С      |  |  |  |  |
| 23M4UCAP04  | PROGRAMMING<br>IN JAVA  | DSC PRACTICAL -<br>IV  | IV  | 5  | -                             | -                      | 5             | 3      |  |  |  |  |
| Objective   | To develop simple o<br>about Event handlin  | bject-oriented Java<br>g, String concepts ar   | prograr<br>nd also  | ns and e<br>to create                          | nable the st<br>e GUI using A | ude<br>\W <sup>-</sup> | ents to<br>F. | o know |  |  |  |  |
| S.No.   | List of Expe  | List of Experiments / Programmes Knowledge Levels  |   |  |                               |                        |               |        |  |  |  |  |
| 1   | Write a Java progra<br>integer and then print<br>to that Integer.   | m that prompts the<br>nts out all the prime  | user fo<br>numbe  | or an<br>rs up                                 | K1                            |                        | Ľ             | 5      |  |  |  |  |
| 2   | Write a Java progran  | n to multiply two giv  | en mat  | rices.   | К1                            |                        | 5             | 5      |  |  |  |  |
| 3   | Write a Java progra<br>characters, lines and  | im that displays the<br>I words in a text.   | e numb  | er of  | K1                            |                        | 5             | 5      |  |  |  |  |
| 4   | Write a program to<br>Character Array and<br>operations:<br>a. String length.<br>b. Finding a characte<br>c. Concatenating two              | o do String Manipu<br>d perform the follo<br>er at a particular pos<br>o strings.  | lation<br>owing s<br>ition.                                     | using<br>tring                                 | К2                            |                        | 5             | 5      |  |  |  |  |
| 5   | Write a program to<br>String Buffer class:<br>a. Length of a string<br>b. Reverse a string<br>c. Delete a substring                         | perform string oper  | ations i  | using  | К2                            |                        | Ę             | 5      |  |  |  |  |
| 6   | Write a java program<br>application that ha<br>generates random in<br>value is even, second<br>the number and prin<br>thread will print the | n that implements an<br>as three threads. In<br>nteger every 1 secor<br>d thread computes t<br>nts. If the value is oc<br>value of cube of the | multi-th<br>First th<br>nd and i<br>he squa<br>dd, the<br>numbe | read<br>read<br>f the<br>re of<br>third<br>er. | K3                            |                        | e             | 5      |  |  |  |  |
| 7   | Write a program to c<br>exceptions.<br>a. Arithmetic Except<br>b. Number Format E<br>c. Array Index Out o<br>d. Negative Array Siz          | demonstrate the use<br>ion<br>exception<br>f Bound Exception<br>are Exception  | of follo  | wing   | КЗ                            |                        | e             | 5      |  |  |  |  |

| 8                  | Write a Java pro<br>the user, then d<br>the file exists, w<br>the file is writab<br>the file in bytes.                                       | ogram that reads on<br>lisplays information<br>hether the file is rea<br>le, the type of file an   | file name from<br>about whether<br>adable, whether<br>nd the length of  | К4                           | 6                                      |  |
|--------------------|--|--|---|------------------------------|--|--|
| 9                  | Write a Java pro<br>and shows the<br>window when a<br>classes).  | gram that handles a<br>event name at the<br>mouse event is fire  | ll mouse events<br>e center of the<br>d. (Use adapter   | К4                           | 6                                      |  |
| 10                 | Write a Java pro<br>calculator. Use<br>for the digits an<br>Add a text field<br>any possible exc   | ogram that works as<br>a grid layout to arran<br>nd for the +, -, *, % o<br>to display the result<br>ceptions like divide k                  | a simple<br>nge buttons<br>perations.<br>. Handle<br>oy zero.   | К5                           | 6                                      |  |
| 11                 | Write a Java pro<br>The program lets<br>red, yellow, or gr<br>a button, an app<br>— ready    or<br>— go    should ap<br>color. Initially the | ogram that simulate<br>s the user select one<br>reen with radio butto<br>propriate message w<br>pear above the butto<br>ere is no message sh | s a traffic light.<br>e of three lights:<br>ons. On selecting<br>vith — stop    or<br>ons in a selected<br>own. | К5                           | 6                                      |  |
|                    | <b>CO1:</b> Recall the C   | DOPs Concepts to   |   | К1                           |  |  |
| Course Outcome     | <b>CO2:</b> Understand<br>inheritance, pack<br>exception handli  | d the Concepts of<br>kages, interfaces and<br>ng of core java.   | 1   |                              | K2                                     |  |
|                    | and I/O streams  | vorking of multithrea<br>of java.  | ading   |                              | КЗ                                     |  |
|                    | CO4: Analyze an  | Applet with AWT Co   | omponents.  |                              | К4                                     |  |
|                    | <b>CO5:</b> Implement GUI.   | Swing functions to a   | create  |                              | K5                                     |  |
|                    |  | Learning Reso  | urces   |                              |  |  |
| Text<br>Books      | <ol> <li>Herbert Schildt,<br/>Edition, 2010.</li> <li>Gary Cornell, Control</li> </ol>   | , The Complete Refe<br>ore Java2 Volume I –  | rence Java 2, Tata N<br>· Fundamentals, Ad  | McGraw Hill,<br>dison Wesley | New Delhi, 7 <sup>th</sup><br>y, 1999. |  |
| Reference<br>Books | <ol> <li>Head First Java,</li> <li>Y.Daniel Liang, Ir</li> <li>India, 2010.</li> </ol>   | O'Rielly Publications  | ,<br>Programming, 7thE  | dition, Pears                | on Education                           |  |
| Website<br>Link    | ial  |  |   |                              |  |  |
|                    | L-Lecture  | P-Practical  | C   | -Credit                      |  |  |

|                             | BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |        |             |     |          |              |           |             |              |         |    |   |  |
|-----------------------------|---|--------|-------------|-----|----------|--------------|-----------|-------------|--------------|---------|----|---|--|
| Course Code                 | :   | Course | Title       |     | Course   | туре         | Sem       | Hours       | L            | т       | Ρ  | С |  |
| 23M4UCAP04                  | 4 PR  | OGRAI  | MMING<br>VA | DSC | C PRAC   | TICAL - IV   | / IV      | 5           | -            | -       | 5  | 3 |  |
|                             |   | ing    |             |     |          |              |           |             |              |         |    |   |  |
| CO Number                   | PO1   | PO2    | PO3         | PO4 | PO5      | PSO1         | PSO2      | PSO3        | PSO4         | PSO5    |    |   |  |
| CO1                         | S   | М      | М           | М   | М        | ISMLSM       |           |             |              |         |    |   |  |
| CO2                         | S   | S      | М           | М   | М        | S            | S M L S L |             |              |         |    |   |  |
| CO3                         | М   | М      | М           | S   | S        | S            | М         | L           | S            | М       |    |   |  |
| CO4                         | Μ   | М      | М           | S   | S        | S            | М         | L           | S            | М       |    |   |  |
| CO5                         | М   | М      | S           | S   | S        | S            | М         | L           | S            | М       |    |   |  |
| Level of Corr<br>between CO | relation<br>and P(  | n<br>D | L-          | LOW |          |              | M-MED     | IUM         |              | S-STROI | NG |   |  |
| Tutorial Schee              | dule  |        |             |     |          | Sample       | program   | s to the re | lated topics |         |    |   |  |
| Teaching and                | Learni  | ng Me  | thods       |     |          | Handlin      | g practic | al session  | through Pro  | jector  |    |   |  |
| Assessment N                | /lethod   | ls     |             |     |          | Attenda      | nce, Obs  | ervation,   | Model pract  | ical    |    |   |  |
| Design                      | ed By   |        |             | ١   | Verified | d By         |           |             | Approv       | ed By   |    |   |  |
| Mrs.N.Pac                   | dmapri  | уа     |             | ır  | Membe    | er Secretary | - Dr.S.S  | hahi        | itha         |         |    |   |  |





|             | BCA Syllabus LOCF - CE   | BCS with effect from   | 2023  | -2024 Or                           | nwaro       | ls |    |    |  |  |  |  |  |
|-------------|--|--|---|------------------------------------|-------------|----|----|----|--|--|--|--|--|
| Course Code | Course Title   | Course Type  | Sem   | Hours                              | L           | т  | Ρ  | С  |  |  |  |  |  |
| 23M5UCAC05  | RDBMS  | DSC THEORY - V   | v   | 5                                  | 5           | -  | -  | 5  |  |  |  |  |  |
| Objective   | Student Learn the high p<br>update data and debuggin   | Student Learn the high productivity to programmers as it update data and debugging in a database.                                    |   |                                    |             |    |    |    |  |  |  |  |  |
| Unit        | Cou  | Kı   | nowl<br>Leve                                | edge<br>els                        | Sessions    |    |    |    |  |  |  |  |  |
| I           | Introduction to DBMS–<br>– Database Managemen<br>Advantages– Component<br>Building blocks of ER Dia<br>Classification–ER diagram<br>Constraints–Aggregation  | Data and Information<br>nt System–Objecti<br>s Architecture. ER M<br>gram – Relationship<br>to Tables–ISA relat<br>and Composition–A | on - Da<br>ves-<br>Model<br>Degre<br>ionshi | atabase<br>:<br>ee–<br>p–<br>ages. |             | K1 |    | 12 |  |  |  |  |  |
| II          | <b>Relational Model</b> : COD<br>Key- Integrity–Relational<br>and limitations–Relatior<br>Calculus - QBE.  | D's Rule-Relational<br>Algebra Operatio<br>nal Calculus– Dom   | l Data<br>ns–Ad<br>nain F                   | a Model<br>Ivantage:<br>Relationa  | -<br>S<br>I | K2 |    | 12 |  |  |  |  |  |
| 111         | Structure of Relational Database. Introduction to Relational<br>Database Design-Objectives—Tools—Redundancy and Data<br>Anomaly— Functional Dependency-Normalization—1NF—<br>X3<br>2NF—3NF—BCNF. Transaction Processing—Database Security.K3 |  |   |                                    |             | }  | 12 |    |  |  |  |  |  |
| IV          | <b>SQL:</b> Commands–Data ty<br>and Set Ope<br>DML–Modification-Trunc  | pes–DDL-Selection,<br>rations–Aggregate<br>ation-Constraints–  | Projec<br>Fi<br>Sub qi                      | tion, Joir<br>unctions-<br>uery.   | ר<br>-      | K4 |    | 12 |  |  |  |  |  |
| v           | PL/SQL: Structure-Elemen<br>Control Structure– Itera<br>Function- Packages–Exce<br>Current Trends-*. Tight In  | nts–Operators Prece<br>tive Control-Curso<br>ptional Handling-Tri<br>ntegration with SQI   | edence<br>rs-Pro<br>ggers.<br>•             | e                                  |             | К5 |    | 12 |  |  |  |  |  |
|             | ** Self Study.   |  |   |                                    |             |    |    |    |  |  |  |  |  |
| Course      | CO1:Remember basic cor   | К1   |   |                                    |             |    |    |    |  |  |  |  |  |
| Outcome     | CO2: Understand a Data   | model and Schemas  | in RD                                       | BMS.                               | К2          |    |    |    |  |  |  |  |  |
|             | CO3: Design use of SQL.  |  |   |                                    | КЗ          |    |    |    |  |  |  |  |  |

|                        | CO4: Analyze<br>Database.   | functional depe  | ng robust   | К4                   |                                  |                                       |  |  |  |  |  |  |  |
|------------------------|---|--|---|----------------------|----------------------------------|---------------------------------------|--|--|--|--|--|--|--|
|                        | CO5: create ba  | isic concepts of                                       | database system.  |                      | К5                               |                                       |  |  |  |  |  |  |  |
|                        | Learning Resources  |  |   |                      |                                  |                                       |  |  |  |  |  |  |  |
| Text<br>Books          | <ol> <li>Coronel,<br/>Management",<br/>Pearson Educat</li> </ol>    | Morris, Rob<br>Ninth Edition N<br>ion India, 2016      | , "Database Systen<br>lilesh Shah, "Database                          | ns, Desig<br>Systems | n, Implement<br>Using Oracle",   | ation and<br>2 <sup>nd</sup> edition, |  |  |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Abraham</li> <li>Concepts" McG</li> <li>ShioKum</li> </ol> | n Silberschatz,<br>raw Hill Interna<br>ar Singh -Datak | Henry F.Korth and<br>ational Publication, VI<br>base Systems, Pearsor | S.Sudar<br>Edition.  | shan "Databa<br>ons, II Edition. | se System                             |  |  |  |  |  |  |  |
| Website<br>Link        | https://docs.o  | racle.com/cd/B   | 13789 01/appdev.10  | 1/b10807             | /01 oview.htm                    | 1                                     |  |  |  |  |  |  |  |
| Self-Study<br>Material | https://www.j   | https://www.javatpoint.com/pl-sql-interview-questions  |   |                      |                                  |                                       |  |  |  |  |  |  |  |
|                        | L-Lecture   | T-Tutorial   | P-Practical   | C-Cre                | dit                              |                                       |  |  |  |  |  |  |  |

|   | BCA S | Syllabu               | s LOCF    | - CBCS   | with eff  | ect fron | n 20 | 23-20  | 24 Onw | ard         | S            |      |    |
|---|-------|-----------------------|-----------|----------|-----------|----------|------|--------|--------|-------------|--------------|------|----|
| Course Code                                     | Co    | ourse Ti              | itle      |          | Cours     | se Type  |      | Sem    | Hours  | L           | Т            | Р    | С  |
| 23M5UCAC05                                      |       | RDBN                  | IS        |          | DSC T     | HEORY    | - V  | v      | 5      | 5           | -            | -    | 5  |
|   |       |                       |           |          |           |          |      |        |        |             |              |      |    |
| CO Number                                       | PO1   | PO2                   | PO3       | PO4      | PO5       | PSO1     | Р    | SO2    | PSO3   | PSO4        |              | PSC  | )5 |
| CO1   | L     | Μ                     | S         | S        | S         | S        |      | М      | S      |             | Μ            | S    |    |
| CO2   | S     | Μ                     | Μ         | S        | S         | S        | S    |        | S      |             | Μ            | S    |    |
| CO3   | S     | S                     | Μ         | S        | S         | S        | М    |        | S      |             | Μ            | S    |    |
| CO4   | М     | S                     | S         | Μ        | S         | S        | М    |        | S      | М           |              | M S  |    |
| CO5   | S     | S                     | S         | S        | S         | S        |      | S      |        | S           | S            |      |    |
| Level of<br>Correlation<br>between CO and<br>PO |       | L-L                   | OW        |          | M-MEDIUM  |          |      |        |        |             | S-           | STRO | NG |
| Tutorial Schedule                               |       | Samp                  | ole Prog  | rams to  | the rel   | ated top | oics |        |        |             |              |      |    |
| Teaching and Learni<br>Methods                  | ng    | Hand                  | lling Pra | ctical S | ession T  | Through  | Pro  | jector |        |             |              |      |    |
| Assessment Method                               | ls    | Obse                  | rvation,  | Mode     | l Practic | al's     |      |        |        |             |              |      |    |
| Designed E                                      | Зу    |                       |           | Ver      | ified By  | ,        |      |        | Approv | ved         | Ву           |      |    |
| Mr. V. Venga                                    |       | HoD - Mr.G.Selvakumar |           |          |           |          |      |        |        | ecro<br>ahi | etary<br>tha | -    |    |





|             | BCA Syllabus LOCF-Cl                                   | BCS with effect from 202              | 3-2024 | Onward                          | S  |   |       |    |  |  |
|-------------|--|---------------------------------------|--------|---------------------------------|----|---|-------|----|--|--|
| Course Code | Course Title   | Course Type                           | Sem    | Hours                           | L  | т | Р     | С  |  |  |
| 23M5UCAP05  | RDBMS USING SQL  | DSC PRACTICAL - V                     | v      | 4                               | -  | - | 4     | 2  |  |  |
| Objective   | Student can develop the<br>construct queries using S   | database concepts and SQL.            | demon  | onstrate the use of constraints |    |   |       |    |  |  |
| S.No.       | List of Experi   | ments / Programmes                    |        | Knowled<br>Levels               | ge | S | essio | ns |  |  |
| 1           | Implement the program                                  | using DDL Commands                    |        | К1                              |    |   | 5     |    |  |  |
| 2           | Construct a code using D                               | OML Commands                          |        | К2                              |    |   | 5     |    |  |  |
| 3           | Write the code for TCL C                               | commands                              |        | K1                              |    |   |       |    |  |  |
| 4           | Design a program for Fib                               | onacci Series                         |        | К2                              |    |   |       |    |  |  |
| 5           | Develop the code for Fac                               | ctorial                               |        | КЗ                              |    |   |       |    |  |  |
| 6           | Write the code for String                              | gReverse                              |        | K4                              |    |   | 5     |    |  |  |
| 7           | Implement the program                                  | Sum of Series                         |        | К4                              |    |   | 6     |    |  |  |
| 8           | Construct a code using T                               | rigger                                |        | КЗ                              |    |   | 6     |    |  |  |
| 9           | Design a program for Stu<br>cursor                     | udent mark analysis using             | ß      | K5                              |    |   | 6     |    |  |  |
|             | <b>CO1:</b> Recall the various I System .              | basic concepts of Data Ba             | ise    |                                 | K: | 1 |       |    |  |  |
| Course      | <b>CO2:</b> Illustrate the basic Model.                | c concepts of Relational I            | Data   |                                 | K  | 2 |       |    |  |  |
| Outcome     | <b>CO3:</b> Apply and constru-<br>Query Language.      | ct data base using Struct             | ured   |                                 | K  | 3 |       |    |  |  |
|             | CO4: Analyze operations                                | s and enhance.                        |        |                                 | K  | 1 |       |    |  |  |
|             | <b>CO5</b> : Create to design D implement using PL/SQI | atabase operations and<br>_ programs. |        |                                 | K  | 5 |       |    |  |  |

|                    |   | Learning Resou   | rces  |   |  |  |  |  |  |  |  |  |
|--------------------|---|--|---|---|--|--|--|--|--|--|--|--|
| Text<br>Books      | <ol> <li>Coronel, Morris,<br/>Management", Ni</li> <li>NileshShah, "Da</li> <li>2016</li> </ol> | <ol> <li>Coronel, Morris, Rob, "Database Systems Design, Implementation and<br/>Management", Ninth Edition</li> <li>NileshShah, "DatabaseSystemsUsingOracle", 2ndedition, PearsonEducationIndia,<br/>2016</li> </ol> |   |   |  |  |  |  |  |  |  |  |
| Reference<br>Books | <ol> <li>Abraham Silbo<br/>System Concepts</li> <li>ShioKumarSing</li> </ol>                    | erschatz, Henry F.Ko<br>  ,McGrawHillInterna<br>h,—DatabaseSystem  | rth and S.Sudarshan<br>tionalPublication,VII<br>ns—,Pearsonpublicat | ,—Database<br>Edition<br>ions,IIEdition |  |  |  |  |  |  |  |  |
| Website<br>Link    | https://www.youtub  | e.com/watch?v=J4F  | 2Q5fdn3Ns   |   |  |  |  |  |  |  |  |  |
|                    | L-Lecture   | T-Tutorial   | P-Practical   | C-Credit                                |  |  |  |  |  |  |  |  |

|                             |                   | BCA S    | yllabus | LOCF-C  | CBCS wi  | th effect                                   | from 20   | 23-2024    | Onwar    | ds         |       |    |       |
|-----------------------------|-------------------|----------|---------|---------|----------|---|-----------|------------|----------|------------|-------|----|-------|
| Course Code                 |                   | Course   | Title   |         | Course   | е Туре                                      | Sem       | Hours      | L        | т          | P     |    | С     |
| 23M5UCAP05                  | 5 RD              | BMS US   | SING SQ |         | SC PRAC  | CTICAL - V                                  | v v       | 4          | -        | -          | 4     |    | 2     |
|                             |                   |          |         |         | CO-F     | O-PO Mapping                                |           |            |          |            |       |    |       |
| CO Number                   | PO1               | PO2      | PO3     | PO4     | PO5      | 5 PSO1 PSO2 PSO3 PSO4 PSO5                  |           |            |          |            |       |    |       |
| CO1                         | М                 | S        | М       | S       | S        | 5 M M S S S                                 |           |            |          |            |       |    |       |
| CO2                         | М                 | S        | S       | S       | S        | S   | М         | S          | S        | S          |       |    |       |
| CO3                         | S                 | S        | S       | S       | S        | S   | S         | S          | S        | S          |       |    |       |
| CO4                         | S                 | S        | М       | S       | S        | S   | М         | S          | S        | S          |       |    |       |
| CO5                         | Μ                 | S        | М       | Μ       | Μ        | S   | S         | S          | S        | S          |       |    |       |
| Level of Corr<br>between CO | elatior<br>and PC | ו<br>כוו | L-      | LOW     | I        |   | M-MED     | DIUM       |          | S          | STRO  | NG |       |
| Tutorial Schedu             | ule               |          |         |         |          | Sample                                      | e prograr | ns to rela | ated top | pics       |       |    |       |
| Teaching and L              | earnin            | g Metł   | nods    |         |          | Handlii                                     | ng practi | cal sessio | on throu | ugh proje  | ector |    |       |
| Assessment M                | ethods            | }        |         |         |          | Attend                                      | ance, Ob  | servatio   | n, Mode  | el practio | al's. |    |       |
| Design                      | ed By             |          |         |         | Verified | ified By Approved By                        |           |            |          |            |       |    |       |
| Mr. V.Ver                   | ngades            | h        |         | HoD - I | Mr.G.Se  | Selvakumar Member Secretary - Dr.S.Shahitha |           |            |          |            |       |    | nitha |



### MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE



(Autonomous)

#### **RASIPURAM - 637408.**

| BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |   |  |  |   |                |             |        |        |  |  |  |  |  |
|---|---|--|--|---|----------------|-------------|--------|--------|--|--|--|--|--|
| Course Code   | Course Title  | Course Type  | Sem  | Hour                                    | s L            | т           | Ρ      | С      |  |  |  |  |  |
| 23M5UCAC06  | ASP.NET<br>PROGRAMMING  | DSC THEORY - VI  | v  | 5                                       | 5              | -           | -      | 5      |  |  |  |  |  |
| Objective   | Students Learn the application using stan   | .NET frame work an dard controls.  | d with   | C# lang                                 | guage ar       | nd AS       | P. NET | Web    |  |  |  |  |  |
| Unit  | C   | Course Content   |  |   | Knowle<br>Leve | edge<br>els | Se     | ssions |  |  |  |  |  |
| I   | Overview of.NET<br>Runtime (CLR), Frame<br>C# Fundamentals:<br>Operators - conditiona<br>– Creating and using C                         | K1   |  |   | 12             |             |        |        |  |  |  |  |  |
| II  | Introduction to ASP<br>Components-Working<br>standard controls: P<br>controls -List Controls  | <b>.NET</b> - IDE Languag<br>with Web Forms<br>roperties and its ev<br>Properties and its ev     | es supp<br>- <b>Web</b><br>ents –<br>vents.                | oorted<br><b>form</b><br>HTML           | K2             |             |        | 12     |  |  |  |  |  |
| 111   | <b>Rich Controls:</b> Proper<br>controls: Properties a<br>File Modes – File Sha<br>Creating, Moving, Cr<br>uploading.                   | erties and its events<br>nd its events– File Str<br>re – Reading and Wri<br>opying and Deleting  | <ul> <li>valid</li> <li>ream claditing to files</li> </ul> | dation<br>Isses -<br>files —<br>– File  | K3             |             |        | 12     |  |  |  |  |  |
| IV  | ADO.NET Overview –<br>–Data Reader - Data /<br>and its properties – Da  | Database Connection<br>Adapter - Data Sets -<br>ata Binding.                                     | is–Comr<br>Data Co   | nands<br>ntrols                         | K4             | ļ           |        | 12     |  |  |  |  |  |
| V   | Grid View control:<br>Paging.XML classes—V<br>Website Security —<br>Creating a Web applic<br>Current trends-*Azur<br>Microsoft BLazor.* | Deleting, editing,<br>Veb form to manipul<br>Authentication – Au<br>ation.<br>re cloud developme | Sorting<br>ate XM<br>thorizat                              | and<br>L files<br>ion –<br><b>core-</b> | К5             |             |        | 12     |  |  |  |  |  |
|   | ** Self Study.  |  |  |   |                |             |        |        |  |  |  |  |  |
|   | <b>CO1:</b> Define the work constructs and the. N   | <b>CO1:</b> Define the working knowledge of C# programming constructs and the. NET Framework.    |  |   |                |             |        |        |  |  |  |  |  |
|   | <b>CO2:</b> Illustrate a soft using ASP.NET.  | ware to solve real w   | orld pro   | oblems                                  | К2             | К2          |        |        |  |  |  |  |  |

| Course     | CO3: Apply the Vari  | ous File mode   | iles.           | К3       |                        |                 |             |  |  |  |  |  |
|------------|--|---|-----------------|----------|------------------------|-----------------|-------------|--|--|--|--|--|
| Outcome    | <b>CO4:</b> Examine th<br>Connection using N                                     | e web appl<br>licrosoft ADO.I   | ication<br>NET. | and [    | Database               | K4              |             |  |  |  |  |  |
|            | CO5: Estimate the v  | K5  |                 |          |                        |                 |             |  |  |  |  |  |
|            |  | Learning  | Resource        | es       |                        |                 |             |  |  |  |  |  |
| Taut       | 1. Svetlin Nakov, Ves  | 1. Svetlin Nakov, Veselin Kolev &Co, "Fundamentals of Computer Programming with |                 |          |                        |                 |             |  |  |  |  |  |
| Books      | C#", Faber publication,2019.   |   |                 |          |                        |                 |             |  |  |  |  |  |
| BUUKS      | 2. Mathew , MacDonald , "The Complete Reference ASP.NET" , Tata McGraw-Hill,2015 |   |                 |          |                        |                 |             |  |  |  |  |  |
|            | L Herbert Schildt , The Complete Reference C# .NET, Tata McGraw-Hill,2017.       |   |                 |          |                        |                 |             |  |  |  |  |  |
|            | 2. Kogent Learning   | Solutions, C#   | ‡ 2012Pr        | ogramı   | ming Cov               | vers .NET 4.5 E | Black Book, |  |  |  |  |  |
| Reference  | Dreamtechpres,201  | 3.  | <del></del>     |          |                        |                 |             |  |  |  |  |  |
| Books      | 3. Denielle Otey , Mi  | chael Otey,AD   | 0.NE1:1h        | e Com    | plete refe<br># 2010 A | PRESS 2010      | 1111,2008.  |  |  |  |  |  |
|            | 4. Matthew Mac DO  | naiu, beginnin  | g ASP.INE       | 14 111 C | # 2010,A               | PRE33,2010.     |             |  |  |  |  |  |
| Website    | https://www.geel   | ksforgeeks.org  | /introduc       | ction-to | o-net-frar             | nework/         |             |  |  |  |  |  |
| LIIK       |  |   |                 |          |                        |                 |             |  |  |  |  |  |
| Self-Study | 1. https://www.arkasoftwares.com/blog/net-development-trends/                    |   |                 |          |                        |                 |             |  |  |  |  |  |
| Material   | 2. https://www.java  | tpoint.com/ne   | t-framew        | ork      |                        |                 |             |  |  |  |  |  |
|            | L-Lecture  | T-Tutorial  | P-Pra           | actical  |                        | C-Credit        |             |  |  |  |  |  |

|                                     | E            | BCA Sy      | llabu        | s LOCF-(            | CBCS w             | vith ef             | fect fron            | n 2023                           | -2024 Onv                | vard  | s     |        |       |  |
|-------------------------------------|--------------|-------------|--------------|---------------------|--------------------|---------------------|----------------------|----------------------------------|--------------------------|-------|-------|--------|-------|--|
| Course Title                        |              | Co          | ourse        | Title               | (                  | Course              | туре                 | Sem                              | Hours                    | L     | Т     | Р      | С     |  |
| 23M5UCAC06                          | Р            | ASI<br>ROGR | P.NET<br>AMM | IING                | DSC                | THEO                | RY - VI              | v                                | 5                        | 5     | -     | -      | 5     |  |
|                                     |              |             |              |                     | СО                 | -PO M               | apping               |                                  |                          |       |       |        |       |  |
| CO Numbe                            | er           | PO1         | PO2          | PO3                 | PO4                | PO5                 | PSO1                 | PSO                              | 2 PSO3                   | P     | SO4   | PSO5   |       |  |
| CO1                                 |              | Μ           | S            | М                   | S                  | S                   | L                    | М                                | S                        | S M   |       | S      |       |  |
| CO2                                 |              | L           | Μ            | L                   | S                  | М                   | S                    | S                                | М                        |       | S     | S      |       |  |
| CO3                                 |              | Μ           | S            | S                   | М                  | S                   | S                    | S                                | SS MS                    |       |       |        |       |  |
| CO4                                 |              | S           | Μ            | М                   | S                  | S                   | S                    | М                                | М                        |       |       |        |       |  |
| CO5                                 |              | S           | S            | М                   | М                  | М                   | S                    | S                                | S                        |       |       |        |       |  |
| Level of Correlat<br>between CO and | tion<br>I PO |             |              | L-LOW               |                    |                     | Ν                    | /I-MEDI                          | IUM                      |       | S     | -STRON | G     |  |
| Tutorial Schedule                   | 9            |             | G            | Group Di            | scussio            | on, Qu              | iz progra            | am, Mo                           | del prepa                | ratio | n     |        |       |  |
| Teaching and Lea<br>Methods         | irnin        | g           | A            | udio Vio<br>resenta | deo leo<br>tion ar | cture, (<br>nd Vide | Chalk an<br>eo prese | d Boar<br>ntatior                | d class <i>,</i> As<br>า | signr | ment  | , PPT  |       |  |
| Assessment Met                      | hods         | ;           | С            | lass Tes            | t <i>,</i> Unit    | Test,               | Assignm              | nent, Cl                         | A-I, CIA-II              | and   | ESE   |        |       |  |
| Designed By                         |              |             |              |                     | Verifi             | ed By               |                      |                                  | Арр                      | orove | ed By |        |       |  |
| Mrs.S.Shahana                       |              |             |              | HoD –               | Mr.G.              | Selvak              | umar                 | r Member Secretary – Dr.S.Shahit |                          |       |       |        | nitha |  |



# MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE



(Autonomous)

#### **RASIPURAM - 637408.**

|             | BCA Syllabus LOCF-C                                    | BCS with effect from 2                      | 2023-2         | 2024 Oi | nwards         |             |         |          |  |  |
|-------------|--|---|----------------|---------|----------------|-------------|---------|----------|--|--|
| Course Code | Course Title   | Course Type                                 | Sem            | Hour    | s L            | Т           | Р       | С        |  |  |
| 23M5UCAP06  | ASP. NET<br>PROGRAMMING                                | DSC PRACTICAL - VI                          | v              | 4       | -              | -           | 4       | 2        |  |  |
| Objective   | Students develop ASP<br>database applications          | NET Web application using ADO.NET.          | using          | standa  | ard cont       | rols a      | nd crea | ate rich |  |  |
| S.No        | List of Expe   | riments / Programmes                        | 5              |         | Knowle<br>Leve | edge<br>els | Se      | essions  |  |  |
| 1           | Develop an exposure o                                  | f Web applications and                      | l tools        |         | K1             |             |         | 3        |  |  |
| 2           | Implement the Html Co                                  | ontrols.                                    |                |         | K1             |             |         | 3        |  |  |
| 3           | Implement the Server (                                 |   | K1             |         |                | 3           |         |          |  |  |
| 4           | Develop Web applicati                                  | evelop Web application using Web controls.  |                |         |                |             |         |          |  |  |
| 5           | Develop Web applicati                                  |   | K2             |         |                | 3           |         |          |  |  |
| 6           | Web Page design using using Validation contro          |   | 3              |         |                |             |         |          |  |  |
| 7           | Web application using                                  | Data Controls.                              |                |         | КЗ             |             |         | 3        |  |  |
| 8           | Data binding with Web                                  | controls.                                   |                |         | K4             |             |         | 3        |  |  |
| 9           | Data binding with Data                                 | Controls.                                   |                |         | K4             |             |         | 3        |  |  |
| 10          | Data base application delete operations.               | to perform insert, ι                        | update         | e and   | К3             |             |         | 3        |  |  |
| 11          | Database application insert, delete, edit, page        | using Data Controls ging and sorting operat | to pe<br>tion. | rform   | K4             |             |         | 3        |  |  |
| 12          | Implement the Xml clas                                 | sses.                                       |                |         | K5             |             |         | 3        |  |  |
| 13          | Implement Authenticat                                  | tion – Authorization.                       |                |         | K5             |             |         | 4        |  |  |
| 14          | Ticket reservation using                               | g ASP.NET controls.                         |                |         | K5             |             |         | 4        |  |  |
| 15          | Online examination usi                                 | ng ASP.NET controls.                        |                |         | K5             |             |         | 4        |  |  |
|             | <b>CO1:</b> Define the web a various controls.         | pplications and implen                      | nent           |         | K1             |             |         |          |  |  |
|             | <b>CO2:</b> Interpret a web p                          | age in Rich control.                        |                |         | K2             |             |         |          |  |  |
| Course      | CO3: Organize about fi                                 | le handling operations.                     |                |         | КЗ             |             |         |          |  |  |
| Outcome     | CO4: Inspect the design                                | using XML classes.                          |                |         | K4             |             |         |          |  |  |
|             | <b>CO5:</b> Evaluate the soft<br>problems using ASP.NE | ware to solve real wor<br>T.                | ld             |         | K5             |             |         |          |  |  |

|                    |   | Learnir  | ng Resources                       |                                       |  |  |  |  |  |  |
|--------------------|---|--|------------------------------------|---------------------------------------|--|--|--|--|--|--|
| Text<br>Books      | Svetl in Nakov , V<br>Faber publicatior | ′eselin Kolev &<br>n , 2019.   | Co, Fundament                      | als of Computer Programming with C# , |  |  |  |  |  |  |
| Reference<br>Books | Herbert Schildt, T                      | erbert Schildt, The Complete Reference C#. NET, Tata Mc Graw-Hill, 2017. |                                    |                                       |  |  |  |  |  |  |
| Website<br>Link    | 1. https://www.g<br>2. https://www.ja   | eeksforgeeks.  | org/introduction<br>/net-framework | -to-net-framework/                    |  |  |  |  |  |  |
|                    | L-Lecture                               | T-Tutorial   | P-Practical                        | C-Credit                              |  |  |  |  |  |  |

|                           |                               | BCA S        | yllabı        | IS LOCF         | -CBCS   | with e     | ffect fro | m 2023-   | 2024 On   | war      | ds    |      |      |  |  |
|---------------------------|-------------------------------|--------------|---------------|-----------------|---------|------------|-----------|-----------|-----------|----------|-------|------|------|--|--|
| Course Title              |                               | C            | ourse         | Title           | C       | Course     | Туре      | Sem       | Hours     | L        | Т     | Р    | С    |  |  |
| 23M5UCAP06                | F                             | ASF<br>PROGR | P. NET<br>AMM | ING             | DSC     | PRACT      | ical - Vi | v         | 4         | -        | -     | 4    | 2    |  |  |
|                           |                               |              |               |                 | СС      | )-PO N     | Aapping   |           |           |          |       |      |      |  |  |
| CO Numl                   | ber                           | PO1          | PO2           | PO3             | PO4     | PO5        | PSO1      | PSO2      | PSO3      | Р        | SO4   | PSO5 |      |  |  |
| CO1                       |                               | S            | S             | M S S L L M S S |         |            |           |           |           |          |       |      |      |  |  |
| CO2                       |                               | М            | S             | L M S S M S S S |         |            |           |           |           |          |       |      |      |  |  |
| CO3                       |                               | S            | L             | S               | S       | М          | S         | S         | М         |          | Μ     | S    |      |  |  |
| CO4                       |                               | М            | S             | S               | S       | S          | М         | Μ         | S         |          | S S   |      |      |  |  |
| CO5                       |                               | М            | S             | М               | М       | М          | S         | М         | S         |          | Μ     | S    |      |  |  |
|                           |                               |              |               | L-LOW           |         |            |           | M-ME      | DIUM      |          |       | S-ST | RONG |  |  |
| Tutorial Schedu           | ıle                           |              |               | Sample          | e progr | ams to     | o related | topics    |           |          |       |      |      |  |  |
| Teaching and L<br>Methods | earni                         | ng           |               | Handlir         | ng prad | ctical s   | ession th | nrough p  | rojector  |          |       |      |      |  |  |
| Assessment Me             | ethod                         | ls           |               | Attend          | ance, ( | )<br>Dbser | vation, N | lodel pra | actical's |          |       |      |      |  |  |
| Design                    | ed By Verified By Approved By |              |               |                 |         |            |           |           |           |          |       |      |      |  |  |
| Mrs.S.S                   |                               | HoD -        | Mr.G.         | Selval          | kumar   | Mer        | nber Sec  | reta      | ry – I    | Dr.S.Sha | hitha |      |      |  |  |





|             | BCA Syllabus LOCF - CBCS  | with effect from   | 2023-202                                     | 24 0                       | nwar       | ds                  |      |      |                     |  |  |       |
|-------------|---|--|--|----------------------------|------------|---------------------|------|------|---------------------|--|--|-------|
| Course Code | Course Title  | Course Type  | Sem  | н                          | ours       | L                   | Т    | Р    | С                   |  |  |       |
| 23M6UCAC07  | COMPUTER NETWORKS   | DSC THEORY-VII   | VI   |                            | 5          | 5                   | -    | -    | 5                   |  |  |       |
| Objective   | Students Learn Data commur<br>networking and inter networki   | nication, Computer<br>ng devices.  | network                                      | anc                        | d imp      | art kı              | nowl | edge | about               |  |  |       |
| Unit        | Course  | Content  |  |                            | Knov<br>Le | Knowledge<br>Levels |      |      | Knowledge<br>Levels |  |  | sions |
| I           | Introduction: Network Hardv<br>Models – OSI and TCP/IP Mode<br>Networks: Internet, ATM, E<br>Physical Layer – Theoretical B<br>Guided Transmission Media. | vare – Software<br>els – Example.<br>thernet and Wire<br>asis for Data Com   | – Refere<br>eless LAN<br>municatio           | ence<br>Ns -<br>on -       |            | K1                  |      | 1    | 2                   |  |  |       |
|             | Wireless Transmission -<br>– Telephone System: Stru<br>and Multiplexing and Switch<br>Issues - Error Detection and Co                                     | Communication<br>cture, Local Lo<br>ing <b>. Data Link L</b> a<br>prrection. | o Satell<br>oop, Tru<br><b>ayer:</b> Des     | lites<br>ınks<br>sign      |            | K2                  |      | 12   |                     |  |  |       |
|             | Elementary Data Link Protoco<br>– Data Link Layer in the Into<br>– Channel Allocation Pro<br>Protocols–Bluetooth.   | <b>ols</b> - Sliding Windo<br>ernet - Medium <i>i</i><br>oblem – Multi       | ow Proto<br>Access La<br>ple Acc             | cols<br>ayer<br>cess       |            | К3                  |      |      | 2                   |  |  |       |
| IV          | <b>Network Layer</b> - Design I<br>- Congestion Control Algorithn<br>– Internet Control Protocols.  | ssues - Routing<br>ns – IP Protocol –  | Algorith<br>IP Addres                        | nms<br>sses                |            | КЗ                  |      | 1    | 2                   |  |  |       |
| v           | <b>Transport Layer</b> –<br>Management-Addressing, Es<br>Connection – Simple Trans<br>Transport Protocols (ITP)- <b>Ne</b>                                | Services -<br>tablishing and I<br>port Protocol<br><b>twork Security:</b> Cr | Connect<br>Releasing<br>– Inter<br>yptograpl | tion<br>; a<br>rnet<br>hy. |            | K4                  |      | 1    | 2                   |  |  |       |
|             | Current Trends-*Networking T  | rends *  |  |                            |            |                     |      |      |                     |  |  |       |
|             | ** Self Study.  |  |  |                            |            |                     |      |      |                     |  |  |       |
|             | <b>CO1:</b> Recall the basics Compute TCP/IP reference model.   | er Network architecture, OSI and K1  |  |                            |            |                     |      |      |                     |  |  |       |
| Course      | <b>CO2:</b> Illustrate on Telephone sy  | ystems using Wirel   | ess netwo                                    | ork.                       |            | K2                  |      | 4    |                     |  |  |       |
| Outcome     | <b>CO3:</b> Utilize the concept of Slid   | ing Window Proto   | cols.  |                            |            | КЗ                  |      |      |                     |  |  |       |
|             | <b>CO4:</b> Analyze the characteristic Congestion control algorithms  | cs of Routing and  |  |                            |            | КЗ                  |      |      |                     |  |  |       |
|             | <b>CO5:</b> Examine the various Prot DNS and Cryptography.  | ocols such as FTP, I   | HTTP, Tel                                    | net,                       |            | K4                  | 1    |      |                     |  |  |       |

|                        | Learning Resources  |  |             |          |  |  |  |  |  |  |  |
|------------------------|---|--|-------------|----------|--|--|--|--|--|--|--|
| Text<br>Books          | A.S.Tanenbaum — Computer Networks, 4th Edition, Prentice – Hall of India, 2008.   |  |             |          |  |  |  |  |  |  |  |
| Reference<br>Books     | <ul> <li>B.A.Forouzan— Data Communications and Networking, Tata McGraw Hill,4th</li> <li>Edition,2017</li> <li>F. Halsall — Data Communications, Computer Networks and Open</li> <li>Systems, Pearson Education, 2008.</li> </ul> |  |             |          |  |  |  |  |  |  |  |
| Website<br>Link        | https://en.wikipedia.org/\  | https://en.wikipedia.org/wiki/Computer network                               |             |          |  |  |  |  |  |  |  |
| Self-Study<br>Material | https://www.enterprisene  | https://www.enterprisenetworkingplanet.com/management/top-networking-trends/ |             |          |  |  |  |  |  |  |  |
|                        | L-Lecture   | T-Tutorial   | P-Practical | C-Credit |  |  |  |  |  |  |  |

|  | BCA Sy      | llabus        | LOCF ·             | CBCS             | with e           | effect fro                              | m 20         | 023-3 | 2024 0        | nwards   | 5       |     |   |
|--|-------------|---------------|--------------------|------------------|------------------|---|--------------|-------|---------------|----------|---------|-----|---|
| Course Code  | С           | ourse         | Title              |                  | Cou              | rse Type                                | :            | Sem   | Hou           | rs L     | т       | Р   | с |
| 23M6UCAC07   | COMPL       | JTER NETWORKS |                    |                  | S DSC THEORY-VII |   |              | VI    | 5             | 5        | -       | -   | 5 |
|  | -           |               | -                  |                  | CO-PO            | Mappin                                  | g            |       |               |          |         |     |   |
| CO Number PO1 PO2 PO3 PO4 PO5 PSO1 PSO2 PSO3 PSO4 PSO5 |             |               |                    |                  |                  |   |              |       |               |          |         |     |   |
| CO1  | L           | М             | S                  | S                | S                | S                                       | Μ            | 1     | S             | М        | S       |     |   |
| CO2  | S           | М             | М                  | S                | S                | S                                       | S            |       | S             | М        | S       |     |   |
| CO3  | S           | S S M S       |                    |                  | S                | S                                       | Μ            | 1     | S             | Μ        | S       |     |   |
| CO4  | М           | S             | S                  | Μ                | S                | S                                       | Μ            | 1     | S             | Μ        | S       |     |   |
| CO5  | S           | S             | S                  | S                | S                | S                                       | Μ            | 1     | S             | S        | S       |     |   |
| Level of<br>Correlation<br>between CO<br>and<br>PO     |             | L             | -LOW               |                  |                  | M-M                                     | EDIL         | JM    |               | S        | -STRON  | ١G  |   |
| Tutorial Schedule                                      |             | C             | Group I            | Discus           | sion, Q          | uiz prog                                | ram,         | , Mo  | del pre       | paratio  | n       |     |   |
| Teaching and Lear<br>Methods                           | ning        | /<br>F        | Audio V<br>Present | /ideo l<br>ation | ecture<br>and Vi | , Chalk a<br>deo pres                   | nd B<br>enta | oarc  | d class,<br>า | Assign   | nent, I | РРТ |   |
| Assessment Meth  | ods         | C             | Class Te           | est, Ur          | nit Test         | , Assign                                | men          | t, Cl | A-I, CIA      | A-II and | ESE     |     |   |
| Desi   | Verified By |               |                    | Approved By      |                  |   |              |       |               |          |         |     |   |
| Mr.P.Mohankumar HoD -                                  |             |               |                    |                  | 1r.G.Se          | G.Selvakumar Member Secretary – Dr.S.Sh |              |       |               | hahitha  |         |     |   |





|             | BCA Syllabus LOC  | F-CBCS with effect f  | rom 20  | 23-2024                    | Onware              | ds              |                   |            |  |  |  |  |
|-------------|---|---|---|----------------------------|---------------------|-----------------|-------------------|------------|--|--|--|--|
| Course Code | Course Title  | Course Type   | Sem   | Hours                      | s L T               |                 | Р                 | С          |  |  |  |  |
| 23M6UCAC08  | DATA ANALYTICS<br>USING R<br>PROGRAMMING  | DSC THEORY - VIII   | VI  | 5                          | 5                   | -               | -                 | 5          |  |  |  |  |
| Objective   | Students Learn the bad dictionaries, as well as   | asics of R programm<br>s input/output opera   | ing and<br>tions w  | d data str<br>ith files ir | ructure<br>n R Prog | s like<br>gramr | lists, t<br>ning. | uples, and |  |  |  |  |
| Unit        | Ca  | ourse Content   |   |                            | Knowle<br>Leve      | edge<br>els     | s                 | Sessions   |  |  |  |  |
| I           | <b>EVOLUTION OF BIG I</b><br>Analytics — Big data of<br>Promotion of the Va<br>Cases- Characteristic<br>Perception and Quant<br>Big Data Storage —<br>Performance Architec<br>YARN — Map Reduce I   | K1  |   |                            | 12                  |                 |                   |            |  |  |  |  |
| I           | <b>CONTROL STRUCTU</b><br>structures, functions,<br>Introduction to Functi<br>Data Structures, Vect<br>Lists, Data Frames,<br>sequences, Vectors ar<br>of a vector using s<br>subscripts, Scalars,<br>Adding and Deleting<br>Length of a Vector,<br>Vector Arithmetic a<br>Indexing, Common - V | RES AND VECTO<br>scoping rules, date<br>ons, preview of Some<br>cors, Character Strin<br>, Classes Vectors:<br>ad subscripts, Extract<br>subscripts, Working<br>Vectors, Arrays, an<br>Vector Elements, C<br>Matrices and Array<br>and Logical Operations.  | Control<br>times,<br>rtant R<br>trices,<br>erating<br>ments<br>logical<br>trices,<br>ng the<br>ectors<br>Vector | K2                         |                     |                 | 12                |            |  |  |  |  |
|             | LISTS: Creating Lists<br>Indexing Adding and E<br>Size of a List, Exten<br>Accessing List Com<br>Functions to Lists, Da<br>Accessing Data Frame   | s, List<br>ng the<br>dance<br>oplying<br>rames,<br>ions.  | КЗ  |                            |                     | 12              |                   |            |  |  |  |  |
| IV          | FACTORS AND TABLE<br>Functions Used with<br>Matrix / Array Like O<br>Sub table, Finding th<br>Functions, Calculating  | Accessing Data Frames, Other Matrix-Like Operations.<br>FACTORS AND TABLES: Factors and Levels, Common<br>Functions Used with Factors, Working With Tables,<br>Matrix / Array Like Operations on Tables, Extracting a K4 12<br>Sub table, Finding the Largest Cells in A Table, Math<br>Functions Calculating a Probability Cumulative Sums |   |                            |                     |                 |                   |            |  |  |  |  |

|                        | and Products, M for Statistical Dis   | inima and Ma<br>tributions RPR   | unctions  |                                 |                            |               |  |  |  |
|------------------------|---|--|---|---------------------------------|----------------------------|---------------|--|--|--|
| V                      | OBJECT- ORIE<br>SGeneric Functio<br>SClasses, Writin<br>Function on an<br>profiling, Statistic<br>Current Trends -  | NTED PROC<br>ns, Writing SC<br>g SClasses, In<br>SClass, visuali<br>cal Analysis w<br>* Data Fabric. | Classes,<br>eritance,<br>Generic<br>on, code<br>pulation. | К5                              | 12                         |               |  |  |  |
|                        | ** Self Study.  |  |   |                                 |                            |               |  |  |  |
|                        | <b>CO1:</b> Recall the for and their analysis   | undamental id<br>s techniques.   | ata tools   | K1                              |                            |               |  |  |  |
|                        | <b>CO2:</b> Employ dat and classification   | a through the algorithms.  | lustering   | К2                              |                            |               |  |  |  |
| Course<br>Outcome      | <b>CO3:</b> Sketch varion volumes of date techniques.   | ous mining algo<br>ata, and im   | ling large<br>edge on                                     | К3                              |                            |               |  |  |  |
|                        | CO4: Assess ac streams, and ma  | lvanced analy ke informed de   | rtics on real-tine<br>cisions.                            | me data                         | К4                         |               |  |  |  |
|                        | <b>CO5:</b> Develop So design strategies maintenance.   | QL databases<br>to ensure eff  | by employing a<br>icient data retrie                      | advanced<br>eval, and           | К5                         |               |  |  |  |
|                        |   | Lear   | ning Resources  |                                 |                            |               |  |  |  |
| Text<br>Books          | 1.Roge D.Peng, "<br>2.Norman Matlo<br>2011.   | R Programmin<br>ff, "The Art of  | g for DataScienc<br>R Programming                         | e",2012.<br>- A Tour of         | f Statistical Soft         | ware Design", |  |  |  |
| Reference<br>Books     | <ol> <li>Garrett Grolen</li> <li>Own Functions a</li> <li>Venables, W.N</li> </ol>  | nund, Hadley \<br>nd Simulations<br>I., and Ripley, '  | Wickham, "Hand<br>s", 1st Edition, 20<br>"R programming   | s On Prog<br>014.<br>", Springe | ramming with R<br>r, 2000. | : Write Your  |  |  |  |
| Website<br>Link        | 1. https://www.s  | implilearn.cor   | n   |                                 |                            |               |  |  |  |
| Self-Study<br>Material | 1.https://www.starburst.io/data-glossary/data-fabric/2.ttps://ebookcentral.proquest.com/lib/inflibnet-ebooks/reader.action?docID=29449175&query=data+fabric+in+DATA+ANALYTICS+USING+R+PROGRAMMING |  |   |                                 |                            |               |  |  |  |
|                        | L-Lecture   | <b>T-Tutorial</b>  | P-Practical   |                                 | C-Credit                   |               |  |  |  |

|  | BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |  |                                       |                         |                     |                 |         |      |          |       |       |           |              |
|--|---|--|---------------------------------------|-------------------------|---------------------|-----------------|---------|------|----------|-------|-------|-----------|--------------|
| Course Title   | Coι   | ırse Tit   | le                                    | Οοι                     | Irse Ty             | pe              | Sem     | H    | ours     | L     | Т     | Р         | С            |
| 23M6UCAC08   | DATA<br>U<br>PROG   | ANALY<br>SING R<br>RAMM  | LYTICS<br>R DSC THEORY - VIII<br>MING |                         |                     | - VIII          | VI      |      | 5        | 5     | -     | -         | 5            |
|  |   |  |                                       |                         | CO-PO               | Mappi           | ng      |      |          |       |       |           |              |
| CO Number  | PO1   | PO1         PO2         PO3         PO4         PO5         PS01         PS02         PS03         PS04         PS05 |                                       |                         |                     |                 |         |      |          |       |       |           |              |
| CO1  | Μ   | S  | М                                     | S                       | S                   | L               | M       |      | S        |       | Μ     | S         |              |
| CO2  | L   | М  | L                                     | S                       | М                   | S               | S       |      | Μ        |       | S     | S         |              |
| CO3  | Μ   | S  | S                                     | М                       | S                   | S               | S       |      | S        |       | М     | S         |              |
| CO4  | S   | М  | М                                     | S                       | S                   | S               | M       |      | Μ        |       | S     | М         |              |
| CO5  | S   | S  | М                                     | М                       | М                   | S               | S       |      | S        |       | S     | S         |              |
| Level of<br>Correlation<br>between CO<br>and PO                          |   |  | L-LOW                                 | 1                       |                     | M-MEDIUM S-STRO |         |      |          | RONG  |       |           |              |
| <b>Tutorial Schedu</b>   | le  | C  | Group [                               | Discussi                | on, Qui             | iz progr        | am, N   | 1ode | el prepa | arati | ion   |           |              |
| Teaching and Le<br>Methods   | arning  | A  | Audio V<br>Ind Vid                    | 'ideo leo<br>eo pres    | cture, C<br>entatio | Chalk ar        | nd Boa  | rd c | class, A | ssigr | nmer  | it, PPT f | Presentation |
| Assessment Me  | thods   | C  | Class Te                              | est, Unit               | : Test,             | Assignn         | nent, ( | CIA- | I, CIA-I | l and | d ESE |           |              |
| Designe  | d By  |  |                                       | Verified By Approved By |                     |                 |         |      | 1        |       |       |           |              |
| Mrs.V.Krishnaveni HOD – Mr.G.Selvakumar Member Secretary – Dr.S.Shahitha |   |  |                                       |                         |                     | .S.Shahitha     |         |      |          |       |       |           |              |



## **MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE** (Autonomous)



#### **RASIPURAM - 637408.**

|                   | BCA Syllabus LO   | CF-CBCS with effect fro                                    | m 2023                 | -2024 OI               | nward         | ls               |                   |             |  |  |  |
|-------------------|---|--|------------------------|------------------------|---------------|------------------|-------------------|-------------|--|--|--|
| Course Code       | Course Title  | Course Type  | Sem                    | Hours                  | L             | т                | Р                 | С           |  |  |  |
| 23M6UCAP07        | R PROGRAMMING   | DSC PRACTICAL - VII  | VI                     | 6                      | 6             |                  |                   | 3           |  |  |  |
| Objective         | Students learn the back computational strate  | asic programming cons<br>gies to tackle real-work          | tructs in<br>d challe  | n R Prog<br>nges in F  | ramm<br>-base | ing, a<br>d solu | and ap<br>utions. | ply diverse |  |  |  |
| S.No.             | List of Exp   | List of Experiments / Programmes Knowledge Sessions Levels |                        |                        |               |                  |                   |             |  |  |  |
| 1                 | Program to convert the given temperature from<br>Fahrenheit to Celsius and vice versa depending UponK16user's choice. |  |                        |                        |               |                  |                   |             |  |  |  |
| 2                 | Program to find the a triangle by accepting the user.   | rea of rectangle, square<br>g suitable input Param         | e, circle<br>leters fi | and<br><sup>r</sup> om | K1            |                  |                   | 6           |  |  |  |
| 3                 | Construct a program<br>1 to n using R-Loops.  | to find a list of even nu                                  | mbers fi               | rom                    | K1            |                  |                   | 6           |  |  |  |
| 4                 | Create a function t sequence.   | o print squares of r                                       | numbers                | in                     | K2            |                  |                   | 6           |  |  |  |
| 5                 | Develop a program t<br>Frame using cbind() a  | o join columns and rov<br>and rbind() in R.                | vs in a c              | lata                   | К2            |                  |                   | 6           |  |  |  |
| 6                 | Implement different   | String Manipulation fur                                    | nctions i              | n R.                   | К3            |                  |                   | 6           |  |  |  |
| 7                 | Implement different<br>DataFrames)  | data structures in R (Ve                                   | ctors, L               | ists,                  | K3            |                  |                   | 6           |  |  |  |
| 8                 | Develop a program to data in the file in R.   | to read a csv file and a                                   | analyze                | the                    | K4            |                  |                   | 6           |  |  |  |
| 9                 | Create pie chart and  | bar chart using R.   |                        |                        | К4            |                  |                   | 6           |  |  |  |
| 10                | Create a data set and using R.  | l do statistical analysis                                  | on the c               | lata                   | К3            |                  |                   | 6           |  |  |  |
| 11                | Program to find fact<br>recursive function.   | torial of the given nu                                     | mber u                 | sing                   | K4            |                  |                   | 6           |  |  |  |
| 12                | Construct a R program<br>odd numbers from ar  | n to count the number<br>ray of N numbers                  | of even                | and                    | K5            |                  |                   | 6           |  |  |  |
|                   | <b>CO1:</b> Understand Programming  | programming skills i                                       | n core                 | R                      | K1            |                  |                   |             |  |  |  |
| Course<br>Outcome | CO2: Sketch simple representation of the Object-<br>oriented programming concept.K2                                   |  |                        |                        |               |                  |                   |             |  |  |  |
|                   | <b>CO3:</b> Dramatize appro<br>User Interfaces in R P   | opriate skills for crafting<br>programming.                | g Graphi               | cal-                   | K3            |                  |                   |             |  |  |  |

|                    | <b>CO4:</b> Analyze R P into specialized k  | rogramming sl<br>pranches.                            | ansition  | К4                              |                             |              |  |  |  |  |
|--------------------|---|---|---|---------------------------------|-----------------------------|--------------|--|--|--|--|
|                    | <b>CO5:</b> Create GU demonstrating p   | I application roficiency in da                        | for updating da<br>atabase manage                       | tabases,<br>ment.               | К5                          |              |  |  |  |  |
| Learning Resources |   |   |   |                                 |                             |              |  |  |  |  |
| Text<br>Books      | <ol> <li>Roge D.Peng, "R Programming for DataScience",2012.</li> <li>Norman Matloff, "The Art of R Programming - A Tour of Statistical Software Design",<br/>2011.</li> </ol> |   |   |                                 |                             |              |  |  |  |  |
| Reference<br>Books | 1. Garrett Grolen<br>Own Functions a<br>2. Venables, W.N  | nund, Hadley \<br>nd Simulations<br>I., and Ripley, ' | Wickham, "Hand<br>s", 1st Edition, 20<br>"R programming | s On Prog<br>)14.<br>", Springe | ramming with R<br>er, 2000. | : Write Your |  |  |  |  |
| Website<br>Link    | 1. https://www.s  | 1. https://www.simplilearn.com                        |   |                                 |                             |              |  |  |  |  |
|                    | L-Lecture   | T-Tutorial  | P-Practical C-Credit                                    |                                 |                             |              |  |  |  |  |

|   | BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |                       |                   |          |          |                   |         |             |       |       |       |          |      |   |
|---|---|-----------------------|-------------------|----------|----------|-------------------|---------|-------------|-------|-------|-------|----------|------|---|
| Course Title                                    | Cou   | rse Titl              | е                 | Со       | urse Ty  | /pe               | Sem     | Но          | ours  | L     | Т     | Р        |      | С |
| 23M6UCAP07                                      | R PROG  | RAMN                  | MMING DSC PRACTIC |          |          | CAL -             | VI      |             | 6     | -     | -     | 6        |      | 3 |
|   |   |                       |                   | CO-      | PO Ma    | pping             |         |             |       |       |       |          |      |   |
| CO Number                                       | PO1   | PO2                   | PO3               | PO4      | PO5      | PSO1              | PSO     | 2           | PSO   | 3     | PSC   | 04       | PSO5 |   |
| CO1   | S   | S                     | М                 | S        | S        | L                 | L       |             | Μ     |       | S     |          | S    |   |
| CO2   | М   | S                     | L                 | М        | S        | S                 | М       |             | S     |       | S     |          | S    |   |
| CO3   | S   | L                     | S                 | S        | М        | S                 | S       |             | Μ     |       | N     | 1        | S    |   |
| CO4   | М   | S                     | S                 | S        | S        | М                 | Μ       |             | S     |       | S     |          | S    |   |
| CO5   | М   | S                     | М                 | М        | М        | S                 | М       |             | S     |       | N     | 1        | S    |   |
| Level of<br>Correlation<br>between CO and<br>PO |   |                       | L-LOW             |          |          | M-MEDIUM S-STRONG |         |             |       |       |       |          |      |   |
| Tutorial Schedule                               |   | Sar                   | nple pr           | ogram    | s to rel | ated to           | pic     |             |       |       |       |          |      |   |
| Teaching and Lear<br>Methods                    | ning  | На                    | ndling            | practica | al sessi | on thro           | ugh pro | oject       | or    |       |       |          |      |   |
| Assessment Metho                                | ods   | Ob                    | servati           | on, Mo   | del pra  | actical's         |         |             |       |       |       |          |      |   |
| Designed  | Designed By   |                       |                   |          |          |                   |         | Approved By |       |       |       |          |      |   |
| Mrs.V.Krishn                                    |   | HoD – Mr.G.Selvakumar |                   |          |          |                   |         | ber Se      | ecret | ary - | - Dr. | 5.Shahit | tha  |   |

#### List of Foundation Course (FC) offered by the B.C.A., SYLLABUS - LOCF-CBCS Pattern EFFECTIVE FROM THE ACADEMIC YEAR 2023-2024 Onwards

| S.No. | SEM | COURSE_CODE | TITLE OF THE COURSE         |
|-------|-----|-------------|-----------------------------|
| 1     | I   | 23M1UCAFC1  | STRUCTURED PROGRAMMING IN C |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |   |  |   |  |                |                   |          |  |  |  |  |
|---|---|---|--|---|--|----------------|-------------------|----------|--|--|--|--|
| Course Code   | Course Title  | Course<br>Type                                      | Sem  | Hours   | L                                      | т              | Р                 | С        |  |  |  |  |
| 23M1UCAFC1  | STRUCTURED<br>PROGRAMMING IN C  | FC - I  | I  | 2   | 2                                      | -              | -                 | 2        |  |  |  |  |
| Objective   | Students learn the Pro<br>Mathematical, logical op  | entals<br>ents.                                     | of C, Da   | ta types  |  |                |                   |          |  |  |  |  |
| Unit  |   | Course Content                                      |  |   |  | Kı             | owledge<br>Levels | Sessions |  |  |  |  |
| I   | <b>Overview of C:</b> Importal<br>structure, executing C p<br>Types: Character set,<br>constants, variables, c<br>Assigning values to varia<br>variable as constant, as v   | m<br>ta<br>s,<br>s,<br>a                            | К1   | 6   |  |                |                   |          |  |  |  |  |
| Ш   | Decision Making and Bra<br>IF, IF ELSE, nested IF<br>statement. Decision Ma<br>Jumps in loop.   | le<br>O<br>or,                                      | К2   | 6   |  |                |                   |          |  |  |  |  |
| 111   | Arrays: Declaration and arrays, initializing two-<br>arrays.  | d accessin<br>-dimensior                            | ig of one<br>nal arrays                            | & two-<br>s, multid                               | dimensio<br>limension                  | nal<br>al      | КЗ                | 6        |  |  |  |  |
| IV  | Functions: The form of C functions, Return values and types,<br>calling a function, categories of functions, Nested functions,<br>Recursion, functions with arrays, call by value, call by reference,<br>storage classes-character arrays and string functions.K4 |   |  |   | 6                                      |                |                   |          |  |  |  |  |
| v   | <b>Pointers:</b> definition, dec<br>a variable through ac<br>expressions, pointer inc<br>arrays, pointers and func  | laring and<br>Idress an<br>rements a<br>ctions, poi | initializing<br>d throug<br>and scale<br>nters and | g pointers<br>h pointe<br>factor, po<br>Structure | s, accessir<br>er, point<br>ointers ar | ng<br>er<br>nd | K4                | 6        |  |  |  |  |

|  | <b>CO1:</b> Recall the programmer semantics.  | am structu  | re of C with its syntax a   | and K1  |                   |
|--|---|---|---|---|-------------------|
|  | <b>CO2:</b> Illustrate the pro operators, branching an pointers and files).   | gramming<br>d looping,  | principles in C (data typ<br>arrays, functions, structu   | res, K2   |                   |
| Course<br>Outcome                                | <b>CO3:</b> Apply the prographic problems.  | me K3   |   |   |                   |
|  | <b>CO4:</b> Categorize the var choose the best method   | and K3  |   |   |                   |
|  | <b>CO5:</b> Assess the Code appropriate test cases.   | vith K4   |   |   |                   |
|  |   |   |   |   |                   |
|  |   | Learning F  | Resources   |   |                   |
| Text Books                                       | E. Balagurusamy, Progra   | Learning F  | <b>Resources</b><br>NSI C, Fifth Edition, Tata N  | 1cGraw-Hill, 2010.  |                   |
| Text Books<br>Reference<br>Books                 | E. Balagurusamy, Program<br>1. Byron Gottfried, Scha<br>McGraw-Hill, 2018.<br>2. Kernighan and Ritchie,<br>1998.<br>3. YashavantKanetkar, Le  | Learning I<br>mming in Al<br>aum's Outl<br>, The C Pro                                | Resources<br>NSI C, Fifth Edition, Tata M<br>ine Programming with o<br>gramming Language, Sec<br>teenth Edition, BPB Public                           | IcGraw-Hill, 2010.<br>C, Fourth Edition,<br>ond Edition, Prenti<br>ations,2021. | Tata<br>ice Hall, |
| Text Books<br>Reference<br>Books<br>Website Link | <ul> <li>E. Balagurusamy, Program</li> <li>1. Byron Gottfried, Schar</li> <li>McGraw-Hill, 2018.</li> <li>2. Kernighan and Ritchie,</li> <li>1998.</li> <li>3. YashavantKanetkar, Lee</li> <li>1. https://www.geeksforg</li> <li>2. http://learn-c.org/</li> <li>3. https://www.cprogram</li> </ul> | Learning I<br>mming in Al<br>aum's Outl<br>The C Pro<br>t Us C, Eigh<br>geeks.org/con | Resources<br>NSI C, Fifth Edition, Tata M<br>ine Programming with o<br>gramming Language, Sec<br>teenth Edition, BPB Public<br>-programming-language/ | AcGraw-Hill, 2010.<br>C, Fourth Edition,<br>ond Edition, Prenti<br>ations,2021. | Tata<br>ice Hall, |

|                         |                     | BCA Sy   | /llabus l        | .OCF - 0        | CBCS w          | ith effec            | t from 20             | 23-2024               | Onwar    | ds      |         |        |
|-------------------------|---------------------|--|------------------|-----------------|-----------------|----------------------|-----------------------|-----------------------|----------|---------|---------|--------|
| Course Cod              | e                   | C  | Course T         | ïtle            | Co<br>T         | urse<br>ype          | Sem                   | Hours                 | L        | т       | Р       | С      |
| 23M1UCAFC               | C1 PF               | STRL<br>ROGRA                                      | JCTUREI<br>MMING | D<br>6 IN C     | FC              | C - I                | I                     | 2                     | 2        | -       | -       | 2      |
|                         |                     |  |                  |                 | CO-F            | PO Mapp              | bing                  |                       |          |         |         |        |
| CO Number               | PO1                 | PO2  | PO3              | PO4             | PO5             | PSO1                 | PSO2                  | PSO3                  | PSO4     | 4 PSC   | )5      |        |
| CO1                     | М                   | S  | М                | S               | S               | L                    | L                     | М                     | S        | S       |         |        |
| CO2                     | М                   | S  | S                | S               | S               | S                    | М                     | S                     | S        | S       |         |        |
| CO3                     | S                   | S  | S                | S               | S               | S                    | S                     | М                     | S        | S       |         |        |
| CO4                     | S                   | S  | М                | S               | S               | S                    | М                     | S                     | S        | S       |         |        |
| CO5                     | М                   | S  | М                | L               | L               | S                    | М                     | S                     | S        | S       |         |        |
| Level o<br>betwe        | of Corre<br>en CO a | elation<br>and PO                                  |                  |                 | Ŀ               | -LOW                 |                       | M-MEDIUM S-STRO       |          |         |         | STRONG |
| Tutorial Sched          | ule                 |  |                  | Group           | Discus          | sion, Qu             | iz progra             | m, Model              | prepar   | ration  | 1       |        |
| Teaching and<br>Methods | Learnin             | g  |                  | Audio<br>Presen | Video<br>tation | lecture,<br>and Vide | Chalk and<br>o presen | l Board cla<br>tation | ass, Ass | signmer | nt, PPT |        |
| Assessment N            | lethods             | 5  |                  | Class T         | Fest, Ur        | nit Test,            | Assignm               | ent, CIA-I,           | CIA-II a | and ESE |         |        |
| De                      | signed              | Ву   |                  | Verified By     |                 |                      | Approved By           |                       |          |         |         |        |
| Mrs.N<br>Mr.K           |                     | HoD – Dr.V.Vijayadeepa Member Secretary – Dr.S.Sha |                  |                 |                 |                      | ahitha                |                       |          |         |         |        |
|       | List of Elective Course (DSE) Details for B.C.A., |                   |                                    |  |  |  |  |  |  |  |  |
|-------|---|-------------------|------------------------------------|--|--|--|--|--|--|--|--|
|       |   | EFFECTIVE FROM TH | IE ACADEMIC YEAR 2023-2024 Onwards |  |  |  |  |  |  |  |  |
| S.No. | SEM   | COURSE_CODE       | TITLE OF THE COURSE                |  |  |  |  |  |  |  |  |
| 1     |   | 23M_UCAE01        | Software Metrics                   |  |  |  |  |  |  |  |  |
| 2     |   | 23M_UCAE02        | Natural Language Processing        |  |  |  |  |  |  |  |  |
| 3     |   | 23M_UCAE03        | Analytics for Service Industry     |  |  |  |  |  |  |  |  |
| 4     |   | 23M_UCAE04        | Cryptography                       |  |  |  |  |  |  |  |  |
| 5     |   | 23M_UCAE05        | Database Management System         |  |  |  |  |  |  |  |  |
| 6     |   | 23M_UCAE06        | Big Data Analytics                 |  |  |  |  |  |  |  |  |
| 7     |   | 23M_UCAE07        | IOT and its Applications           |  |  |  |  |  |  |  |  |
| 8     |   | 23M_UCAE08        | Software Project Management        |  |  |  |  |  |  |  |  |
| 9     |   | 23M_UCAE09        | Image Processing                   |  |  |  |  |  |  |  |  |
| 10    |   | 23M_UCAE10        | Information Security               |  |  |  |  |  |  |  |  |
| 11    |   | 23M_UCAE11        | Human Computer Interaction         |  |  |  |  |  |  |  |  |
| 12    |   | 23M_UCAE12        | Fuzzy Logic                        |  |  |  |  |  |  |  |  |
| 13    |   | 23M_UCAE13        | Artificial Intelligence            |  |  |  |  |  |  |  |  |
| 14    |   | 23M_UCAE14        | Mobile Ad-hoc Network              |  |  |  |  |  |  |  |  |
| 15    |   | 23M_UCAE15        | Computational Intelligence18       |  |  |  |  |  |  |  |  |
| 16    |   | 23M_UCAE16        | Grid Computing                     |  |  |  |  |  |  |  |  |
| 17    |   | 23M_UCAE17        | Cloud Computing                    |  |  |  |  |  |  |  |  |
| 18    |   | 23M_UCAE18        | Artificial Neural Network          |  |  |  |  |  |  |  |  |
| 19    |   | 23M_UCAE19        | Agile Project Management           |  |  |  |  |  |  |  |  |
| 20    |   | 23M_UCAC_         | Microprocessor and Microcontroller |  |  |  |  |  |  |  |  |
| 21    |   | 23M_UCAP_         | Microprocessor and Microcontroller |  |  |  |  |  |  |  |  |
| 22    |   | 23M_UCAC_         | Software Engineering               |  |  |  |  |  |  |  |  |
| 23    |   | 23M_UCAC_         | Machine Learning Techniques        |  |  |  |  |  |  |  |  |
| 24    |   | 23M_UCAP_         | Machine Learning                   |  |  |  |  |  |  |  |  |
| 25    |   | 23M_UCAC_         | Network Security                   |  |  |  |  |  |  |  |  |
| 26    |   | 23M_UCAC_         | Data Mining and Warehousing        |  |  |  |  |  |  |  |  |
| 27    |   | 23M_UCAC_         | Mobile Application Development     |  |  |  |  |  |  |  |  |
| 28    |   | 23M_UCAP_         | Mobile Application Development     |  |  |  |  |  |  |  |  |
| 29    |   | 23M_UCAC_         | Introduction to Data Science       |  |  |  |  |  |  |  |  |





|             | BCA Syllabus LOCF - C   | BCS with effect from  | n 2023 <sup>.</sup>                                       | -2024 Or   | ıwa   | rds                  |                |                    |  |  |  |  |  |
|-------------|---|---|---|--|---|----------------------|----------------|--------------------|--|--|--|--|--|
| Course Code | Course Title  | Course Type   | Sem   | Hours  | L   | т                    | Р              | С                  |  |  |  |  |  |
| 23M_UCAE01  | SOFTWARE METRICS  | DSE THEORY  |   | 5  | 3   | 2                    | -              | 4                  |  |  |  |  |  |
| Objective   | Student Learn the qua<br>and predict the quality  | ality of the current<br>once the software   | produc<br>develo  | t or proc<br>oment p                                   | cess<br>roje  | , impro<br>ect is co | ove tl<br>mple | nat quality<br>te. |  |  |  |  |  |
| Unit        | С   | ourse Content   |   |  | ŀ   | nowle/<br>Level      | dge<br>s       | Sessions           |  |  |  |  |  |
| I           | Fundamentals of Mea<br>Measurement in Softw<br>Metrics, The Ba<br>representational theo<br>and models, Measu<br>meaningfulness in mea   | surement: Need fo<br>vare Engineering, So<br>sics of measu<br>ry of measurement<br>rement scales an<br>asurement.   | r Measi<br>cope of<br>u <b>remen</b><br>t, Meas<br>d scal | urement<br>Software<br>t: The<br>surement<br>e types   | :<br>2<br>2<br>t  | K1                   |                | 12                 |  |  |  |  |  |
| II          | A Goal-Based Framew<br>Classifying software<br>measure, Applying<br>measurement valid<br>Measurement Validati<br>Empirical investigatio<br>Planning Experiments<br>experiments. Relevant  | Goal-Based Framework For Software Measurement:<br>lassifying software measures, Determining what to<br>neasure, Applying the framework, Software<br>neasurement validation, Performing Software<br>leasurement Validation.<br>mpirical investigation: Principles of Empirical Studies,<br>lanning Experiments, Planning case studies as quasiK212 |   |  |   |                      |                |                    |  |  |  |  |  |
| 111         | Software Metrics Data<br>Data collection for inc<br>Reliability of data colle<br>Analyzing software<br>distributions and hypo<br>techniques, Examples   | ta Collection: Definition<br>cident reports, How<br>ection Procedures.<br>measurement d<br>thesis testing, Classi<br>of simple analysis te  | ning go<br>to coll<br>ata: S<br>ical data                 | od data<br>ect data<br>Statistica<br>a analysis<br>es. | ,<br>,<br> <br>5  | K3                   |                | 11                 |  |  |  |  |  |
|             | Measuring internal product attributes: Size Properties of<br>Software Size, Code size, Design size, Requirements<br>analysis and Specification size, Functional size measures<br>and estimators, Applications of size measures.K4Measuring internal product attributes: Structure: Aspects<br>of Structural Measures, Control flow structure of program<br>units, Design level Attributes, Object-oriented Structural<br>attributes and measures.K4 |   |   |  | echniques, Examples of simple analysis techniques.         Aeasuring internal product attributes: Size Properties of oftware Size, Code size, Design size, Requirements inalysis and Specification size, Functional size measures.         Indestimators, Applications of size measures.         Measuring internal product attributes: Structure: Aspects of Structural Measures, Control flow structure of program inits, Design level Attributes, Object-oriented Structural measures. |                      |                |                    |  |  |  |  |  |
| V           | software quality, Mea<br>Measures, Maintainab   | suring aspects of c<br>ility measures, Secu   | quality,<br>irity Me                                      | Usability<br>asures.                                   | /   | K5                   |                | 13                 |  |  |  |  |  |

|                        | Software Re<br>of reliability<br>Parametric r   | liability: Measu<br>theory, The<br>eliability growth                     | rement and Pre<br>software reliat<br>n models, Predic     | diction: Basics<br>bility problem,<br>ctive accuracy |                                 |                         |  |  |  |
|------------------------|---|--|---|--|---------------------------------|-------------------------|--|--|--|
|                        | Current Tren<br>Score, Team   | ds: Customer e<br>satisfaction usi                                       | xperience using<br>ng a team healt                        | , Net Promoter<br>h check.                           |                                 |                         |  |  |  |
|                        |   | ** S   | elf Study.  |  |                                 |                         |  |  |  |
|                        | <b>CO1:</b> Recalling software me   | ng various funda<br>trics.   | amentals of mea   | asurement and  | К1                              |                         |  |  |  |
|                        | <b>CO2:</b> Identify framework and classifying analysis techniques for software measurement.  |  |   |  |                                 |                         |  |  |  |
| Course<br>Outcome      | <b>CO3:</b> Imple software pro  | l attributes of  | КЗ  |  |                                 |                         |  |  |  |
|                        | <b>CO4:</b> Analyze metrics data  | e different tech<br>and derive Mea                                       | rpret software  | К4   |                                 |                         |  |  |  |
|                        | <b>CO5:</b> Recommend reliability models for predictin software quality.  |  |   |  |                                 |                         |  |  |  |
|                        | Learning Resources  |  |   |  |                                 |                         |  |  |  |
| Text<br>Books          | 1. Norman<br>Approach Th  | Fenton, James<br>ird Edition, 201  | Bieman, Softw<br>4.                                       | vare Metrics A                                       | Rigorous and                    | l Practical             |  |  |  |
| Reference<br>Books     | <ol> <li>Stephen<br/>edition,</li> <li>2002, Add</li> <li>Robert B.C</li> <li>Improvemen</li> </ol>   | H.Kan, Metric<br>ison Wesley Pro<br>Grady, Practical<br>t, 1992, Prentic | and models in<br>ofessional.<br>Software Metri<br>e Hall. | software quali                                       | ity engineerin<br>lanagement ai | g, Second<br>nd Process |  |  |  |
| Website<br>Link        | https://lansa.com/blog/general/what-are-software-metrics-how-can-i-measure-<br>thesemetrics/<br>1. https://stackify.com/track-software-metrics/ |  |   |  |                                 |                         |  |  |  |
| Self-Study<br>Material | https://www   | https://www.apptio.com/blog/software-development-metrics/                |   |  |                                 |                         |  |  |  |
|                        | L-Lecture T-Tutorial P-Practical C-Credit   |  |   |  |                                 |                         |  |  |  |

|   | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |                    |                     |                      |               |               |                |         |       |         |        |   |
|---|---|---|--------------------|---------------------|----------------------|---------------|---------------|----------------|---------|-------|---------|--------|---|
| Course Code                                     | Cou   | ırse Tit  | le                 | Οοι                 | urse Typ             | е             | Sei           | m H            | ours    | L     | т       | Р      | С |
| 23M_UCAE01                                      | SOFTWA  | ARE ME  | METRICS DSE THEORY |                     |                      |               | 5             | 3              | 2       | -     | 4       |        |   |
|   |   |   |                    | CO - I              | PO Map               | ping          |               |                |         |       |         |        |   |
| CO Number                                       | PO1   | PO2   | PO3                | PO4                 | PO5                  | PS            | 01            | PSO2           | PSC     | 23    | PSO4    | PSO5   |   |
| CO1   | М   | S   | S                  | S                   | S                    | S             | ;             | Μ              | S       | 1     | S       | S      |   |
| CO2   | S   | М   | М                  | S                   | S                    | S             | 5             | S              | S       |       | S       | S      |   |
| CO3   | S   | S   | S                  | S                   | S                    | S             | 5             | S              | S       |       | М       | S      |   |
| CO4   | S   | S   | S                  | М                   | S                    | M             |               | S              | S S     |       | S       | S      |   |
| CO5   | М   | S   | S                  | S                   | S                    | S             |               | Μ              | S       |       | S       | S      |   |
| Level of<br>Correlation<br>between CO and<br>PO |   | l   | -LOW               |                     |                      |               | M-M           | IEDIUI         | v       |       | Ş-      | STRONG | Ì |
| <b>Tutorial Schedule</b>                        |   | G   | roup Di            | scussio             | n, Quiz p            | orogi         | ram,          | Mode           | el prep | bara  | tion    |        |   |
| Teaching and Lear<br>Methods                    | ning  | Aı<br>Pr  | udio Vio<br>esenta | deo lect<br>tion an | ture, Cha<br>d Video | alk a<br>pres | nd Bo<br>enta | oard c<br>tion | lass, A | Assig | gnment, | PPT    |   |
| Assessment Meth                                 | ods   | Cl  | ass Tes            | t, Unit             | Test, As             | signı         | nent          | t, CIA-        | I, CIA- | ll ar | nd ESE  |        |   |
| Designed  |   | Verif   | ied By             |                     |                      |               |               | Α              | pproved | Ву    |         |        |   |
| Mrs. N.Hyrur                                    |   | HOD - Mr.G.Selvakumar Member Secretary -Dr.S.Shahitha |                    |                     |                      |               |               |                | nitha   |       |         |        |   |



# MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE



(Autonomous)

#### **RASIPURAM - 637408.**

|             | BCA Syllab   | us LOCF - CBCS wi  | ith effe   | ct from 2  | 2023-                           | -2024 Or       | nward      | s          |  |
|-------------|--|--|--|--|---------------------------------|----------------|------------|------------|--|
| Course Code | Course Title   | Course Type  | Sem  | Hours  | L                               | т              | Р          | С          |  |
| 23M_UCAE02  | NATURAL LANGUAGE<br>PROCESSING   | DSE THEORY   |  | 5  | 3                               | 2              | -          | 4          |  |
| Objective   | Students Learn the sem statistical approaches to   | antics in NLP, ap<br>machine translat  | plying<br>tion.  | basic alg  | orith                           | ims and        | comp       | prehending |  |
| Unit        | Co   | ourse Content  |  |  |                                 | Knowle<br>Leve | edge<br>Is | Sessions   |  |
| I           | Introduction: Natural Language Processing tasks in syntax,<br>semantics, and pragmatics – Issue- Applications – The role of<br>machine learning – Probability Basics – Information theory –<br>Collocations -N-gram Language Models – Estimating<br>parameters and smoothing – Evaluating language models.K1 |  |  |  |                                 |                |            |            |  |
| II          | Word level and Syntac<br>Regular Expressions-Fin<br>Parsing-Spelling Error D<br>Word classes-Part-of S<br>Context-free Grammar<br>Parsing.   | Analysis: and smoothing – Evaluating language models.         /ord level and Syntactic Analysis:         egular Expressions-Finite-State Automata - Morphological         arsing-Spelling Error Detection and correction-Words and         /ord classes-Part-of Speech Tagging. Syntactic Analysis:         ontext-free Grammar-Constituency Parsing-Probabilistic |  |  |                                 |                |            |            |  |
| 111         | Semantic analysis and<br>Analysis: Meaning F<br>Ambiguity-Word Sen<br>Processing: cohesion<br>Coherence and Structure  | <b>d Discourse Pro</b><br>Representation-Le<br>se Disambigua<br>n-Reference Res<br>e.  | Processing: Semantic<br>on-Lexical Semantics-<br>biguation. Discourse K3<br>Resolution Discourse |  | ,                               | 12             |            |            |  |
| IV          | Natural Language Gene<br>Generation Tasks and R<br>Machine Translation:<br>Characteristics of India<br>Approaches-Translation  | ration: Architectu<br>epresentations- A<br>Problems in Ma<br>n Languages- Ma<br>involving Indian L   | ure of N<br>Applicat<br>chine<br>achine<br>anguag  | ILG Syste<br>tion of N<br>Translati<br>Translati<br>ges. | ems<br>LG.<br>on.<br>on         | К4             |            | 12         |  |
| v           | Information retrieval a<br>Retrieval: Design feature<br>Classical, Non classic<br>Information Retrieval –<br>Net-Frame Net Stemme<br>SSAS. Current Trends- *   | and lexical resources<br>of Information<br>al and Alterna<br>valuation Lexical<br>ers- POS Tagger-<br>Language Transfo   | rces: 1<br>Retriev<br>ative 1<br>Resour<br>Resear  | nformat<br>val Syster<br>Models<br>rces: Wo<br>rch Corpo | ion<br>ns-<br>of<br>orld<br>ora | К4             |            | 12         |  |
|             | ** Self Study.   | ural   |  |  |                                 |                |            |            |  |
|             | language processing.   |  |  |  |                                 | K1             |            |            |  |

|                        | <b>CO2</b> : Illustrate the E Analysis.   | rror Correction and Det  | ection and Syntactic                          | К2                |            |  |  |  |  |
|------------------------|---|--|---|-------------------|------------|--|--|--|--|
| Course<br>Outcome      | <b>CO3</b> : Build NLP met<br>document.   | hods to assess sentime   | nt within a textual                           | КЗ                |            |  |  |  |  |
|                        | <b>CO4</b> : Examine exte real-world applicati  | erived from various  | K4  |                   |            |  |  |  |  |
|                        | <b>CO5</b> : Assume the f intelligence and sur  | K4   |   |                   |            |  |  |  |  |
|                        | Learning Resources  |  |   |                   |            |  |  |  |  |
| Text Books             | <ol> <li>Daniel Jurafsky,<br/>publications.</li> <li>Allen, James., National</li> </ol> | <ol> <li>Daniel Jurafsky, James H. Martin, Speech &amp; language processing, Pearson publications.</li> <li>Allen, James., Natural language understanding. Pearson, 1995.</li> </ol> |   |                   |            |  |  |  |  |
| Reference<br>Books     | 1. Pierre M. Nugue<br>Springer.   | es, An Introduction to   | Language Processing                           | g with Perl ar    | nd Prolog, |  |  |  |  |
| Website<br>Link        | 1. <u>https://en.wik</u><br>2. <u>https://www.t</u><br>languageprocessi                 | ipedia.org/wiki/Natura<br>echtarget.com/searcho<br>ing   | l language processi<br>enterpriseai/definitic | ng<br>on/natural- |            |  |  |  |  |
| Self-Study<br>Material | https://www.startu<br>trends/   | https://www.startus-insights.com/innovators-guide/natural-language-processing-<br>trends/  |   |                   |            |  |  |  |  |
|                        | L-Lecture   | T-Tutorial   | P-Practical                                   | C-Cı              | redit      |  |  |  |  |

|   | В        | CA Syll       | abus L           | OCF - C              | BCS wi              | th effect            | : fro        | m 202                            | 23-202         | <b>4 O</b> | nwar   | ds     |      |   |
|---|----------|---------------|------------------|----------------------|---------------------|----------------------|--------------|----------------------------------|----------------|------------|--------|--------|------|---|
| Course Code                                   |          | (             | Course           | Title                | Co                  | ourse Typ            | be           | Sen                              | n Hou          | urs        | L      | т      | Р    | С |
| 23M_UCAE02                                    | NA       | TURAL<br>PROC | . LANG<br>CESSIN | UAGE<br>G            | DSI                 | THEOR                | Y 5          |                                  | 3              | 2          | -      | 4      |      |   |
|   |          |               |                  |                      | CO - I              | PO Mapp              | oing         |                                  |                |            |        |        |      |   |
| CO Numb                                       | ber      | PO1           | PO2              | PO3                  | PO4                 | PO5                  | PS           | 501                              | PSO2           | P          | SO3    | PSO4   | PSO5 |   |
| CO1   |          | L             | Μ                | S                    | S                   | S                    | 9            | 5                                | Μ              |            | S      | Μ      | S    |   |
| CO2   |          | S             | Μ                | М                    | S                   | S                    | 0,           | 5                                | S              |            | S      | Μ      | S    |   |
| CO3   |          | S             | S                | М                    | S                   | S                    | 0,           | 5                                | Μ              |            | S      | Μ      | S    |   |
| CO4   |          | М             | S                | S                    | М                   | S                    | 0,           | 5                                | Μ              |            | S      | Μ      | S    |   |
| CO5   |          | S             | S                | S                    | S                   | S                    | 0,           | 5                                | Μ              |            | S      | S      | S    |   |
| Level of<br>Correlation<br>between CO a<br>PO | ı<br>ınd |               |                  | L-LOW M-MEDIUM       |                     |                      |              |                                  | S-STRONG       |            |        |        |      |   |
| Tutorial Schedul                              | e        |               | Gr               | oup Dis              | cussior             | n, Quiz pi           | rogra        | am, N                            | /lodel p       | orep       | arati  | on     |      |   |
| Teaching and Le<br>Methods                    | arnin    | g             | Au<br>Pre        | dio Vide<br>esentati | eo lecti<br>ion and | ure, Chal<br>Video p | k an<br>rese | d Boa<br>entati                  | ard clas<br>on | ss, A      | ssign  | ment,  | РРТ  |   |
| Assessment Met                                | thods    |               | Cla              | iss Test,            | , Unit T            | est, Ass             | ignn         | nent,                            | CIA-I, (       | CIA-       | ll and | ESE    |      |   |
| Designed By                                   |          |               |                  | V                    | /erified            | Ву                   |              |                                  |                | ŀ          | Appro  | ved By |      |   |
| Mr.P.Mohankumar                               |          |               |                  | HoD - N              | ۱r.G.Se             | lvakuma              | ır           | Member Secretary - Dr.S.Shahitha |                |            |        |        | ha   |   |





|             | B.C.A Syllabus LOC   | F-CBCS with effec   | t from 2                                  | 2023-202                                   | 24 On                            | war                      | ds     |                   |              |  |
|-------------|--|---|---|--|----------------------------------|--------------------------|--------|-------------------|--------------|--|
| Course Code | Course Title   | Course Type   | Sem                                       | Hours                                      | L                                |                          | т      | Р                 | С            |  |
| 23M_UCAE03  | ANALYTICS FOR<br>SERVICE INDUSTRY  | DSE THEORY  |   | 5  | 3                                |                          | 2      | -                 | 4            |  |
| Objective   | Student Learn the conce<br>and create solutions for  | epts and methodol<br>r decision problem   | ogies of<br>s across                      | busines:<br>various                        | s ana<br>cont                    | lytics<br>exts.          | s, pro | gressing to       | o analyze    |  |
| Unit        |  | Course Content  |   |  |                                  |                          | Kno    | owledge<br>.evels | Sessio<br>ns |  |
| I           | Healthcare Analytics :<br>Electronic Health Recor<br>Benefits of EHR- Barrier<br>Algorithms. Biomedica<br>GenomicDataAnalysisfo<br>edict ion Models. | Aitncare Analytics : Introduction to Healthcare Data Analytics         ctronic Health Records- Components of EHR- Coding Systems         nefits of EHR- Barrier to Adopting HER Challenges Pheno typing         orithms. Biomedical Image Analysis and Signal Analysis-         nomicDataAnalysisforPersonalizedMedicine.ReviewofClinicalPr         ct ion Models.  |   |  |                                  |                          |        |                   |              |  |
| II          | Healthcare Analytics<br>Systems for Healthcare-<br>Detection in Healthc<br>Discoveries Clinical Dec<br>Medical Image Analysis<br>Biomedical Data.    | Part of Models.         Palthcare Analytics Applications : Applications and Practical stems for Healthcare – Data Analytics for Pervasive Health- Fraud etection in Healthcare-Data Analytics for Pharmaceutical scoveries Clinical Decision Support Systems-Computer Assisted edical Image Analysis Systems-Mobile Imaging and Analytics for exercised for the second statement of the secon |   |  |                                  |                          |        |                   |              |  |
| 111         | HR Analytics: Evolution<br>and data sources, HR<br>Analytics;HRMetricsand<br>king; HRMS/HRIS and<br>LAMP, HCM:21(r)Mode                              | n of HR Analytics,<br>Metric and HR Ar<br>IHRAnalytics;Intuit<br>data sources ;An<br>I.   | HR info<br>alytics,<br>ionvers<br>alytics | rmation<br>Evolutio<br>usanalyt<br>framewo | syste<br>on of<br>icalth<br>orks | ems<br>HR<br>nin<br>like |        | К3                | 12           |  |
| IV          | <b>Performance Analysi</b><br>Training requirements<br>Optimizing selection an   | <ul> <li>Predicting end</li> <li>evaluating traind</li> <li>d promotion decision</li> </ul>   | mployee<br>ning an<br>iions.              | e perfo<br>d devel                         | ormar<br>opme                    | nce,<br>ent,             |        | K4                | 12           |  |
| v           | Tourism and Hospitalit<br>Dynamic Pricing-opti<br>detection in payments.<br>*Current Trends - Pred   | y Analytics: Guest<br>mized disruptio<br>Analytics Loyalty A<br>ictive Analytics *.   | t Custon<br>n mar<br>Analytic.            | ner Satis<br>nagemer                       | factiont<br>T                    | on–<br>aud               |        | К5                | 12           |  |
|             | ** Self Study.   |   |   |  |                                  |                          |        |                   |              |  |
|             | CO1: Recall the concept  | ts and methods of   | busines                                   | s analyti                                  | CS                               |                          |        | K1                |              |  |
|             | <b>CO2</b> : Predict the mode settings.  | l and solve decision  | on prob                                   | lems in o                                  | differ                           | ent                      |        | K2                |              |  |
| Course      | <b>CO3:</b> Apply solutions an a given managerial situa  | d identify appropr<br>ation whether a pro   | iate cou<br>oblem o                       | rses of a<br>r an opp                      | ction<br>ortun                   | for<br>ity.              |        | К3                |              |  |
| Guttome     | CO4: Analyze the soluti  | ons to decision ma  | aking pro                                 | oblems.                                    |                                  | ,                        |        | К4                | 1            |  |

|                        | <b>CO5:</b> Create a sense of et to the long-run welfare of they serve               | hical decision-making a<br>f both organizations and                                | and a commitment<br>d the communities | К5            |           |  |  |  |  |  |
|------------------------|--|--|---------------------------------------|---------------|-----------|--|--|--|--|--|
|                        |  | Learning Resources   |                                       |               |           |  |  |  |  |  |
|                        | 1 ChandanK.Reddy and<br>2015.  | CharuCAggarwal,—He   | althcare data analytics               | s  , Taylor & | Francis,  |  |  |  |  |  |
| Text                   | Kogan Page Publishers 2016, ISBN-0749473924  |  |                                       |               |           |  |  |  |  |  |
| Books                  | 3 Fitz-enzJac,—The nev   | Fitz-enzJac,—The new HR analytics: predicting the economic value of your company's |                                       |               |           |  |  |  |  |  |
|                        | human capital investments 2010   ,AMACOM,ISBN-13:978-0-8144-1643-3                   |  |                                       |               |           |  |  |  |  |  |
|                        | 4 Rajendra Sahu, Manoj Dash and Anil Kumar. Applying Predictive Analytics Within the |  |                                       |               |           |  |  |  |  |  |
|                        | Service Sector.  |  |                                       |               |           |  |  |  |  |  |
|                        | 1. HuiYang and EvaK. Le  | e,—Healthcare Analyti  | cs: From Data to Know                 | ledge to Hea  | alth care |  |  |  |  |  |
| Reference              | Improvement, Wiley, 20   | )16  |                                       |               |           |  |  |  |  |  |
| Books                  | 2. Fitz-enzJac, Mattox I   | I John,—Predictive Ana   | alytics for Human Resc                | ources  , Wil | ey 2014,  |  |  |  |  |  |
|                        | $1 + \frac{110940709}{1}$  | assavs com/assavs/mar  | keting/contemporary-                  | issues_in_m   | arkating_ |  |  |  |  |  |
| Website                | marketing-essay nhn  | 2334 93.00117 0334 937 1141  | Keting/contemporary                   |               | Incering  |  |  |  |  |  |
| Link                   | 2. https://vourbusine  | ss.azcentral.com/exam  | ples-contemporary-iss                 | ues-marketi   | ng-field- |  |  |  |  |  |
|                        | 26524.html   |  |                                       |               |           |  |  |  |  |  |
|                        | 1.https://www.datapine   | e.com/blog/business-ir   | telligence-trends/                    |               |           |  |  |  |  |  |
| Sell-Study<br>Material | 2.   | https:/  | //ebookcentral.proque                 | st.com/lib/i  | nflibnet- |  |  |  |  |  |
|                        | ebooks/reader.action?c   | locID=4334745  |                                       |               |           |  |  |  |  |  |
|                        | L-Lecture  | T-Tutorial   | P-Practical                           | C- Cre        | edit      |  |  |  |  |  |
|                        |  |  |                                       |               |           |  |  |  |  |  |

|  | В                                 | CA Sylla          | bus LO  | CF-CB                  | CS with ef  | ffect from              | 2023-2               | 024 Onwa            | ards      |       |        |       |
|--|-----------------------------------|-------------------|---------|------------------------|---|-------------------------|----------------------|---------------------|-----------|-------|--------|-------|
| Course Code                                | 2                                 | Cours             | e Title |                        | Course  | Туре                    | Sem                  | Hours               | L         | т     | Р      | С     |
| 23M_UCAE03 ANALYTICS FOI<br>SERVICE INDUST |                                   |                   | ICS FOR | RY                     | DSE THEORY  |                         |                      | 5                   | 3         | 2     | -      | 4     |
|  |                                   |                   |         |                        | CO-PO N   | lapping                 |                      |                     |           |       |        |       |
| CO Number                                  | CO Number P01 P02 P03 P04 P05 PSC |                   |         |                        |   |                         | PSO2                 | PSO3                | PSO4      | PS    | 05     |       |
| CO1  | S                                 | S                 | S       | S                      | S   | S                       | S                    | S                   | S         |       |        |       |
| CO2  | М                                 | S                 | S       | S                      | S   | М                       | S                    | S                   | S         |       | S      |       |
| CO3  | S                                 | S                 | М       | S                      | S   | S                       | S                    | М                   | S         |       |        |       |
| CO4  | S                                 | S                 | S       | S                      | S   | S                       | S                    | S                   | S         |       | S      |       |
| CO5  | S                                 | S                 | S       | L                      | L   | S                       | S                    | S                   | S         | S S   |        |       |
| Level o<br>betwe                           | of Corre<br>en CO a               | elation<br>and PO |         | L-LOW M-MEDIUM S-STROM |   |                         |                      |                     |           | NG    |        |       |
| <b>Tutorial Sched</b>                      | lule                              |                   |         | Grou                   | up Discuss  | ion, Quiz               | program              | n, Model p          | preparat  | ion   |        |       |
| Teaching and                               | Learnir                           | ng Meth           | nods    | Aud<br>Pres            | io Video le<br>entation a                                 | ecture, Ch<br>and Video | alk and I<br>present | Board clas<br>ation | ss, Assig | nmen  | it, PP | Т     |
| Assessment M                               | 1ethod                            | S                 |         | Clas                   | s Test, Uni   | it Test, As             | signmei              | nt, CIA-I, (        | CIA-II an | d ESE |        |       |
| De   | Designed By                       |                   |         |                        | Verified By   |                         |                      |                     |           | pprov | ved By | ,     |
| Mrs  | Mrs.K.Gayathri                    |                   |         |                        | HOD - Mr.G.Selvakumar Member Secretary -<br>Dr.S.Shahitha |                         |                      |                     |           |       |        | ary - |





|             | BCA Syllabus LC  | OCF - CBCS with ef  | fect fro   | m 2023-2  | 024 (   | Dnward              | s                      |                    |
|-------------|--|---|--|---|---|---------------------|------------------------|--------------------|
| Course Code | Course Title   | Course Type   | Sem  | Hours   | L   | т                   | Р                      | С                  |
| 23M_UCAE04  | CRYPTOGRAPHY   | DSE THEORY  |  | 5   | 3   | 2                   | -                      | 4                  |
| Objective   | Students Learn th<br>standard algorithn  | e fundamentals<br>ns used to provide  | of Cryp<br>confide   | tography<br>entiality, i  | and<br>ntegr  | to acquity and      | uire knov<br>authentio | wledge on<br>city. |
| Unit        |  | Course Conte  | nt   |   |   | Kno<br>L            | wledge<br>evels        | Sessions           |
| I           | Introduction: The Attacks - Security for network Security  | e OSI security A<br>Mechanisms - Sec<br>ty.   | Architect<br>curity Se   | ure – S<br>rvices - A   | ecuri<br>mod  | ty<br>el            | K1                     | 12                 |
| II          | <b>Classical Encryptic</b><br>Substitution Techr<br>cipher–Play fair<br>Transposition tech   | on Techniques: Sy<br>niques: Caesar Cip<br>cipher – Poly<br>niques–Stenograp                        | mmetrio<br>oher – N<br>y Alph<br>ohy.                              | : Cipher n<br>Aono alpl<br>abetic (   | nodel<br>nabet<br>Ciphei                                  | <br>ic<br>^         | K2                     | 12                 |
| ш           | Block Cipher and Strength of DES-R   | I <b>DES:</b> Block Cip<br><b>SA:</b> The RSA algor   | her Prir<br>ithm.  | nciples–D   | ES—Tŀ   | ie                  | K2                     | 12                 |
| IV          | Network Security<br>architecture–Auth<br>Socket Layer And T<br>Transaction.  | <b>Practices</b> : IP Secu<br>entication Heade<br>ransport Layer Se                                 | rity over<br>r. <b>Web</b><br>curity–S                             | view-IP S<br><b>Security</b> :<br>ecure Ele                                     | ecuri<br>Secui<br>ctron                                   | ty<br>re<br>ic      | К3                     | 12                 |
| V           | Intruders – Intrus<br>Malicious softwar<br>Counter measures<br>Firewalls: Firewal<br>Common Criteria<br>Evaluation.<br>*Current Trends: Finewal<br>in Blockchain * | ion detection – F<br>re: Viruses and F<br>– Distributed De<br>I Design Principle<br>for Information | Passwor<br>Related<br>nial of S<br>es – Tru<br>n Techn<br>cryption | d Manage<br>Threats -<br>ervice At<br>isted syst<br>nology S<br>– <b>Crypto</b> | emen<br>– Viru<br>tacks<br>tems<br>ecurit<br><b>grpał</b> | t-<br>us<br>—<br>ty | К4                     | 12                 |

|                        | *Self-Study*   |  |  |                                 |        |  |  |  |  |  |
|------------------------|--|--|--|---------------------------------|--------|--|--|--|--|--|
|                        | <b>CO1:</b> Recall the Comput  | er Networking Process.   |  | K1                              |        |  |  |  |  |  |
|                        | <b>CO2:</b> Interpret the consymmetric cryptographic   | lifferent cryptographic<br>ic algorithms.  | operations of  | К2                              |        |  |  |  |  |  |
| Course                 | CO3: Demonstrate Bloc  | k Cipher Principles.   |  | K2                              |        |  |  |  |  |  |
| Outcome                | <b>CO4:</b> Develop the vario different applications.  | emes to simulate   | К3   |                                 |        |  |  |  |  |  |
|                        | <b>CO5:</b> Assume the variou Principles.  | d Firewall Design  | K4   |                                 |        |  |  |  |  |  |
|                        | Learning Resources   |  |  |                                 |        |  |  |  |  |  |
| Text<br>Books          | 1. William Stallings, —C   | 1. William Stallings, —Cryptography and Network Security Principles and Practices. |  |                                 |        |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Behrouz A.Foruzan -</li> <li>AtulKahate - Cryptogi</li> <li>M.V.ArunKumar - Ne</li> </ol> | Cryptography and Netw<br>raphy and Network Sec<br>twork Security, 2011, Fi         | ork Security, Tata Mc<br>urity, Second Edition,<br>rst Edition, USP. | Graw-Hill,<br>2003 <i>,</i> TMH | 2007.  |  |  |  |  |  |
| Website<br>Link        | <ol> <li><u>https://www.tutorial</u></li> <li><u>https://gpgtools.tenc</u></li> </ol>              | spoint.com/cryptograp<br>lerapp.com/kb/how-to,                                     | <u>hy/</u><br>/introduction-to-crypt                                 | ography                         |        |  |  |  |  |  |
|                        | 1. https://www.linkedin.com/advice/0/what-current-emerging-trends-innovations-1e                   |  |  |                                 |        |  |  |  |  |  |
| Self-Study<br>Material | 2. https://www.geeksforgeeks.org/cryptography-in-blockchain/                                       |  |  |                                 |        |  |  |  |  |  |
|                        | L-Lecture  | T-Tutorial   | P-Practical  | C- C                            | Credit |  |  |  |  |  |

|                        | ВС                   | A Syllab          | us LOCF | - CBC      | CS w          | ith effec               | t from 20             | )23-202             | 24 0         | nward        | ls    |          |        |       |
|------------------------|----------------------|-------------------|---------|------------|---------------|-------------------------|-----------------------|---------------------|--------------|--------------|-------|----------|--------|-------|
| Course Code            |                      | Cours             | e Title |            |               | Course T                | Гуре                  | Sem                 | н            | ours         | L     | т        | Р      | С     |
| 23M_UCAE04             | ı                    | CRYPTO            | GRAPHY  | ,          |               | DSE THE                 | ORY                   |                     |              | 5            | 3     | 2        | -      | 4     |
|                        |                      |                   |         | С          | 0-Р           | О Марр                  | oing                  |                     |              |              |       |          |        |       |
| CO Number PO1 PO2 PO3  |                      |                   |         |            | )4            | PO5                     | PSO1                  | PSO2 PSO3           |              | 3            | PSO4  | PS       | 05     |       |
| CO1                    | S                    | S                 | М       | 5          | 5             | S                       | S                     | S                   |              | Μ            |       | Μ        | 5      | 5     |
| CO2                    | S                    | S                 | S       | 9          | 5             | S                       | S                     | M                   |              | S            |       | М        | 9      | 5     |
| CO3                    | S                    | М                 | S       | 9          | 5             | S                       | М                     | S                   |              | Μ            |       | М        | Ν      | Л     |
| CO4                    | S                    | S                 | М       | 5          | S S M S S N   |                         |                       |                     |              |              | 1 M   |          | Л      |       |
| CO5                    | S                    | S                 | М       | 5          | 5             | S                       | S                     | М                   | VI S         |              |       | S        | 9      | 5     |
| Level<br>betwe         | of Corre<br>een CO a | elation<br>and PO |         |            |               | L-LOW                   |                       |                     | M-           | MEDI         | JM    |          | S-ST   | RONG  |
| <b>Tutorial Schedu</b> | ıle                  |                   |         | Gro        | oup [         | Discussio               | n, Quiz p             | rogram              | n, Mo        | odel p       | repa  | ration   |        |       |
| Teaching and Le        | earning              | Method            | S       | Auc<br>Pre | dio V<br>sent | /ideo lect<br>ation and | ure, Cha<br>d Video p | lk and l<br>present | Boar<br>atio | d clas:<br>n | s, As | signme   | ent, P | PT    |
| Assessment Me          | ethods               |                   |         | Clas       | ss Te         | est, Unit <sup>-</sup>  | Fest, Ass             | ignmei              | nt, C        | IA-I, C      | IA-II | and ES   | E      |       |
| D                      | esigned              | Ву                |         |            |               | Verified                | Ву                    |                     |              | Ap           | prov  | ved By   |        |       |
| М                      | Mr.T.Prabhu          |                   |         |            | D - I         | Mr.G.Sel                | vakumar               | Me                  | embo         | er Seci      | retar | ry - Dr. | S.Sha  | hitha |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |  |   |   |  |  |          |                 |          |  |  |  |  |
|---|--|---|---|--|--|----------|-----------------|----------|--|--|--|--|
| Course Code   | Course Title   | Course Type   | Sem   | Hours  | L  | т        | Р               | С        |  |  |  |  |
| 23M_UCAE05  | DATABASE<br>MANAGEMENT SYSTEM  | DSE THEORY  |   | 5  | 3  | 2        | -               | 4        |  |  |  |  |
| Objective   | Students learn the design data and normal forms ar   | n the<br>   | the relational mo   |  |  |          |                 |          |  |  |  |  |
| Unit  | C  | ourse Content   |   |  |  | Knc<br>L | wledge<br>evels | Sessions |  |  |  |  |
| I   | Database Concepts: Data<br>introducing the database -<br>– Database systems. Dat<br>Blocks Business rules - Evo<br>Abstraction.  | base Systems D<br>File system -Prol<br>a models: Impo<br>lution of Data mo  | ata VS<br>plems w<br>rtance-l<br>pdels - D                  | Informat<br>with file sy<br>Basic Bu<br>Degree Of        | tion -<br>/stem<br>ilding<br>Data          |          | К1              | 10       |  |  |  |  |
| II  | <b>Design Concepts</b> : Relation<br>data- keys-Integrity rules re<br>and the system catalog-re<br>indexes codd's rules. Entity  | nal database mo<br>elational set oper<br>lationships-data<br>y relationship mo                                      | del - Lo<br>ators - c<br>redunda<br>del - ER                | ogical vie<br>lata dicti<br>ancy revi<br>diagram         | ew of<br>onary<br>sited-                   |          | K2              | 11       |  |  |  |  |
| 111   | Normalization of Datab<br>Normalization -The Need<br>Process - Higher level No<br>Definition Commands - D<br>Queries - Additional Dat<br>SELECT Query Keywords   | pase Tables: Da<br>for Normalizatio<br>rmal Form. Intro<br>Data Manipulatio<br>a Definition Cor<br>Joining Database | atabase<br>n -The<br>duction<br>n Comr<br>nmands<br>Tables. | Tables<br>Normaliz<br>to SQL:<br>nands–SI<br>5 - Addi    | and<br>ation<br>Data<br>ELECT<br>tional    |          | К2              | 12       |  |  |  |  |
| IV  | Advanced SQL: Relational<br>INTERSECT-MINUS.SQL Joi<br>Join USING Clause – JOIN C<br>Correlated Queries: WHER<br>SQL Functions: Date and Ti<br>Function–Conversion Func  | SET Operators:<br>n Operators: Cros<br>N Clause – Outer<br>E – IN –HAVING –<br>ime Function–Nu<br>stion.            | UNION<br>ss Join –<br>Join. Su<br>ANY an<br>meric Fu        | –UNION<br>Natural<br>Ib Querie<br>d ALL – F<br>unction–S | ALL–<br>Join –<br>es and<br>ROM.<br>String |          | К3              | 12       |  |  |  |  |
| V   | Function-Conversion Function.PL/SQL: A Programming Language: History - Fundamentals -<br>Block Structure - Comments - Data Types - Other Data Types -<br>Variable Declaration - Assignment operation -Arithmetic<br>operators. Control Structures and Embedded SQL: Nested Blocks<br>- SQL in PL/SQL - Data Manipulation-Transaction Control<br>statements. PL/SQL Cursors and Exceptions: Cursors - Implicit<br>Cursors, Explicit Cursors and Attributes-Cursor For loops -<br>SELECTFOR UPDATE- WHERE CURRENT OF clause - Cursor with<br>Parameters - Cursor Variables - Exceptions - Types of<br>Exceptions. Current Trends : * Recent Trend in SDLC *. |   |   |  |  |          |                 |          |  |  |  |  |

|                        | <b>CO1:</b> Remember th and compare variou   | ie various bas<br>us data model                                      | ic concepts c<br>s.                             | f Database System                                       | K1                             |                        |  |  |  |  |  |  |
|------------------------|--|--|---|---|--------------------------------|------------------------|--|--|--|--|--|--|
|                        | <b>CO2</b> : Understand the of Relational Data N                                     | ne integrity co<br>Model & Entity                                    | nstraints and<br>y Relationship                 | the Basic concepts<br>Model.                            | К2                             |                        |  |  |  |  |  |  |
| Course<br>Outcome      | CO3: Analyse norm construct queries u  | alization tech sing SQL.   | niques withir                                   | the database and  | К3                             |                        |  |  |  |  |  |  |
|                        | <b>CO4</b> : Apply the dif and enhance the kr  | ferent function for the function of h                                | ons and varic<br>andling Multi                  | us join operations ple tables.                          | К3                             |                        |  |  |  |  |  |  |
|                        | <b>CO5</b> : Evaluate Dat<br>PL/SQL programs.  | К4   |   |   |                                |                        |  |  |  |  |  |  |
|                        |  | Learn  | ing Resource                                    | 5   |                                |                        |  |  |  |  |  |  |
| Text<br>Books          | Coronel, Morris, R<br>Ninth Edition Nilesh<br>India, 2016.                           | ob, "Databası<br>Shah,"Datab   | e Systems, D<br>base Systems I                  | esign, Implementat<br>Jsing Oracle", 2 <sup>nd</sup> ed | ion and Mana<br>ition, Pearson | agement",<br>Education |  |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Abraham Silbers<br/>McGraw Hill Interna</li> <li>ShioKumar Singh</li> </ol> | schatz, Henry<br>ational Publica<br>-Database Sy                     | F.Korth and<br>ation, VI Editi<br>stems, Pearso | S.Sudarshan "Data<br>on.<br>on publications, II Ed      | base System (<br>ition.        | Concepts"              |  |  |  |  |  |  |
| Website<br>Link        | Web resources fror   | Web resources from NDL Library, E-content from open-source libraries |   |   |                                |                        |  |  |  |  |  |  |
| Self-Study<br>Material | https://www.youtube.com/watch?v=J4PQ5fdn3Ns  |  |   |   |                                |                        |  |  |  |  |  |  |
|                        |  |  |   |   |                                |                        |  |  |  |  |  |  |

|  | BCA - Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |                          |                      |                   |                     |                      |                      |             |           |          |      |   |
|--|---|--------------------------|----------------------|-------------------|---------------------|----------------------|----------------------|-------------|-----------|----------|------|---|
| Course Code                                    | Co  | ourse T                  | Title                |                   | Course              | еТуре                | Sem.                 | Hours       | L         | т        | Р    | С |
| 23M_UCAE05                                     | D<br>MA   | ATABA<br>NAGEN<br>SYSTEI | ASE<br>MENT<br>M     | 1                 | DSE TH              | EORY                 |                      | 5           | 3         | 2        | -    | 4 |
|  |   |                          |                      | СО                | -PO Ma              | apping               |                      |             |           |          |      |   |
| CO Number                                      | PO1   | PO2                      | PO3                  | PO4               | PO5                 | PSO1                 | PSO2                 | PSO3        | PSO4      | PSO5     |      |   |
| CO1  | М   | S                        | S                    | М                 | М                   | S                    | М                    | S           | S         | S        |      |   |
| CO2  | S   | S                        | S                    | S                 | М                   | S                    | S                    | S           | М         | S        |      |   |
| CO3  | S   | Μ                        | S                    | S                 | S                   | S                    | S                    | S           | S         | S        |      |   |
| CO4  | S   | S                        | S                    | S                 | S                   | S                    | S                    | S           | S         | S        |      |   |
| CO5  | S   | S                        | S                    | М                 | S                   | S                    | М                    | S           | S         | S        |      |   |
| Level of<br>Correlation<br>between CO an<br>PO | d   |                          | L-LOW                |                   |                     | 1                    | M-MEDIU              | М           | S         | -STRON   | G    |   |
| Tutorial Sc                                    | hedule  | C                        | Group D              | iscussi           | on, Qu              | iz progra            | am, Mode             | l prepara   | ition     |          |      |   |
| Teaching and<br>Metho                          | Learning<br>ds  | g /<br>F                 | Audio Vi<br>Presenta | deo le<br>ation a | cture, (<br>nd Vide | Chalk an<br>eo prese | d Board c<br>ntation | lass, Assi  | gnment,   | , PPT    |      |   |
| Assessment                                     | Methods   | ; (                      | Class Tes            | st, Uni           | t Test,             | Assignm              | nent, CIA-           | I, CIA-II a | nd ESE    |          |      |   |
| Designe  | d By  |                          |                      | Verif             | ied By              |                      |                      | Ар          | proved    | Ву       |      |   |
| Mr.M.F   | lavi  |                          | HOD                  | - Mr.G            | .Selvak             | kumar                | Mem                  | ber Secre   | etary – I | Dr.S.Sha | hith | а |





|             | BCA Syllabus LOCF - CB  | CS with effect fro   | m 2023  | -2024 Or  | ward                    | s               |          |          |
|-------------|---|--|---|---|-------------------------|-----------------|----------|----------|
| Course Code | Course Title  | Course Type  | Sem.  | Hours   | L                       | т               | Ρ        | С        |
| 23M_UCAE06  | BIG DATA ANALYTICS  | DSE THEORY   |   | 5   | 3                       | 2               | -        | 4        |
| Objective   | Students Learn the Big Da<br>cluster and decision tree<br>Databases.  | ap Re<br>Idatio  | duce<br>n Sy  | Jobs<br>stem  | , basics of<br>, No SQL |                 |          |          |
| Unit        | Cou   | rse Content  |   |   | Kno                     | owlee<br>.evel: | dge<br>s | Sessions |
| I           | <b>Evolution of Big data</b> - Bes<br>Big data characteristics - V<br>Value of Big Data - Big Data<br>Data Applications -Percept<br>Understanding Big Data S<br>High – Performance Archir<br>YARN – Map Reduce Progr          | st Practices for Big<br>Validating - The P<br>a Use Cases - Char<br>tion and Quantific<br>Storage - A Gene<br>tecture - HDFS - N<br>ramming Model. | data Ai<br>romotic<br>acterist<br>ation of<br>ral Ove<br>Aap Rec                    | nalytics -<br>on of the<br>ics of Big<br>Value –<br>rview of<br>luce and              |                         | K1              |          | 9        |
| II          | Advanced Analytical The<br>Clustering - K-means - Use<br>Determining the Number of<br>to Choose and Cautions<br>Overview of a Decision<br>Decision Tree Algorithms<br>Decision Trees in R - N<br>NaiveBayes Classifier.       | ory and Method<br>Cases - Overview<br>of Clusters - Diagn<br>Classification: D<br>Tree - The Gene<br>- Evaluating a<br>aive Bayes - Ba             | ls: Over<br>of the M<br>ostics -<br>ecision<br>eral Alge<br>Decision<br>yes The     | rview of<br>Method -<br>Reasons<br>Trees -<br>orithm -<br>n Tree -<br>eorem –         |                         | K2              |          | 9        |
| 111         | Advanced Analytical The<br>Rules - Overview - Ap<br>Candidate Rules-Application<br>Association & finding Simil<br>Recommendation System<br>Content Based Recomm<br>Recommendation - Hybrid                                    | eory and Metho<br>riori Algorithm -<br>ons of Association<br>arity.<br>Collaborative Rec<br>nendation – Kno<br>Recommendation                      | ds: Ass<br>Evalua<br>Rules<br>commer<br>owledge<br>n Approa                         | sociation<br>ation of<br>- Finding<br>ndation -<br>e Based<br>aches.                  | кз<br>I                 |                 |          | 10       |
| IV          | Introduction to Streams C<br>Architecture - Stream Com<br>- Filtering Streams - Counti<br>Estimating moments – Co<br>Decaying Window-Real<br>applications - Case Studies<br>Stock Market Predictions<br>Data: Graph Analytics | oncepts - Stream<br>puting - Sampling<br>ng Distinct Elemen<br>ounting oneness<br>Time Analytics<br>s – Real Time Sen<br>. Using Graph A           | Data M<br>Data in a<br>nts in a S<br>in a W<br>Platfor<br>timent<br><b>nalytics</b> | odel and<br>a Stream<br>Stream –<br>indow –<br>m(RTAP)<br>Analysis,<br><b>for Big</b> |                         | К4              |          | 10       |

| V  | <b>NoSQL Databases :</b> Schema - less Models – Increasing<br>Flexibility for Data Manipulation - Key Value Stores -<br>Document Stores -Tabular Stores - Object Data Stores –<br>Graph Databases Hive – Sharding - Hbase - Analyzing big data<br>with twitter - Big data for E-Commerce Big data for blogs -<br>Review of Basic Data Analytic Methods using R.<br><b>Current Trends-* Edge Computing*</b>  | К5  | 10  |
|--|---|---|---|
|  | ** Self Study.  |   |   |
|  | <b>CO1:</b> Recall the big data tools and its analysis techniques   | K1  |   |
| Course   | <b>CO2</b> : Analyze data by utilizing clustering and classification algorithms.  | К2  |   |
| Outcome  | <b>CO3</b> : Apply different mining algorithms and recommendation systems for large volumes of data.  | КЗ  |   |
|  | <b>CO4</b> : Perform analytics on data streams.   | К4  |   |
|  | <b>CO5</b> : Evaluate no SQL databases and management.  | К5  |   |
|  | Learning Resources  |   |   |
| Text   | Anand Rajaraman and Jeffrey David Ullman, - Mining of Mass  | sive Datasets, (  | Cambridge   |
| Books  | University Press, 2012.   |   |   |
| Books<br>Reference<br>Books  | <ol> <li>Driversity Press, 2012.</li> <li>David Loshin - Big Data Analytics: From Strategic Planning<br/>with Tools, Techniques, NoSQL, and Graph ,Morg<br/>Publishers,2013.</li> <li>EMC Education Services, Data Science and Big Data Analytics<br/>Visualizing and Presenting Data, Wiley publishers, 2015.</li> </ol>   | to Enterprise I<br>gan Kaufman<br>s: Discovering,                                     | ntegration<br>n/Elsevier<br>Analyzing,              |
| Books<br>Reference<br>Books<br>Website<br>Link                           | <ol> <li>Driversity Press, 2012.</li> <li>David Loshin - Big Data Analytics: From Strategic Planning<br/>with Tools, Techniques, NoSQL, and Graph ,Morg<br/>Publishers,2013.</li> <li>EMC Education Services, Data Science and Big Data Analytics<br/>Visualizing and Presenting Data, Wiley publishers, 2015.</li> <li>https://www.simplilearn.com</li> <li>https://www.sas.com/en_us/insights/analytics/big-data-ar</li> </ol>  | to Enterprise I<br>gan Kaufman<br>s: Discovering,<br>nalytics.html                    | ntegration<br>n/Elsevier<br>Analyzing,              |
| Books<br>Reference<br>Books<br>Website<br>Link<br>Self-Study<br>Material | <ol> <li>Driversity Press, 2012.</li> <li>David Loshin - Big Data Analytics: From Strategic Planning<br/>with Tools, Techniques, NoSQL, and Graph ,Morg<br/>Publishers,2013.</li> <li>EMC Education Services, Data Science and Big Data Analytics<br/>Visualizing and Presenting Data, Wiley publishers, 2015.</li> <li>https://www.simplilearn.com</li> <li>https://www.sas.com/en_us/insights/analytics/big-data-ar</li> <li>https://www.cloudflare.com/learning/serverless/glossary/v</li> <li>https://en.wikipedia.org/wiki/Edge_computing</li> </ol> | to Enterprise I<br>gan Kaufman<br>s: Discovering,<br>nalytics.html<br>what-is-edge-co | ntegration<br>n/Elsevier<br>Analyzing,<br>omputing/ |

|  | B            | CA Sylla | abus L(   | DCF - C   | BCS wi             | th effe            | ct from           | 2023-202               | 4 Onwar    | ds         |       |       |    |
|--|--------------|----------|-----------|---|--------------------|--------------------|-------------------|------------------------|------------|------------|-------|-------|----|
| Course Code                            |              | Cours    | se Title  |   | C                  | ourse T            | уре               | Sem                    | Hours      | L          | Т     | Ρ     | С  |
| 23M_UCAE06                             | BIG          | DATA     | ANALY     | TICS  | D                  | SE THE             | ORY               |                        | 5          | 3          | 2     | -     | 4  |
|  |              |          |           |   | CO-P               | О Мар              | ping              |                        |            |            |       |       |    |
| CO Numbe                               | r            | PO1      | PO2       | PO3   | PO4                | PO5                | PSO1              | PSO2                   | PSO3       | PSO4       | PS    | 05    |    |
| CO1                                    |              | S        | М         | М   | М                  | М                  | L                 | S                      | М          | М          |       | S     |    |
| CO2                                    |              | S        | S         | М   | М                  | М                  | S                 | М                      | S          | М          |       | S     |    |
| CO3                                    |              | М        | Μ         | М   | S                  | S                  | L                 | S                      | М          | М          | 1     | Ν     |    |
| CO4                                    |              | М        | Μ         | М   | S                  | S                  | S                 | S                      | S          | L          |       | S     |    |
| CO5                                    |              | М        | Μ         | S   | М                  | S                  | S                 | М                      | S          | S          | S     |       |    |
| Level of Correla<br>between CO a<br>PO | ation<br>and |          |           | L-LOW   | ,                  |                    |                   | M-MEDIU                | Μ          | S-:        | STRC  | NG    |    |
| Tutorial Schedu                        | ule          |          | Gr        | Group Discussion, Quiz program, Model preparation |                    |                    |                   |                        |            |            |       |       |    |
| Teaching and L<br>Methods              | earnir       | ng       | Au<br>Pre | dio Vid<br>esentat                                | eo lect<br>ion and | ure, Ch<br>d Video | alk and<br>preser | l Board cla<br>ntation | ass, Assig | nment,     | PPT   |       |    |
| Assessment Me                          | ethod        | s        | Cla       | iss Test  | :, Unit T          | Fest, A            | ssignme           | ent, CIA-I,            | CIA-II an  | d ESE      |       |       |    |
| Design                                 | ed By        | ,        |           | ٧   | /erified           | Ву                 |                   |                        | Appr       | oved By    |       |       |    |
| Mr.A                                   | .Raja        |          |           | HoD - N   | ۸r.G.Se            | lvakun             | nar               | Membe                  | er Secret  | ary - Dr.: | S.Sha | ahitł | าล |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |  |   |   |   |  |  |    |    |  |  |  |  |
|---|--|---|---|---|--|--|----|----|--|--|--|--|
| Course Code   | Course Title   | Course Type   | Sem   | Hours   | L  | т  | Р  | С  |  |  |  |  |
| 23M_UCAE07  | INTERNET OF THINGS<br>AND ITS APPLICATIONS   | DSE<br>THEORY   |   | 5   | 3  | 2  | -  | 4  |  |  |  |  |
| Objective   | Students learn the basic analyze their performance   | and E<br>rity is  | ata mana<br>sues in IoT   | gement, to  |  |  |    |    |  |  |  |  |
| Unit  | C  | K   | nowledge<br>Levels  | Sessions  |  |  |    |    |  |  |  |  |
| I   | IoT & WebTechnology: T<br>Convergence – Towards<br>Vision - IoT Strategic Res<br>Applications – Future Ir<br>Networks and Communic<br>– Security - Privacy & Tr<br>Related Standardization -       | he Internet of<br>the IoT Unive<br>earch and Inn<br>iternet Techno<br>ation – Proces<br>ust - Device L<br>Recommendat     | Things<br>rse - Ii<br>ovatior<br>ologies<br>ses – D<br>evel Er<br>cions or                                      | Today<br>nternet<br>Directi<br>- Infras<br>Data Mar<br>nergy Iss<br>n Researd | - Time f<br>of Thin<br>ons – lo<br>structur<br>nageme<br>sues - lo<br>ch Topio | or<br>gs<br>oT<br>re,<br>nt<br>oT<br>cs. | K1 | 9  |  |  |  |  |
| II  | M2M to IoT – A Basic<br>Definitions - M2M Value (<br>industrial structure for Io<br>chain and global inform<br>Architectural Overview –<br>principles and needed cap<br>standards considerations.  | Perspective<br>Chains - IoT Va<br>Γ - The internat<br>ation monopo<br>Building an ar<br>pabilities - An I                 | <ul> <li>Intro</li> <li>lue Cha</li> <li>chonal d</li> <li>lies. N</li> <li>chitect</li> <li>oT arch</li> </ul> | oductior<br>lins - An<br>riven glo<br>12M to<br>ure - Ma<br>hitecture         | i - Son<br>emergii<br>obal valı<br>loT – A<br>in desig<br>Outline              | ne<br>ng<br>ue<br>An<br>gn<br>e -        | K2 | 9  |  |  |  |  |
|   | IoT Architecture - State o<br>- Architecture. Reference<br>and architecture - IoT<br>Architecture: Introductio<br>– Deployment and Of<br>architectural views.                                      | f the Art: Intro<br>Model: Introdu<br>Freference<br>n – Functional<br>perational Vie                                      | duction<br>uction -<br>Model.<br>View –<br>ew –   | n - State<br>Referen<br><b>IoT F</b><br>Informa<br>Other                      | of the a<br>ace Mod<br><b>Referen</b><br>tion Vie<br>Releva                    | ert<br>el<br>ce<br>w<br>nt               | К3 | 10 |  |  |  |  |
| IV  | <b>IoT Applications for V</b><br>applications for industry:<br>IoT - Smart Objects - Sma<br>Business to Master IoT<br>Serialization - IoT for Re<br>Industry - Opinions on Ic<br>Home Management.  | <b>Value Creation</b><br>Future Factor<br>art Application<br>- Value Creat<br>tailing Industr<br>T Application            | ns: Int<br>y Conce<br>is - Fou<br>ion fro<br>y - IoT<br>and Va  | croductio<br>epts - Br<br>ir Aspectom Big<br>For Oil<br>lue for               | on - lo<br>own fie<br>ts in yo<br>Data ar<br>and G<br>Industry                 | oT<br>ld<br>ur<br>nd<br>as<br>y -        | К4 | 10 |  |  |  |  |
| v   | Internet of Things Pr<br>Introduction – Overview<br>Issues – Contribution from<br>Trust in IoT – Data - Pl<br>Towards a Secure Platform<br>for the IoT in Smart Cities<br>*Current Trends: Smart c | ivacy, Securit<br>of Governance<br>m FP7 Projects<br>atforms for Sr<br>n - Smartie App<br>– Security.<br>ities, Al Integr | ty and<br>e – Priv<br>– Secu<br>mart Ci<br>proach.<br>ation.*   | <b>I Gove</b><br>vacy and<br>urity - Pr<br>ities - F<br>Data Ag               | rnance<br>I Securi<br>ivacy ar<br>irst Ste<br>gregatio                         | :<br>ty<br>nd<br>ps<br>on                | К4 | 10 |  |  |  |  |

|                        | ** Self Study  |  |  |   |                |  |  |  |  |  |  |
|------------------------|--|--|--|---|----------------|--|--|--|--|--|--|
|                        | <b>CO1:</b> Recall the use of De Management in IoT.  | evices, Gateways and D   | ata  | К1  |                |  |  |  |  |  |  |
| Course                 | <b>CO2:</b> Identify IoT applica analyze their performant  | tions in different domai<br>ce.  | ns and be able to  | К2  |                |  |  |  |  |  |  |
| Outcome                | CO3: Implement basic Io  | T applications on embe   | dded Platform.   | КЗ  |                |  |  |  |  |  |  |
|                        | <b>CO4</b> : Gain knowledge o  | n Industry internet of T   | hings.   | K4  |                |  |  |  |  |  |  |
|                        | <b>CO5:</b> Evaluate the privacy and Security issues in IoT. K4  |  |  |   |                |  |  |  |  |  |  |
|                        |  | Learning Resources   |  |   |                |  |  |  |  |  |  |
| Text                   | 1.Vijay Madisetti and Ar   | shdeep Bahga,—Intern   | et of Things: (A Hands   | – on Appro  | oach) ∥,       |  |  |  |  |  |  |
| Books                  | Universities Press (INDIA  | A) Private Limited 2014,   | 1 <sup>st</sup> Edition.   |   |                |  |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Michael Miller – The I<br/>And Smart Cities Are Ch</li> <li>Francisda Costa,—Ref<br/>Connecting Everything I</li> <li>Waltenegus Dargie, C</li> <li>Networks: Theory and P</li> <li>CunoPfister, — Getti</li> </ol> | Internet of Things : How<br>anging the World   , kind<br>thinking the Internet of<br> , A press Publications 2<br>hristian Poellabauer, "F<br>gractice   <br>Ing Started with the Inte | v Smart TVs, Smart Car<br>dle version.<br>Things: A Scalable App<br>013, 1 <sup>st</sup> Edition.<br>Fundamentals of Wirel<br>ernet of Things  , O "Re | rs, Smart H<br>proach to<br>ess Sensor<br>eilly Media | omes,<br>2011. |  |  |  |  |  |  |
| Website<br>Link        | https://www.simplilea<br>https://www.javatpoin<br>https://www.w3schoo  | rn.com<br>t.com<br>ls.com  |  |   |                |  |  |  |  |  |  |
| Self-Study<br>Material | https://www.antino.com/blog/top-9-lot-trends   |  |  |   |                |  |  |  |  |  |  |
|                        | L-Lecture  | L-Lecture T-Tutorial P-Practical C- Credit   |  |   |                |  |  |  |  |  |  |

|                        | В                    | CA Syllab           | us LOCF- | -CBC       | S wi           | th effect              | from 202               | 23-2024              | Onwa           | ards   |        |         |          |     |
|------------------------|----------------------|---------------------|----------|------------|----------------|------------------------|------------------------|----------------------|----------------|--------|--------|---------|----------|-----|
| Course Code            |                      | Cours               | e Title  |            |                | Course 1               | Гуре                   | Sem                  | Ηοι            | ırs    | L      | т       | Р        | С   |
| 23M_UCAE07             | , IN<br>AN           | ITERNET<br>D ITS AP | OF THIN  | GS<br>DNS  |                | DSE THE                | ORY                    |                      | 5              |        | 3      | 2       | -        | 4   |
|                        |                      |                     |          | (          | CO-F           | PO Mapp                | ing                    |                      |                |        |        |         |          |     |
| CO Number              | PO1                  | PO2                 | PO3      | PC         | )4             | PO5                    | PSO1                   | PSO2                 | 2              | PSO    | )3 F   | PSO4    | PSO      | 5   |
| CO1                    | S                    | М                   | М        | N          | Λ              | М                      | Μ                      | L                    |                | L      |        | Μ       | L        |     |
| CO2                    | S                    | S                   | М        | N          | Λ              | М                      | М                      | Μ                    |                | L      |        | L       | S        |     |
| CO3                    | М                    | М                   | S        | 9          | 5              | S                      | S                      | L                    |                | Μ      |        | L       | L        |     |
| CO4                    | М                    | М                   | М        | 5          | 5              | S                      | М                      | L                    |                | L      |        | Μ       | L        |     |
| CO5                    | М                    | М                   | М        | 5          | 5              | S                      | М                      | L                    |                | L      |        | Μ       | L        |     |
| Level<br>betwe         | of Corre<br>een CO a | elation<br>and PO   |          |            | L-LOW M-MEDIUM |                        |                        |                      |                | S-STR( | ONG    |         |          |     |
| <b>Tutorial Schedu</b> | le                   |                     |          | Gro        | oup l          | Discussio              | n, Quiz pi             | rogram,              | Mode           | el pr  | epar   | ation   |          |     |
| Teaching and Le        | earning              | Method              | 5        | Auc<br>Pre | dio V<br>sent  | /ideo lect             | ure, Chal<br>d Video p | k and Bo<br>resentat | oard o<br>tion | class  | , Ass  | ignme   | ent, PPT | Г   |
| Assessment Me          | thods                |                     |          | Clas       | ss Te          | est, Unit <sup>-</sup> | Fest, Ass              | ignment              | , CIA-         | -I, Cl | A-II a | nd ES   | E        |     |
| D                      | esigned              | Ву                  |          |            |                | Verified               | Ву                     |                      |                | Ap     | prov   | ed By   |          |     |
| Mrs.N.Padmapriya       |                      |                     |          | но         | )D -           | Mr.G.Sel               | vakumar                | Men                  | nber S         | Secr   | etary  | / - Dr. | S.Shahi  | tha |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |  |   |   |   |   |                |           |          |  |  |  |  |  |
|---|--|---|---|---|---|----------------|-----------|----------|--|--|--|--|--|
| Course Code   | Course Title   | Course Type   | Sem   | Hours   | L                                       | т              | Р         | С        |  |  |  |  |  |
| 23M_UCAE08  | SOFTWARE PROJECT<br>MANAGEMENT   | DSE THEORY  |   | 5   | 3                                       | 2              | -         | 4        |  |  |  |  |  |
| Objective   | Students Learn the software project management metrics and strategy in effectively managing projects and apply the software testing techniques.  |   |   |   |   |                |           |          |  |  |  |  |  |
| Unit  | Co   | urse Content  |   |   |   | Knowle<br>Leve | dge<br>Is | Sessions |  |  |  |  |  |
| I   | IntroductionofSoIntroductiontoCompetitionTechniquesManagemenCycleSoftwareDevelSEICMMInternational Or   | oftware Develor<br>etencies - Procest<br>t Skills - Product<br>opment Procest<br>rganization for S  | opmen<br>luct D<br>Develos<br>and<br>tandar     | t Proce<br>evelopm<br>opment  <br>models- <sup>-</sup><br>dization. | ess:<br>ent<br>Life<br>The              | K1             |           | 8        |  |  |  |  |  |
| II  | <b>Project plan:</b> Managin<br>Selection Models – Project<br>Processes- Selecting a Pro<br>Software Project -Project<br>Breakdown Structure -<br>Project Milestones-Wor<br>Software.                  | ng Domain Pro<br>ct Portfolio Man<br>oject Team - Goa<br>ect Planning -C<br>Approaches to<br>k Packages-Bui   | ageme<br>al and S<br>reating<br>Buildi<br>Iding | - Proj<br>nt-Finan<br>Scope of<br>the W<br>ing a W<br>a WBS         | ect<br>cial<br>the<br>ork<br>BS-<br>for | K2             |           | 10       |  |  |  |  |  |
| 111   | Tasks and Activities - Sof<br>The SEICMM-Problems a<br>Effort Measures COCOM<br>COCOMOII SLIM: A Ma<br>Planning-Project Roles an   | tware Size and I<br>nd Risks-Cost Es<br>IO: A Regression<br>athematical Mo<br>nd Skills Needed  | Reuse I<br>timatic<br>Mode<br>odel-Or           | Estimatin<br>on.<br>I.<br>ganizatio                                 | ıg –<br>ınal                            | К3             |           | 10       |  |  |  |  |  |
| IV  | Project Management R<br>Form and Structure - Sof<br>- Brainstorming -Schedul<br>– Levelling Resource Ass<br>Real Calendar- Critical Ch   | esource Activiti<br>tware Developm<br>ing Fundamenta<br>signments-Map<br>nain Scheduling.   | es: Or<br>nent De<br>Ils – PE<br>the Sc         | ganizatio<br>ependeno<br>RT and C<br>hedule t                       | nal<br>cies<br>PM<br>o a                | К4             |           | 10       |  |  |  |  |  |
| V   | Quality: Requirements<br>Challenges Quality Fu<br>Software Quality Assurar<br>Software Configurati<br>Requirements-Planning<br>Legal Issues in Software-<br>Current Trends- *Block C<br>** Self Study. | <ul> <li>The SEI CM</li> <li>nction Deployr</li> <li>nce – Plan.</li> <li>on Managen</li> <li>and Organiz</li> <li>Case Study.</li> <li>chain in Project I</li> </ul> | M - (<br>nent-B<br>nent:<br>ing-Too<br>Manag    | Guideline<br>uilding<br>Princip<br>ols-Benef<br><b>ement*</b>       | s -<br>the<br>oles<br>îts-              | К5             |           | 10       |  |  |  |  |  |

|                        | CO1: Recall t<br>management       | the basic Princi   | epts of Project                    | K1                |                             |         |  |  |  |  |  |
|------------------------|-----------------------------------|--|------------------------------------|-------------------|-----------------------------|---------|--|--|--|--|--|
|                        | <b>CO2</b> : Explain and models.  | the concept of S   | Software Develo                    | pment Process     | К2                          |         |  |  |  |  |  |
| Course<br>Outcome      | CO3: Dev<br>Methodologie          | elop the Sof<br>es.  | tware project                      | management        | КЗ                          |         |  |  |  |  |  |
|                        | CO4: Examin                       | e the Comprehe   | ensive Project p                   | lans.             | К4                          |         |  |  |  |  |  |
|                        | <b>CO5</b> : Determ Software dev  | nine the mitigated of t | ated with the                      | K5                |                             |         |  |  |  |  |  |
|                        |                                   | Lear   | ning Resources                     |                   |                             |         |  |  |  |  |  |
| Text<br>Book           | RobertT.Futrell,<br>Management, P | DonaldF.Shafer<br>earson Educatio  | r, Lindal.Safer,—<br>on Asia 2002. | - Quality Softwa  | re Project                  |         |  |  |  |  |  |
| Defense                | 1. PankajJalote,                  | — Software Pro   | ject Manageme                      | nt in Practice, A | ddison Wesley               | / 2002. |  |  |  |  |  |
| Books                  | 2. Hughes,—Sof                    | tware Project N  | 1anagement, Ta                     | taMc Graw Hill 2  | 2004,3 <sup>rd</sup> Editic | on.     |  |  |  |  |  |
| Website<br>Link        | www.smartwor                      | ld.com/notes/s   | oftware-project                    | -management       |                             |         |  |  |  |  |  |
| Self-Study<br>Material | https://blockcha                  | tps://blockchain.oodles.io/blog/blockchain-in-project-management/  |                                    |                   |                             |         |  |  |  |  |  |
|                        | L-Lecture                         | T-Tutorial   | P-Practical                        |                   | C-Credit                    |         |  |  |  |  |  |

|   | BCA Sy       | llabus I               | LOCF - (             | CBCS \             | with effeo             | t fro           | m 20             | 23-202        | 24 C           | nwa    | rds      |          |      |
|---|--------------|------------------------|----------------------|--------------------|------------------------|-----------------|------------------|---------------|----------------|--------|----------|----------|------|
| Course Code                                     | Со           | urse Ti                | tle                  | C                  | ourse Ty               | pe              | Sem              | Hou           | rs             | L      | т        | Р        | С    |
| 23M_UCAE08                                      | SOFTW<br>MAN | ARE PF                 | ROJECT<br>ENT        | D                  | SE THEO                | RY              |                  | 5             |                | 3      | 2        | -        | 4    |
|   |              |                        |                      | СО                 | -PO Map                | ping            |                  |               |                |        |          |          |      |
| CO Number                                       | PO1          | PO1 PO2 PO3 PO4 PO5 PS |                      |                    |                        |                 |                  |               | PS             | 03     | PSO4     | PSO5     |      |
| CO1   | S            | S                      | S                    | S                  | S                      | S               |                  | М             | 0              | S      | Μ        | S        |      |
| CO2   | S            | М                      | М                    | S                  | S                      | S               |                  | М             | 0              | S      | М        | S        |      |
| CO3   | S            | S                      | М                    | S                  | S                      | S               |                  | М             | 9              | S      | М        | S        | -    |
| CO4   | S            | S                      | S                    | М                  | S                      | S               |                  | М             | 9              | S      | М        | S        |      |
| CO5   | S            | S                      | S                    | S                  | S                      | S               |                  | М             | 9              | S      | S        | S        |      |
| Level of<br>Correlation<br>between CO<br>and PO |              | L-L                    | .OW                  |                    |                        | ٩               | M-ME             | DIUM          |                |        | S-       | STRONG   | 5    |
| Tutorial Schedu                                 | ule          | Gr                     | oup Di               | scussi             | on, Quiz p             | orogr           | am, N            | /lodel        | pre            | parat  | tion     |          |      |
| Teaching and L<br>Methods                       | earning      | Aı<br>Pr               | udio Vio<br>esenta   | deo leo<br>tion ai | cture, Cha<br>nd Video | alk an<br>prese | nd Boa<br>entati | ard cla<br>on | ISS <i>, I</i> | Assig  | nment,   | PPT      |      |
| Assessment Me                                   | ethods       | Cl                     | ass Tes <sup>.</sup> | t <i>,</i> Unit    | Test, As               | signn           | nent,            | CIA-I,        | CIA            | -II an | d ESE    |          |      |
| Designe   | ed By        |                        | ,                    | Verifie            | ed By                  |                 |                  |               |                | Appr   | oved B   | /        |      |
| Mr.K.Vijay                                      | akumar       |                        | HoD - I              | Mr.G.S             | Selvakum               | ar              | N                | lembe         | er Se          | ecret  | ary – Di | r.S.Shah | itha |





|             | BCA Syllabus LOCF -   | CBCS with effect from  | <mark>ו 2023-2</mark>   | 024 Onv   | wards         |                 |                |        |
|-------------|---|--|---|---|---------------|-----------------|----------------|--------|
| Course Code | Course Title  | Course Type  | Sem   | Hour  | s L           | т               | Р              | С      |
| 23M_UCAE09  | IMAGE PROCESSING  | DSE THEORY   |   | 5   | 3             | -               | 4              |        |
| Objective   | Students Learn about<br>processing methods<br>techniques.   | various 2D Image tra<br>and filters, various   | nsforma<br>classif  | tions, va<br>ications                                   | of Ima        | nage e<br>age s | nhanc<br>egmer | ement  |
| Unit        | c   | ourse Content  |   |   | Knowl<br>Leve | edge<br>els     | Se             | ssions |
| I           | <b>Digital Image Funda</b><br>Basic relationship betw<br>- Applications of Digit<br>Classification of 2D Sy<br>Structuring Elements<br>2D Convolution - 21<br>Method 2D Convolution | mentals: Image rep<br>ween pixels, Elements<br>tal Image Processing<br>stems - Mathematica<br>- MorphologicalImag<br>O Convolution Throu<br>on Through Matrix Ar | oresenta<br>of DIP s<br>- 2DSyst<br>I Morpho<br>ge Proce<br>ugh Gra<br>nalysis. | tion -<br>ystem<br>ems -<br>ology-<br>essing-<br>phical | K1            |                 |                | 10     |
| II          | <b>2D Image transform</b><br>transform Hadamarc<br>Discrete Cosine Trans<br>Singular Value Decom  | <b>ns :</b> Properties of 2<br>I transform - Haar<br>form Karhunen - Loev<br>position.   | 2D-DFT-`<br>transfc<br>ve Transf  | Walsh<br>orm -<br>form-                                 | K2            |                 |                | 9      |
| III         | Image Enhancement<br>processing Intensity<br>processing -Spatial filt<br>filters. Frequency do<br>high pass Filtering - Ho  | : Spatial domain me<br>transformations<br>tering smoothing filte<br>main methods: low<br>omo morphic filter.   | thods -<br>- Histo<br>er-Sharp<br>pass filt                                     | Point<br>ogram<br>oening<br>ering,                      |               | КЗ              |                | 9      |
| IV          | Image segmentation<br>segmentation techniq<br>techniques Segmenta<br>based segmentation<br>detection - Hough tran   | on: Classification<br>Jues - Region approac<br>tion based on thresh<br>Classification of e<br>nsform - Active conto  | of<br>h – Clus<br>holding -<br>dges -<br>ur.                                    | lmage<br>tering<br>Edge<br>Edge                         |               | К4              |                | 10     |

| V  | Image Compression: Need for compression-Redundancy<br>-Classification of image - Compression schemes - Huffman<br>coding-Arithmetic coding Dictionary based compression-<br>Transform based compression.<br>*CurrentTrends-Computer Vision and Natural Language<br>Processing-Augmented Reality and Virtual Reality-Edge<br>Computing and Internet of Things.   | К5  | 10                      |
|--|---|---|-------------------------|
|  | ** Self Study.  |   |                         |
|  | <b>CO1:</b> Recall the fundamental concepts of digital image processing.  | К1  |                         |
|  | <b>CO2:</b> Explain the various 2D Image transformations.   | К2  |                         |
| Course<br>Outcome  | <b>CO3:</b> Build the image enhancement processingtechniques and filters.   | К3  |                         |
|  | <b>CO4:</b> Assume the classification of Image segmentation techniques.   | К4  |                         |
|  | <b>CO5:</b> Determine the various image compression techniques.   | К5  |                         |
|  |   |   |                         |
|  | Learning Resources  |   |                         |
| Text<br>Books  | Learning Resources           1.SJayaraman, SEsakkirajan, TVeerakumar, Digital image           TataMcGrawHill,2015.           2. Gonzalez RafelC, Digital Image Processing, Pearson Educe  | processing cation,2009.   |                         |
| Text<br>Books<br>Reference<br>Books  | Learning Resources<br>1.SJayaraman, SEsakkirajan, TVeerakumar, Digital image<br>TataMcGrawHill,2015.<br>2. Gonzalez RafelC,Digital Image Processing, Pearson Educ<br>1.Jain AnilK, Fundamentals of digital image processing:,P<br>2. KennethR Castleman,Digital image processing:,Pearson<br>3. PrattWilliamK, Digital Image Processing:,JohnWiley,4/e  | e processing<br>cation,2009.<br>HI,1988.<br>Education,2/e,2   | 2003.                   |
| Text<br>Books<br>Reference<br>Books<br>Website<br>Link<br>Self-Study             | Learning Resources1. SJayaraman, SEsakkirajan, TVeerakumar, Digital imageTataMcGrawHill,2015.2. Gonzalez RafelC,Digital Image Processing, Pearson Educe1. Jain AnilK, Fundamentals of digital image processing:,Pearson3. PrattWilliamK, Digital Image Processing:,JohnWiley,4/e1.https://kanchiuniv.ac.in/coursematerials/Digital%20imageVijaya%20Raghavan.pdf2.http://sdeuoc.ac.in/sites/default/files/sde_videos/Digitaling%2033. https://dl.acm.org/doi/10.5555/5597071.https://www.linkedin.com/advice/3/what-top-image-providewatch-kZo6e   | e processing<br>cation,2009.<br>HI,1988.<br>Education,2/e,2<br>,2007.<br>ge%20processing<br>I%20Image%20P | 2003.<br>%20-<br>rocess |
| Text<br>Books<br>Reference<br>Books<br>Website<br>Link<br>Self-Study<br>Material | Learning Resources         1. SJayaraman, SEsakkirajan, TVeerakumar, Digital image<br>TataMcGrawHill,2015.         2. Gonzalez RafelC,Digital Image Processing, Pearson Educe         1. Jain AnilK, Fundamentals of digital image processing:,Pearson         3. PrattWilliamK, Digital Image Processing:,JohnWiley,4/e         1.https://kanchiuniv.ac.in/coursematerials/Digital%20image         Vijaya%20Raghavan.pdf         2.http://sdeuoc.ac.in/sites/default/files/sde_videos/Digital         ing%203         3. https://dl.acm.org/doi/10.5555/559707         1.https://www.linkedin.com/advice/3/what-top-image-prowatch-k7o6e | e processing<br>cation,2009.<br>HI,1988.<br>Education,2/e,2<br>,2007.<br>ge%20processing<br>l%20Image%20P | 2003.<br>%20-<br>rocess |

|  | В     | CA Sy | llabus | LOCF-C              | BCS wi             | ith effe          | ect from            | ו 2023 ו         | -20                   | )24 onwa     | ards   |       |          |         |
|--|-------|-------|--------|---------------------|--------------------|-------------------|---------------------|------------------|-----------------------|--------------|--------|-------|----------|---------|
| Course Title   |       | Co    | urse   | Title               | C                  | Course            | Туре                | Sem              |                       | Hours        | L      | Т     | Р        | С       |
| 23M_UCAE09   | IM    | AGE P | ROCE   | SSING               | DS                 | SE THE            | ORY                 |                  |                       | 5            | 3      | 2     | -        | 4       |
| CO-PO Mapping  |       |       |        |                     |                    |                   |                     |                  |                       |              |        |       |          |         |
| CO Number PO1 PO2 PO3 PO4 PO5 PSO1 PSO2 PSO3 PSO4 PSO5 |       |       |        |                     |                    |                   |                     |                  |                       |              |        |       |          |         |
| CO1  |       | Μ     | S      | М                   | S                  | S                 | L                   | М                |                       | S            |        | М     | S        |         |
| CO2  |       | L     | Μ      | L                   | S                  | М                 | S                   | S                |                       | М            | S      |       | S        |         |
| CO3  |       | Μ     | S      | S                   | М                  | S                 | S                   | S                |                       | S            |        | М     | S        |         |
| CO4  |       | S     | Μ      | М                   | S                  | S                 | S                   | М                |                       | М            | S      |       | М        |         |
| CO5  |       | S     | S      | М                   | М                  | М                 | S                   | S                |                       | S            | S      |       | S        |         |
| Level of<br>Correlation<br>between CO a<br>PO          | nd    |       |        | L-LO                | N                  |                   |                     | M-N              | ЛЕC                   | DIUM         |        |       | S-STR    | ONG     |
| Tutorial Schedu  | le    |       | G      | iroup Di            | scussio            | on, Qui           | z progra            | am, Mo           | ode                   | el prepar    | ratior | 1     |          |         |
| Teaching and Le<br>Methods                             | arni  | ng    | A<br>P | udio Vio<br>resenta | deo lec<br>tion an | ture, C<br>d Vide | Chalk an<br>o prese | d Boar<br>ntatio | <sup>.</sup> d c<br>n | class, Ass   | signm  | ient, | PPT      |         |
| Assessment Me  | thod  | ls    | С      | lass Tes            | t, Unit            | Test,             | Assignm             | nent, C          | IA-                   | ·I, CIA-II a | and E  | SE    |          |         |
| Designe  | ed By | /     |        |                     | Veri               | ified B           | y                   |                  |                       |              | Α      | ppro  | oved By  |         |
| Mrs.S.Shahai   | na    |       |        | Ho                  | 0 – Mr.            | G.Selv            | akumaı              |                  | Me                    | ember Se     | ecreta | ary – | - Dr.S.S | hahitha |





|             | BCA Syllabus LOCF-  | CBCS with effect from   | n 2023-2  | 2024 Onw   | vards           |            |        |         |
|-------------|---|---|---|--|-----------------|------------|--------|---------|
| Course Code | Course Title  | Course Type   | Sem   | Hours  | L               | т          | Р      | С       |
| 23M_UCAE10  | INFORMATION<br>SECURITY   | DSE THEORY  |   | 5  | 3               | 2          | -      | 4       |
| Objective   | Students Learn the authentication and av  | objectives informa<br>ailability various crypt  | tion se<br>tographi   | curity co<br>ic algorith   | onfiden<br>Ims. | tiality    | , inte | egrity, |
| Unit        | c   | ourse Content   |   |  | Knowle<br>Leve  | edge<br>Is | Ses    | sions   |
| I           | Introduction to Inform<br>Computer-Security<br>Vulnerabilities and pr<br>Services, Threats, At<br>analysis and mechanis   | mation Security: Secu<br>Concepts(CIA),<br>rotections, Security G<br>tacks, Assets, malwa   | rity min<br>At<br>oals, Se<br>are, pro  | id set,<br>tacks,<br>curity<br>ogram                             | К1              |            |        | 10      |
| II          | The Security Problem<br>Computer Security,<br>Defense. Cryptograp<br>Introduction, Plain to<br>techniques, transpose<br>decryption.   | n in Computing: The<br>Computer Criminals,<br>phy: Concepts and<br>ext and cipher text,<br>ition techniques, en   | e meani<br>Metho<br>Techn<br>substi<br>cryptior                               | ing of<br>ds of<br>iques:<br>tution<br>n and                     | K2              |            |        | 10      |
| 111         | Symmetric and Asym<br>DES, AES, RSA algor<br>Signatures: Use of<br>Secure Hash function.  | metric Cryptographic<br>ithms. Authentication<br>Cryptography for au<br>Key management–Ke   | <b>c Techn</b> i<br>n and I<br>uthentic<br>erberos.                           | i <b>ques:</b><br>Digital<br>ation,                              | K3              |            |        | 8       |
| IV          | Program Security :<br>Buffer overflow, Incor<br>Time-of- use Errors,<br>Man-in-the- middle<br>protection Mechanise<br>Trusted O.S: Security<br>O.S design, Assuranc<br>examples.    | Non-malicious Progr<br>nplete mediation, Tim<br>Viruses, Trapdoors, S<br>attacks, Covert cl<br>ms User Authenticati<br>polices, models of sec<br>e in trusted O.S. Im | am err<br>ne-of ch<br>Galami a<br>nannels.<br>ion Des<br>curity, tr<br>plemen | ors –<br>eck to<br>Ittack,<br>File<br>igning<br>rusted<br>tation | K4              |            |        | 10      |
| V           | Security in Networks<br>Security Controls A<br>Integrity, Strong A<br>Wireless Security, How<br>Security: Web secur<br>Layer and Transport<br>transaction.<br>*Current Trends: Digi | s: Threats in netwo<br>rchitecture, Encrypt<br>authentication, Acce<br>neypots, Traffic flow s<br>ity considerations, S<br>Layer Security, Secu<br>tal Threat*        | rks, Ne<br>ion, Co<br>ss Cor<br>security<br>ecure S<br>ire elec               | twork<br>ontent<br>ntrols,<br>. Web<br>Gocket<br>tronic          | K5              |            | -      | 10      |
|             | ** Self Study.<br>CO1: Recall Networ  | k security threats,   | services  | , and  | K1              |            |        |         |

|                               | <b>CO2:</b> Identifying security.  | vulnerability   | analysis of  | network  | К2  |                       |  |  |  |  |
|-------------------------------|--|---|--|--|---|-----------------------|--|--|--|--|
| Course<br>Outcome             | <b>CO3:</b> Learn about the second | out hash fui<br>s, and intrusic<br>ty.  | nctions, auther<br>on detection teo  | ntication<br>chniques                              | К4  |                       |  |  |  |  |
|                               | <b>CO4:</b> Gain hands simulation technic  | on experience<br>Jues for securit   | with programm with process.  | ning and   | К4  |                       |  |  |  |  |
|                               | <b>CO5:</b> Apply metho<br>Intrusion detection   | ds for authent<br>n and preventi  | ication, access c<br>on.   | ontrol,  | K5  |                       |  |  |  |  |
|                               |  | Learning  | g Resources  |  |   |                       |  |  |  |  |
| Text<br>Books                 | <ol> <li>Security in Compute</li> <li>Cryptography And<br/>William Stallings, Pe</li> </ol>  | uting, Fourth E<br>d Network Sec<br>arson.  | dition, by Charle<br>urity Principles A                                      | s P.P flee   | ger, Pearson Edu<br>ce, Fourth or Fift                                | ication<br>h Edition, |  |  |  |  |
| Reference<br>Books            | <ol> <li>Cryptography and<br/>India, IstEdition .</li> <li>Cryptography and<br/>Edition.</li> <li>Information Secures.</li> <li>Principles of Com</li> </ol>   | l Network Secu<br>l Network Secu<br>rity, Principles<br>puter Sceurity  | urity CK Shyamal<br>urity: Forouzan N<br>and Practice: Ma<br>: WM. Arthur Cc | a, NHarini<br>Aukhopad<br>ark Stamp<br>onklin, Gre | i, Dradmanabhai<br>hyay, McGraw H<br>, Wiley India.<br>eg White, TMH. | n, Wiley<br>Iill, 2"d |  |  |  |  |
| Website<br>Link<br>Self-Study | <ol> <li>https://www.gee</li> <li>https://www.tuto<br/>security#:~:text=Info</li> <li>%2C%20alteration%</li> <li>https://www.ento</li> </ol>   | <ol> <li>Principles of computer scentry . www. Arthur conkin, Greg white, TMH.</li> <li>https://www.geeksforgeeks.org/what-is-information-security/</li> <li>https://www.tutorialspoint.com/what-is-information</li> <li>security#:~:text=Information%20security%20is%20designed%20and,destruction</li> <li>%2C%20alteration%2C%20and%20disruption.</li> <li>https://www.enterprisenetworkingplanet.com/data-center/enterprise-networking-</li> </ol> |  |  |   |                       |  |  |  |  |
| Material                      |  | Tutorial  | D Practical  |  | C Cradit  |                       |  |  |  |  |
|                               | L-Lecture  | 1-Tutonal   | FFractical   |  | C-Crealt  |                       |  |  |  |  |

|   | BCA Syl        | llabus I       | OCF-0            | CBCS w              | ith effe            | ect fron | n <b>2023</b>     | -2024 On          | ward   | s        |         |   |
|---|----------------|----------------|------------------|---------------------|---------------------|----------|-------------------|-------------------|--------|----------|---------|---|
| Course Title                                    | Cours          | e Title        |                  | Οοι                 | urse Ty             | pe       | Sem               | Hours             | L      | Т        | Р       | С |
| 23M_UCAE10                                      | INFORI<br>SECU | MATIO<br>JRITY | N                | DSE THEORY          |                     |          | 5                 | 3                 | 2      | -        | 4       |   |
|   |                |                |                  | CO-                 | PO Ma               | pping    |                   |                   |        |          |         |   |
| CO Number                                       | PO1            | PO2            | PO3              | PO4                 | PO5                 | PSO1     | PSO2              | 2 PSO3            | PS     | 604      | PSO5    |   |
| CO1   | Μ              | S              | М                | S                   | S                   | L        | Μ                 | S                 |        | Μ        | S       |   |
| CO2   | L              | М              | L                | S                   | М                   | S        | S                 | М                 |        | S        | S       |   |
| CO3   | М              | S              | S                | М                   | S                   | S        | S                 | S                 |        | Μ        | S       |   |
| CO4   | S              | М              | М                | S                   | S                   | S        | Μ                 | М                 |        | S        | М       |   |
| CO5   | S              | S              | М                | М                   | М                   | S        | S                 | S                 |        | S        | S       |   |
| Level of<br>Correlation<br>between CO and<br>PO |                |                | L-LOW M-MEDIUM   |                     |                     |          |                   |                   |        | S        | S-STRON | G |
| Tutorial Schedule                               |                | G              | roup D           | iscussi             | on, Qu              | iz progr | am, M             | odel prep         | arati  | on       |         |   |
| Teaching and Learn<br>Methods                   | ing            | Aı<br>Pr       | udio V<br>esenta | ideo leo<br>ation a | cture, (<br>nd Vide | Chalk ar | nd Boa<br>entatio | rd class, A<br>on | ssigr  | nmen     | it, PPT |   |
| Assessment Metho                                | ds             | CI             | ass Te           | st, Unit            | t Test,             | Assignr  | nent, C           | CIA-I, CIA-       | ll and | ese      |         |   |
| Designed B                                      | y              |                |                  | Verifi              | ed By               |          |                   | ł                 | Appro  | oved     | Ву      |   |
| Mrs.R.Sugu                                      |                | HOD ·          | Dr.V.            | /ijayad             | eepa                | M        | ember Se          | creta             | ary -  | Dr.S.Sha | hitha   |   |





|             | BCA Syllabus LOCF - CB   | CS with effect fr  | om 202  | 23-2024  | Onw                               | ards           |            |           |
|-------------|--|--|---|--|-----------------------------------|----------------|------------|-----------|
| Course Code | Course Title   | Course Type  | Sem   | Hours  | L                                 | т              | Р          | С         |
| 23M_UCAE11  | HUMAN COMPUTER<br>INTERACTION  | DSE THEORY   |   | 5  | 5                                 | -              | -          | 5         |
| Objective   | Students Learn about the technologies for HCI mod  | e frame work o<br>els and theories   | f HCI. I  | Designing  | g rul                             | es in so       | ftware     | e process |
| Unit        | Cou  | urse Content   |   |  |                                   | Knowle<br>Leve | edge<br>Is | Sessions  |
| I           | FOUNDATIONS OF HCI: T<br>Reasoning and problem<br>Memory–processing and<br>frame works–Ergonomics<br>- Paradigms -Case Studies                                     | he Human: I/O o<br>solving: The C<br>networks. Int<br>– styles – elemo   | channe<br>Comput<br>eractio<br>ents – i                     | ls–Memo<br>er: Devi<br>n: Mode<br>nteractiv                  | ory.<br>ices<br>els–<br>vity      | К1             |            | 12        |
| II          | DESIGN & SOFTWARE PR<br>process—scenarios. Navig<br>prototyping. HCI in softw<br>usability engineering —<br>rationale. Design rules:<br>rules. Evaluation Techniqu | OCESS: Interact<br>ation: screen de<br>vare process: So<br>Prototyping i<br>principles, stan<br>ues–Universal De | ive Des<br>esign It<br>ftware<br>n prac<br>dards,<br>esign. | ign: Basi<br>eration a<br>life cycl<br>ctice–des<br>guidelin | ics–<br>and<br>e –<br>sign<br>es, | К2             |            | 12        |
| 111         | MODELS AND THEORIES<br>Socio-Organizational issu<br>Communication and<br>Multimedia and WWW.   | : HCI Models: (<br>es and stake hc<br>collaboration  | Cognitiv<br>older re<br>models                              | ve mode<br>equireme<br>s-Hyperte                             | els:-<br>ents<br>ext,             | К3             |            | 12        |
| IV          | MOBILE HCI: Mobile Ec<br>frame works Types of<br>Applications, Games M<br>Mobile2.0, Mobile Design<br>Case Studies.  | o system: Plat<br>Mobile Appli<br>Iobile Informat<br>Elements of Mo  | forms,<br>cations<br>tion A<br>obile De                     | Applicat<br>: Widge<br>rchitectu<br>sign, Toc                | tion<br>ets,<br>ure,<br>ols.      | К4             |            | 12        |
| V           | WEB INTERFACE DESIGN<br>&Drop, Direct Selection,<br>and Virtual Pages, Process<br>Current Trends- * Interdi  | : Designing Web<br>Contextual Too<br>s Flow -Case Stu<br>sciplinary roots  | ) Interf<br>ls, Ove<br>dies.<br><b>and tre</b>              | aces – D<br>rlays, Inl<br><b>ends *</b>                      | orag<br>ays                       | К5             |            | 12        |
|             | ** Self Study.   |  |   |  |                                   |                | ]          |           |
|             | <b>CO1:</b> Learn the fundamen   | tals of HCI.   |   |  |                                   | K1             |            |           |
|             | <b>CO2</b> : Construct the design Technologies in various st   | n rules for softwa<br>andards.   | are pro   | cess   |                                   | К2             |            |           |
|             | CO3: Assess the HCI mod  | els and theories.  |   |  |                                   | К3             |            |           |

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| Course<br>Outcome      | <b>CO4</b> : Describe<br>Applications, n   | the Mobile Eco<br>nobile Architect                 | osystem, types o<br>ture and design                                | of Mobile  | К4  |  |  |  |  |  |
|------------------------|--|--|--|--|---|--|--|--|--|--|
|                        | CO5: Evaluate  | the various typ                                    | es of Web Inter  | face.  | К5  |  |  |  |  |  |
|                        |  | Learn  | ing Resources  |  |   |  |  |  |  |  |
| Text<br>Books          | 1.AlanDix, Janet<br>Edition, Pearson<br>2.Brian Fling,<br>2009(UNIT–IV)<br>3.Bill Scott and<br>2009.(UNIT-V) | Finlay, Gregory<br>Education, 200<br>Mobile Design | y Abowd, Russe<br>04(UNITI,II&III)<br>and Develop<br>, Designing W | Beale, Human-(<br>oment, I Editio<br>deb Interfaces, | Computer Inte<br>n, O_ReillyM<br>First Edition, | eraction,III<br>edia Inc,<br>O_Reilly, |  |  |  |  |
| Reference<br>Books     | 1.Shneiderman,<br>Computer Intera  | Designing the<br>action, V Editior                 | e User Interfa<br>n, Pearson Educa                                 | ace: Strategies<br>ation.                            | for Effective                                   | Human-                                 |  |  |  |  |
| Website<br>Link        | 1. <u>https://www.in</u><br>2. <u>https://link.spri</u>  | teraction-design<br>nger.com/10.10                 | n.org/literature,<br>007/978-0-387-3                               | / <u>topics/human-c</u><br>39940-9 192               | omputer-inter                                   | <u>action</u>                          |  |  |  |  |
| Self-Study<br>Material | https://www.sciencedirect.com/science/article/abs/pii/S0164121298100262                                      |  |  |  |   |  |  |  |  |  |
|                        | L-Lecture  | T-Tutorial   | P-Practical  |  | C-Credit  |  |  |  |  |  |

|   | B        | CA Syl        | labus L          | OCF - C             | BCS \           | with ef             | fect           | from           | 2023          | 3-2024 (      | Dnwar    | ds     |       |   |
|---|----------|---------------|------------------|---------------------|-----------------|---------------------|----------------|----------------|---------------|---------------|----------|--------|-------|---|
| Course Code                                   |          |               | Course           | e Title             |                 | Cours               | e Tyj          | pe             | Sem           | Hours         | L        | Т      | Р     | С |
| 23M_UCAE11                                    | Н        | IUMAN<br>INTE | I COMP<br>RACTIO | PUTER<br>DN         |                 | DSE T               | HEO            | RY             |               | 5             | 5        | -      | -     | 5 |
|   |          |               |                  |                     | со              | -PO M               | appi           | ng             |               |               |          |        |       |   |
| CO Numb                                       | ber      | PO1           | PO2              | PO3                 | PO              | 94 P                | 05             | PSC            | )1 P          | SO2           | PSO3     | PSO4   | PSO5  |   |
| CO1   |          | L             | М                | М                   | S               | N                   | 1              | S              |               | L             | L        | Μ      | L     |   |
| CO2   |          | М             | М                | М                   | Μ               | S                   |                | S              |               | М             | Μ        | L      | S     |   |
| CO3   | S M M M  |               |                  |                     |                 | N                   | 1              | Μ              |               | М             | L        | L      | Μ     |   |
| CO4   |          | М             | S                | S                   | Μ               | N                   | 1              | S              |               | М             | S        | Μ      | L     |   |
| CO5   |          | S             | S                | Μ                   | S               | S                   |                | S              | S S S M S     |               |          |        |       |   |
| Level of<br>Correlation<br>between CO a<br>PO | n<br>and |               | L-LOV            | V                   |                 |                     |                | N              | 1-ME          | DIUM          |          | S-     | STRON | 6 |
| Tutorial Schedul                              | le       |               | Gro              | oup Disc            | cussio          | on, Qu              | iz pro         | ograr          | n, Mo         | odel pre      | parati   | on     |       |   |
| Teaching and Le<br>Methods                    | arnin    | g             | Auc<br>Pre       | dio Vide<br>sentati | eo leo<br>on ar | cture, (<br>nd Vide | Chalk<br>eo pr | c and<br>resen | Boar<br>tatio | d class,<br>n | Assign   | iment, | PPT   |   |
| Assessment Me                                 | thods    | ;             | Cla              | ss Test,            | Unit            | t Test,             | Assi           | gnme           | nt, C         | IA-I, CIA     | -II and  | I ESE  |       |   |
| Design  | ed By    | 1             |                  |                     | Verif           | fied By             |                |                |               |               | Α        | pprove | d By  |   |
| Mr.M.Pu                                       | n        | HoD - I       | Mr.G             | ì.Selval            | kuma            | ar                  | N              | /lember        | Secre         | tary - Di     | r.S.Shah | itha   |       |   |





|             | BCA Syllabus LOCF -   | CBCS with effect fr   | om 202  | 23-2024   | Onw                                 | ards           |            |          |
|-------------|---|---|---|---|-------------------------------------|----------------|------------|----------|
| Course Code | Course Title  | Course Type   | Sem   | Hours   | L                                   | т              | Р          | С        |
| 23M_UCAE12  | FUZZY LOGIC   | DSE THEORY  |   | 5   | 5                                   | -              | -          | 5        |
| Objective   | Students acquire a functions, gaining pro   | zy Logic<br>le-Basec  | c, me<br>I Syste                                    | mbership<br>ems.  |                                     |                |            |          |
| Unit        |   | Course Content  |   |   |                                     | Knowle<br>Leve | edge<br>Is | Sessions |
| I           | Introduction to Fu<br>Operations, Properti<br>Relations: Introducti<br>Classical Relations - C  | <b>zzy Logic:</b> Fuzzy<br>es of Fuzzy Sets. <b>C</b><br>ion - Cartesian Pro<br>Cardinality of Crisp R        | Sets -<br><b>lassica</b><br>duct o<br>elation       | Fuzzy<br>I and Fu<br>f Relatic                                | Set<br>I <b>zzy</b><br>on -         | K1             |            | 12       |
| II          | <b>Crisp Relation:</b> Opera<br>Crisp Relations - Com<br>of Fuzzy Relations<br>Properties of Fuzzy R<br>Composition - Tolera<br>Relation. | ations on Crisp Rela<br>position of Fuzzy Re<br>- Operations on<br>elations - Fuzzy Car<br>ance and Equivalen | tion - P<br>lations<br>Fuzzy<br>tesian l<br>ce Rela | roperties<br>, Cardina<br>Relation<br>Product a<br>Itions, Ci | s of<br>Ility<br>s -<br>and<br>risp | К2             |            | 12       |
|             | Membership Funct<br>Membership Funct<br>Fuzzification, Memb<br>Inference, Rank Orde   | tions: Introductio<br>ion, Classification<br>ership Value Assig<br>ering.                                     | n, Fe<br>of F<br>nments                             | eatures<br>Fuzzy So<br>s, Intuiti                             | of<br>ets,<br>on,                   | К3             |            | 12       |
| IV          | <b>Defuzzification:</b> Intro<br>Lambda Cuts for Fuz<br><b>Fuzzy Rule-Based Sys</b><br>Decomposition of<br>Properties of Set of R         | oduction, Lambda C<br>zy Relations, Defuzz<br>stem: Introduction, F<br>Rules, Aggregation<br>Rules.           | uts for<br>ificatio<br>format<br>of F               | Fuzzy So<br>n Methc<br>ion of Ru<br>uzzy Ru                   | ets,<br>ods.<br>Ies,<br>Ies,        | К4             |            | 12       |
| v           | Applications of Fuz<br>Applications, Fuzzy A<br>System and Vehicle S<br>*Current Trends- Fuz  | zy Logic: Fuzzy Log<br>ntilock Brake Systen<br>peed Estimation Us<br>zzy Logic Control Sys                    | gic in<br>n - Anti<br>ing Fuz<br>s <b>tem*</b>      | Automot<br>lock Brak<br>zy Logic.                             | tive                                | К5             |            | 12       |
|             | ** Self Study.  |   |   |   |                                     |                |            |          |
| Course      | <b>CO1:</b> Recall the ba properties.   | sics of Fuzzy sets  | , oper  | ations, a   | and                                 | K1             |            |          |
| Outcome     | <b>CO2</b> : Summarize the composition in Fuzzy   | e concepts of Carto<br>relations.   | esian p   | oroduct a   | and                                 | К2             |            |          |

|                        | <b>CO3</b> : Identify<br>key features of<br>Fuzzy Logic.             | different fuzzifi<br>of membership                      | s and recognize<br>In the context of | КЗ                                    |                        |           |  |  |  |  |
|------------------------|--|---|--------------------------------------|---------------------------------------|------------------------|-----------|--|--|--|--|
|                        | CO4: Classi<br>specifically fo<br>Fuzzy Logic.                       | fying defuzzi<br>r real-time app                        | fication meth<br>lications within    | nods tailored<br>the domain of        | К4                     |           |  |  |  |  |
|                        | <b>CO5</b> : Prove Relations.  | К5  |                                      |                                       |                        |           |  |  |  |  |
|                        |  | Learn   | ing Resources                        |                                       |                        |           |  |  |  |  |
| Text<br>Books          | 1. S.N. Sivana<br>MATLAB", Spi                                       | ndam, S. Sumat<br>ringer-Verlag Be                      | hi, and S.N. Dee<br>erlin Heidelberg | epa - "Introductio<br>, 2007.         | on to Fuzzy Lo         | gic using |  |  |  |  |
| Reference<br>Books     | <ol> <li>Guanrong (<br/>and Fuzzy Cor</li> <li>Timothy J.</li> </ol> | Chen and Trung<br>ntrol Systems".<br>Ross - "Fuzzy Lo   | Tat Pham - "Int<br>gic with Engine   | roduction to Fuz<br>ering Applicatior | zy Sets, Fuzzy<br>ıs". | Logic     |  |  |  |  |
| Website<br>Link        | 1.https://www<br>2.https://www                                       | w.javatpoint.co<br>w.guru99.com/v                       | m/fuzzy-logic<br>what-is-fuzzy-lo    | gic.html                              |                        |           |  |  |  |  |
| Self-Study<br>Material | https://www.   | tps://www.geeksforgeeks.org/fuzzy-logic-control-system/ |                                      |                                       |                        |           |  |  |  |  |
|                        | L-Lecture  | C-Credit  |                                      |                                       |                        |           |  |  |  |  |
| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |               |          |                        |                       |                     |                |              |                 |            |       |        |          |       |
|---|---------------|----------|------------------------|-----------------------|---------------------|----------------|--------------|-----------------|------------|-------|--------|----------|-------|
| Course Code   | Cours         | se Title | •                      | Cour                  | se Typ              | е              | Se           | m               | Hours      | L     | Т      | Р        | С     |
| 23M_UCAE12  | FUZZ          | LOGI     | C                      | DSE                   | THEOR               | Y              |              |                 | 5          | 5     | -      | -        | 5     |
|   | CO-PO Mapping |          |                        |                       |                     |                |              |                 |            |       |        |          |       |
| CO Number   | PO1           | PO2      | PO2 PO3 PO4 PO5 PSO1 P |                       |                     |                |              | PSO2            | PSO3       | Р     | SO4    | PSO5     |       |
| CO1   | L             | М        | S                      | S                     | S                   |                | 5            | Μ               | S          |       | Μ      | S        |       |
| CO2   | S             | М        | М                      | S                     | S                   |                | 5            | S               | S          |       | М      | S        |       |
| CO3   | S             | S        | М                      | S                     | S                   |                | 5            | Μ               | S          |       | Μ      | S        |       |
| CO4   | М             | S        | S                      | М                     | S                   | 9              | 5            | Μ               | S          |       | М      | S        |       |
| CO5   | S             | S        | S                      | S                     | S                   |                | 5            | Μ               | S          |       | S      | S        |       |
| Level of<br>Correlation<br>between CO and<br>PO             | d             | L        | L-LOW M-ME             |                       |                     |                |              | 1EDIU           | М          |       | S-     | STRON    | 5     |
| Tutorial Schedule   | 2             | G        | roup [                 | Discussio             | n, Quiz             | prog           | ram,         | Mode            | el prepai  | ratio | n      |          |       |
| Teaching and Lea<br>Methods                                 | rning         | Aı<br>Pr | udio V<br>esent        | ideo lect<br>ation an | ture, Cł<br>d Video | nalk a<br>pres | nd B<br>enta | oard o<br>ition | class, Ass | signr | nent,  | PPT      |       |
| Assessment Met  | hods          | Cl       | ass Te                 | st, Unit              | Test, A             | ssign          | ment         | t, CIA-         | I, CIA-II  | and   | ESE    |          |       |
| Designed  | d By          |          |                        | Verif                 | ied By              |                |              |                 | A          | Appr  | oved   | Ву       |       |
| Mr.E.Natarajan  |               |          | Hol                    | D - Mr.G              | .Selvak             | umai           |              | Me              | ember Se   | ecre  | tary C | Dr.S.Sha | hitha |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |   |                                       |                                   |                      |                |            |            |  |  |
|---|---|---|---------------------------------------|-----------------------------------|----------------------|----------------|------------|------------|--|--|
| Course Code   | Course Title  | Course Type   | Sem                                   | Hours                             | L                    | т              | Р          | С          |  |  |
| 23M_UCAE13  | ARTIFICIAL<br>INTELLIGENCE  | DSE THEORY  |                                       | 5                                 | 5                    | -              | -          | 5          |  |  |
| Objective   | Students learn about th<br>Al.  | e various conce   | ots of A                              | l Technio                         | ques                 | and sea        | rch Al     | gorithm in |  |  |
| Unit  |   | Course Content  |                                       |                                   |                      | Knowle<br>Leve | edge<br>Is | Sessions   |  |  |
| I   | Introduction: Concept<br>scope –agents – enviro<br>Review of tree and<br>representation -Search                                     | of AI – history<br>onments - Probl<br>graph structur<br>graph and Searc | - curre<br>em For<br>es - S<br>h tree | ent statu<br>mulatior<br>State sp | s –<br>ns -<br>ace   | K1             |            | 12         |  |  |
| II  | Search Algorithms : Ra<br>and open list - Deptl<br>Heuristic search -Best<br>Search   | andom search -<br>h first and Bre<br>first search - A                   | Search<br>adth fi<br>I algori         | with clo<br>rst sear<br>thm - G   | osed<br>ch -<br>ame  | K2             |            | 12         |  |  |
| 111   | Probabilistic Reasoni<br>probability -Bayes<br>representation - const<br>model - hidden Markov                                      | ing: Probabilit<br>Rule - Bayes<br>truction and inf<br>model.           | iy -<br>Sian N<br>ference             | conditi<br>Networks<br>e - temp   | onal<br>5 –<br>poral | k              | 3          | 12         |  |  |
| IV  | Markov Decision proce<br>-utility functions - val<br>partially observable MI  | ss : MDP formula<br>ue iteration - p<br>DPs.                            | ation -<br>oolicy i                   | utility the<br>teration           | eory<br>and          | К4             |            | 12         |  |  |
| V   | Reinforcement Learning<br>direct utility estimation -<br>- temporal difference I<br>learning- Q learning<br>Current Trends *AI in G | g<br>t  | К5                                    |                                   | 12                   |                |            |            |  |  |
|   | ** Self Study.  |   |                                       |                                   |                      |                |            |            |  |  |
|   | <b>CO1:</b> Remember the vari   | ious concepts of  | Al Tecl                               | nniques.                          |                      | K1             |            |            |  |  |
|   | <b>CO2:</b> Understand various  |   | К2                                    |                                   |                      |                |            |            |  |  |
| Course  | CO3: Design probabilist   | КЗ  |                                       |                                   |                      |                |            |            |  |  |
| Outcome   | CO4: Analyze Markov De  | cision Process.   |                                       |                                   |                      | К4             |            |            |  |  |
|   | CO5: Create various type of Reinforcement learning<br>Techniques. K5  |   |                                       |                                   |                      |                |            |            |  |  |

| Learning Resources     |  |   |  |                          |  |  |  |  |  |  |  |  |
|------------------------|--|---|--|--------------------------|--|--|--|--|--|--|--|--|
| Text<br>Books          | 1.Stuart Russe<br>3rd Edition, Pr<br>2.Elaine Rich a   | L.Stuart Russell and Peter Norvig, —Artificial Intelligence: A Modern Approach    ,<br>Brd Edition, Prentice Hall.<br>2.Elaine Rich and Kevin Knight, —Artificial Intelligence   , Tata McGraw Hill   |  |                          |  |  |  |  |  |  |  |  |
| Reference<br>Books     | 1.Trivedi, M.C<br>House, Delhi.<br>2.Saroj Kaush<br>Poole and<br>Computationa  | L.Trivedi, M.C., —A Classical Approach to Artifical Intelligence  , Khanna Publishing<br>House, Delhi.<br>2.Saroj Kaushik, —Artificial Intelligence  , Cengage Learning India, 2011 David<br>Poole and Alan Mackworth, —Artificial Intelligence: Foundations for<br>Computational Agents  . Cambridge University Press 2010 |  |                          |  |  |  |  |  |  |  |  |
| Website<br>Link        | 1.NPTEL & MC<br>2.https://npte<br>3.https://npte   | OC courses tit<br>I.ac.in/courses,<br>I.ac.in/courses   | led Artificial Intelli<br>/106106140/<br>/106106126/ | gence and Expert Systems |  |  |  |  |  |  |  |  |
| Self-Study<br>Material | 3.https://nptei.ac.in/courses/106106126/<br>1.https://www.arm.com/glossary/ai-in<br>gaming#:~:text=AI%20in%20gaming%20refers%20to,behavior%20in%20the%20g<br>ame%20world.<br>2.https://in_element14.com/latest-trends-in-artificial-intelligence |   |  |                          |  |  |  |  |  |  |  |  |
|                        | L-Lecture  | T-Tutorial  | P-Practical  | C- Credit                |  |  |  |  |  |  |  |  |

| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards                 |         |               |                      |                  |                         |                |                  |              |           |          |         |        |
|---|---------|---------------|----------------------|------------------|-------------------------|----------------|------------------|--------------|-----------|----------|---------|--------|
| Course Code   | C       | ourse T       | itle                 |                  | Cours<br>Type           | se<br>e        | Sem              | Hou          | rs L      | Т        | Р       | С      |
| 23M_UCAE13  | ARTIFIC | TIFICIAL INTE |                      | NTELLIGENCE      |                         | Y              |                  | 5            | 5         | -        | -       | 5      |
|   |         |               |                      |                  |                         |                |                  |              |           |          |         |        |
| CO Numbe  | r PO1   | PO2           | PO3                  | РО<br>4          | PO5                     | PS             | 01 F             | <b>2</b> SO2 | PSO3      | PSO4     | PSO5    |        |
| C01   | L       | М             | S                    | S                | S                       | S              |                  | М            | S         | М        | S       |        |
| CO2   | S       | М             | М                    | S                | S                       | S              |                  | S            | S         | М        | S       |        |
| CO3   | S       | S             | М                    | S                | S                       | S              |                  | М            | S         | М        | S       |        |
| CO4   | M       | S             | S                    | М                | S                       | S              |                  | М            | S         | М        | S       |        |
| CO5   | S       | S             | S                    | S                | S                       | S              |                  | М            | S         | S        | S       |        |
| Level of<br>Correlation<br>between CO and<br>PO                             | d       |               | L-LOW                |                  |                         |                | М                | -MEDI        | UM        |          | S-STR(  | DNG    |
| Tutorial Schedule   |         | Gro           | oup Dis              | cussio           | on, Quiz pr             | rogra          | m, M             | odel pi      | reparat   | ion      |         |        |
| Teaching and Lear<br>Methods  | ning    | Au<br>Pre     | dio Vide<br>esentati | eo lec<br>ion ar | ture, Chal<br>d Video p | k an<br>rese   | d Boai<br>ntatio | d class      | s, Assigi | nment, I | PPT     |        |
| Assessment Methods Class Test, Unit Test, Assignment, CIA-I, CIA-II and ESE |         |               |                      |                  |                         |                |                  |              |           |          |         |        |
| Designed By Verif   |         |               |                      |                  | ed By                   | 3y Approved By |                  |              |           |          |         |        |
| Mr. V. Vengadesh HoD –  |         |               |                      | <b>) — M</b> i   | r.G.Selvak              | uma            | r                | Mem          | ber Sec   | retary – | Dr.S.Sh | ahitha |





| BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |   |  |  |  |     |       |   |    |  |  |  |  |
|---|---|--|--|--|-----|-------|---|----|--|--|--|--|
| Course Code   | Course Title  | Course Type  | Sem  | Hours                                    | s L | т     | Р | С  |  |  |  |  |
| 23M_UCAE14  | MOBILE ADHOC<br>NETWORK   | DSE THEORY   |  | 5  | 5   | -     | - | 5  |  |  |  |  |
| Objective   | Students Understand ad-hoc network models, medium access protocols, rou protocols, security in the transport layer, and cross-layered design. |  |  |  |     |       |   |    |  |  |  |  |
| Unit  |   |  | Knowl<br>Leve  | nowledge<br>Levels                       |     | sions |   |    |  |  |  |  |
| I   | Introduction: Intro<br>definition, charac<br>Characteristics of w<br>models indoor and c  | Introduction: Introduction to ad-hoc networks–<br>definition, characteristics features, applications.<br>Characteristics of wireless channel, ad-hoc mobility<br>models indoor and out-door models |  |  |     |       |   |    |  |  |  |  |
| II  | Medium Access P<br>issues, goals and<br>protocols with res<br>protocols using dire<br>802.11a, 802.11b, 80                                    | <b>rotocol:</b> MAC Proto<br>classification. Conte<br>servation, scheduling<br>ectional antennas. IEE<br>02.11g, 802.15, HIPERL  | cols: D<br>ntion k<br>algori<br>E stanc<br>AN.       | esign<br>based<br>thms,<br>lards:        | К2  |       | 1 | 12 |  |  |  |  |
| 111   | Network Protocols:<br>goals and classificat<br>unicast routing<br>algorithms, hybrid<br>routing algorithm,<br>routing.                        | Routing Protocols: D<br>ion. Proactive Vs read<br>algorithms, Multica<br>routing algorithm, en<br>hierarchical routing   | esign is<br>ctive rou<br>ast ro<br>nergy a<br>, QoSa | sues,<br>uting,<br>uting<br>ware<br>ware | КЗ  |       | 1 | 12 |  |  |  |  |
| IV  | End–end delivery ar<br>in designing –Tran<br>transport protocols.<br>issues and challenge<br>routing protocols.                               | nd security: Transport<br>sport layer classifica<br>Security issues in ad-h<br>es, network security att  | Layer: Is<br>tion, a<br>oc netw<br>cacks, se         | ssues<br>d-hoc<br>vorks:<br>ecure        | K4  |       | 1 | 12 |  |  |  |  |
| V   | Need for cross layer<br>parameter optimiz<br>cautionary perspect<br>Mobile IP networks.<br>*Current Trends - D                                | er design, cross layer of zation techniques, tive. Integration of elay Tolerant Network  | optimiza<br>cross<br>ad-hoc<br><b>king *</b>         | ation,<br>layer<br>with                  | К5  |       | 1 | 12 |  |  |  |  |
|   | ** Self Study.  |  |  |  |     |       |   |    |  |  |  |  |
|   | CO1: Recall concept   | s of Ad-hoc network m  | odels.   |  | K1  |       |   |    |  |  |  |  |
|   | CO2: Learn the cor (MAC).   | cept of Medium Acce  | ess Prot   | ocols                                    | К2  |       |   |    |  |  |  |  |
|   | <b>CO3:</b> Sketch Netwo and various types of   | rk Routing Protocols, (<br>Routing Algorithms.   | design i   | ssues                                    | K3  |       |   |    |  |  |  |  |
| Course<br>Outcome   | <b>CO4:</b> Categorize knc<br>Transport Layer   | owledge on Delivery ar   | nd Secur   | ity in                                   | K4  |       |   |    |  |  |  |  |
|   | <b>CO5:</b> Design cross layer techniques and Integration, of K5  |  |  |  |     |       |   |    |  |  |  |  |

|                        | ad-hoc with Mol   | oile IP network  | S                              |             |                  |          |  |  |  |  |  |
|------------------------|---|--|--------------------------------|-------------|------------------|----------|--|--|--|--|--|
|                        |   | Learning   | Resources                      |             |                  |          |  |  |  |  |  |
| Text<br>Books          | <ol> <li>1.C. Siva Ram Murth<br/>Protocols II Edition"</li> <li>2. Charles E. Perkins</li> </ol>                | <ol> <li>C. Siva Ram Murthy and B. S. Manoj, "Ad-hoc Wireless Networks Architecture and<br/>Protocols II Edition", Pearson Edition, 2007</li> <li>Charles E. Perkins, "Ad-hoc Networking", Addison –Wesley, 2000</li> </ol>  |                                |             |                  |          |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Stefa no Basagni,<br/>hoc networking", W</li> <li>Mohammad Ilyas</li> <li>T.Camp, J.Boleng,</li> </ol> | 1. Stefa no Basagni, Marco Conti, Silvia Giordano and Ivans to jmenovic, "Mobile ad-<br>hoc networking", Wiley-IEEE press, 2004<br>2. Mohammad Ilyas, "The hand book of ad-hoc wireless networks", CR Cpress, 2002.<br>3. T.Camp, J.Boleng, and V.Davies, "A Survey of Mobility Models for Ad-hoc Network" |                                |             |                  |          |  |  |  |  |  |
| Website<br>Link        | 1. https://www.tech<br>2. https://www.ijer  | ntarget.com/se<br>.org/mobile-a  | archnetworkin<br>d-hoc-network | g/definitio | n/delay-tolerant | -network |  |  |  |  |  |
| Self-Study<br>Material | <ol> <li>https://www.linl<br/>navigating-si3le</li> <li>https://ebookce<br/>ebooks/detail.ac</li> </ol>         | <ol> <li>https://www.linkedin.com/pulse/mobile-ad-hoc-network-manet-market-<br/>navigating-si3le</li> <li>https://ebookcentral.proquest.com/lib/inflibnet-<br/>ebooks/detail.action?docID=830216</li> </ol>  |                                |             |                  |          |  |  |  |  |  |
|                        | L-Lecture T-Tutorial P-Practical C-Credit   |  |                                |             |                  |          |  |  |  |  |  |

| BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |            |                 |                       |                      |                     |          |                   |                   |             |          |         |        |  |
|---|------------|-----------------|-----------------------|----------------------|---------------------|----------|-------------------|-------------------|-------------|----------|---------|--------|--|
| Course Title  | Cou        | rse Tit         | Title Course Typ      |                      |                     | pe       | Sem               | Hours             | L           | Т        | Р       | С      |  |
| 23M_UCAE14  | MOBI<br>NE | LE ADH<br>FWORI | HOC<br>K              | DSE THEORY           |                     |          |                   | 5                 | 5           | -        | -       | 5      |  |
|   |            |                 |                       | CO-                  | PO Ma               | pping    |                   |                   |             |          |         |        |  |
| CO Number   | PO1        | PO2             | PO3                   | PO4                  | PO5                 | PSO1     | PSO               | 2 PSO3            | PS          | 504      | PSO5    |        |  |
| CO1   | S          | S               | М                     | S                    | S                   | М        | М                 | L                 |             | S        | S       |        |  |
| CO2   | М          | М               | S                     | М                    | S                   | М        | L                 | М                 |             | S        | S       |        |  |
| CO3   | S          | S               | L                     | S                    | S                   | S        | М                 | L                 |             | М        | S       |        |  |
| CO4   | М          | М               | Μ                     | М                    | М                   | S        | S                 | М                 |             | S        | М       |        |  |
| CO5   | М          | S               | S                     | L                    | S                   | М        | М                 | S                 |             | S        | S       |        |  |
| Level of<br>Correlation<br>between CO<br>and PO           |            | I               | L-LOW                 |                      |                     | M-MEDIUM |                   |                   |             | S-STRONG |         |        |  |
| <b>Tutorial Schedule</b>                                  |            | G               | Group D               | iscussi              | on, Qui             | iz progr | ram, M            | odel prep         | arati       | on       |         |        |  |
| Teaching and Lea<br>Methods                               | rning      | A<br>P          | udio V<br>Presenta    | ideo leo<br>ation ai | cture, C<br>nd Vide | Chalk an | nd Boa<br>entatio | rd class, A<br>on | ssigr       | nmen     | t, PPT  |        |  |
| Assessment Meth   | nods       | C               | lass Te               | st, Unit             | Test,               | Assignr  | nent, (           | CIA-I, CIA-       | ll and      | d ESE    |         |        |  |
| Designed By V   |            |                 |                       |                      | ied By              |          |                   |                   | Approved By |          |         |        |  |
| Mrs.V.Krishnaveni   |            |                 | HoD – Mr.G.Selvakumar |                      |                     |          |                   | Nember So         | ecret       | ary –    | Dr.S.Sh | ahitha |  |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |  |   |  |  |                       |    |   |    |  |  |
|---|--|---|--|--|-----------------------|----|---|----|--|--|
| Course Code   | Course Title   | Course Type   | Sem  | Hours  | L                     | т  | Р | С  |  |  |
| 23M_UCAE15  | COMPUTATIONAL<br>INTELLIGENCE  | DSE THEORY  |  | 5  | 5                     | -  | - | 5  |  |  |
| Objective   | Students realize a new approach for analyzing and create flexible information processing of humans such as sensing, understanding, learning, recognizing, thinking.  |   |  |  |                       |    |   |    |  |  |
| Unit  | с  | Kı  | nowle<br>Leve                                      | edge<br>Is   | Sessions              |    |   |    |  |  |
| I   | Introduction to AI: Pro<br>Problems – State Space<br>Breadth First and Dept<br>– Heuristic Search tech<br>Hill Climbing.   | blem formulation –<br>e and Search – Proc<br>n First– Travelling Sa<br>niques: Generate an                                  | AI Appl<br>luction<br>alesmar<br>d Test -          | ications -<br>Systems-<br>n Problen<br>- Types o           | -<br>-<br>า<br>f      | K1 |   | 12 |  |  |
| II  | Fuzzy Logic Systems: N<br>fuzzy sets – Tnorms a<br>Basics of Approximate<br>Inference – Fuzzy Ru<br>Fuzzification – Infe<br>Clustering–fuzzy rule Ba   | Notion of fuzziness<br>and other aggregat<br>Reasoning – Comp<br>Ile Based Systems<br>Prencing – Defuzz<br>ased classifier. | – Oper<br>ion op<br>ositiona<br>– Sch<br>ificatior | ations or<br>erators -<br>al Rule o<br>nemes o<br>n —Fuzzy | n<br>-<br>f<br>f<br>/ | К2 |   | 12 |  |  |
| 111   | Neural Networks: What<br>and various activation<br>Back Propagation<br>Backpropagation (BP<br>Learning, Variation of<br>Introduction to Associat<br>theory and Self Organiz                                      | 5<br>,<br>f<br>1<br>,   | К3   |  | 11                    |    |   |    |  |  |
| IV  | Artificial Neural Networks: Fundamental Concepts – Basic         Models of Artificial Neural Networks – Important         Terminologies of ANNs–McCulloch Pitts Neuron–Linear         Separability–Hebb Network. |   |  |  |                       |    |   | 12 |  |  |
| v   | Genetic Algorithm: Intr<br>Genetic Algorithm Vs Tr<br>Terminologies in Genet<br>Genetic Algorithm– Op  | К5  |  | 13   |                       |    |   |    |  |  |

|                   | Current Trends: Optimization in the sensor cloud:                                |  |                         |                         |                 |           |  |  |  |  |
|-------------------|--|--|-------------------------|-------------------------|-----------------|-----------|--|--|--|--|
|                   | Taxonomy, ch   | allenges, and s  | urvey.                  |                         |                 |           |  |  |  |  |
|                   | ** Self Stu  | dy.  |                         |                         |                 |           |  |  |  |  |
|                   | CO1: Recalling   | <b>CO1:</b> Recalling the basics of AI and its search. |                         |                         |                 |           |  |  |  |  |
| _                 | CO2: Understa  | <b>CO2:</b> Understanding the Fuzzy logic systems.     |                         |                         |                 |           |  |  |  |  |
| Course<br>Outcome | CO3: Presenti<br>function  | ng the concepts  | s of Neural Netw        | vork and its            | КЗ              |           |  |  |  |  |
|                   | CO4: Illustrati  | ng the concept   | s of Artificial Ne      | ural Network.           | К4              |           |  |  |  |  |
|                   | CO5: Posting   | genetic algorith                                       | ım.                     |                         | K5              |           |  |  |  |  |
|                   |  | Learn  | ing Resources           |                         |                 |           |  |  |  |  |
|                   | 1.Stuart Russell and Peter Norvig,—Artificial Intelligence-A Modern Approach,2nd |  |                         |                         |                 |           |  |  |  |  |
| Toyt              | Edition, Pearson Education in Asia.  |  |                         |                         |                 |           |  |  |  |  |
| Books             | 2.S.Rajasekaran,   | G.A.Vijayalaksh  | imi,—Neural Ne          | tworks, Fuzzy Lo        | ogic and Gene   | tic       |  |  |  |  |
|                   | Algorithms: Synt   | hesis & Applica  | tions, PHI.             | · ·                     |                 |           |  |  |  |  |
|                   | 1.F.Martin,Mcne  | eill,and Ellen Th                                      | ro,—Fuzzy Logio         | : A Practical app       | oroach, AP      |           |  |  |  |  |
| Reference         | Professional,200   | 0.ChinTeng Lin   | , C.S.George Lee        | e, Neuro-Fuzzy S        | ystems, PHI.    |           |  |  |  |  |
| Books             | 2.ChinTengLin.C  | S.George Lee. I  | Neuro-Fuzzy Svs         | ,<br>stems. PHI.        | , ,             |           |  |  |  |  |
|                   | 1 https://www.i  |  | artificial intellio     |                         |                 |           |  |  |  |  |
| Website           | 2.https://www.j  | v3schools.com/   | ai/                     | ence-tutonal            |                 |           |  |  |  |  |
| Link              |  | ,  | ,                       |                         |                 |           |  |  |  |  |
| Self-Study        | https://shop.els   | evier.com/book   | <u>ks/recent-trends</u> | <u>s-in-computation</u> | nal-intelligenc | <u>e-</u> |  |  |  |  |
| Material          | enabled-research/bhattacharyya/978-0-12-822844-9                                 |  |                         |                         |                 |           |  |  |  |  |
|                   | L-Lecture T-Tutorial P-Practical C-Credit  |  |                         |                         |                 |           |  |  |  |  |

|   | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |                  |                     |                     |                      |               |                |              |        |        |       |       |           |         |
|---|---|------------------|---------------------|---------------------|----------------------|---------------|----------------|--------------|--------|--------|-------|-------|-----------|---------|
| Course Code                                     | Cou   | rse Tit          | e                   | Οοι                 | irse Typ             | е             | Sen            | H            | ours   | L      |       | т     | Р         | С       |
| 23M_UCAE15                                      | COMPL<br>INTE   | JTATIC<br>LLIGEN | NAL<br>CE           | DSE                 | THEOR                | Y             |                |              | 5      | 5      |       | -     | -         | 5       |
| CO-PO Mapping                                   |   |                  |                     |                     |                      |               |                |              |        |        |       |       |           |         |
| CO Number                                       | PO1   | PO2              | PO3                 | PO4                 | PO5                  | PS            | 01             | PSO2         | PS     | 603    | PS    | 604   | PSO5      |         |
| CO1   | L   | S                | S                   | S                   | S                    | 9             | 5              | Μ            |        | S      |       | S     | S         |         |
| CO2   | S   | М                | S                   | S                   | S                    | 0             | S              | S            |        | S      |       | S     | S         |         |
| CO3   | S   | S                | М                   | S                   | S                    | 9             | S              | Μ            |        | S      | 1     | М     | S         |         |
| CO4   | S   | S                | S                   | М                   | S                    | Ν             | Л              | S            |        | S      |       | S     | S         |         |
| CO5   | М   | S                | S                   | S                   | S                    | 0             | S              | Μ            | M S    |        |       | S     | S         |         |
| Level of<br>Correlation<br>between CO and<br>PO | t   | I                | LOW                 |                     | M-MEDIUM S-STRON     |               |                |              |        |        | STRON | Ĵ     |           |         |
| Tutorial Schedule                               | ;   | G                | roup Di             | scussio             | n, Quiz J            | orog          | ram,           | Mode         | el pre | para   | tior  | า     |           |         |
| Teaching and Lea<br>Methods                     | rning   | A<br>Pi          | udio Vio<br>resenta | deo lect<br>tion an | ture, Cha<br>d Video | alk a<br>pres | nd Bo<br>entat | ard o<br>ion | lass,  | Assig  | gnm   | nent, | PPT       |         |
| Assessment Met                                  | nods  | C                | ass Tes             | t, Unit             | Test, As             | sign          | ment           | CIA-         | I, CIA | -II ar | nd E  | SE    |           |         |
| Designed By                                     |   |                  |                     | Veri                | fied By              |               |                |              |        | Α      | ppr   | oved  | d By      |         |
| Mrs. N.Hyrunnisha                               |   |                  | HoD                 | ) - Mr.0            | 6.Selvak             | uma           | r              | м            | embo   | er Se  | cret  | tary  | - Dr.S.Sł | nahitha |



#### MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (Autonomous)





| B.C.A Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |  |   |   |  |  |                            |                   |            |  |  |
|---|--|---|---|--|--|----------------------------|-------------------|------------|--|--|
| Course Code   | Course Title   | Course Type   | Sem   | Hours  | L  | т                          | Р                 | С          |  |  |
| 23M_UCAE16  | GRID<br>COMPUTING  | DSE THEORY  |   | 5  | 3  | 2                          | -                 | 4          |  |  |
| Objective   | Students comprehe<br>frameworks availab  | end the basic of G<br>le within the field.  | rid com   | puting, r  | ecognize   | e the v                    | arious too        | l kits and |  |  |
| Unit  |  | Course Conter   | nt  |  |  | Kn                         | owledge<br>Levels | Sessions   |  |  |
| I   | Introduction: Early of Grid Business are   | К1  | 10  |  |  |                            |                   |            |  |  |
| II  | Grid Computing o<br>Developing Grid Sta<br>Grid Forum (GCF),<br>Tool kits and Frame<br>grid based solut<br>organization buildir                    | rganization and th<br>andards, and Best P<br>#Organization Dev<br>ework #, Organization<br>tions to solve<br>ng and Grid Based so | neir Rol<br>ractice (<br>veloping<br>on and k<br>comput<br>olutions | es: Orga<br>Guideline<br>Grid Co<br>Duilding a<br>ing, cor       | nization<br>s, Globa<br>mputin<br>nd usin<br>nmercia           | s<br>I<br>g<br>g           | К2                | 12         |  |  |
|   | Grid Computing An virtual organization other distributed te  | f<br>D  | КЗ  | 12   |  |                            |                   |            |  |  |
| IV  | The Grid Computin<br>on demand and in<br>Architecture and G  | <b>g Road Map:</b> Auton<br>frastructure virtua<br>rid,# Semantic Grids   | omic co<br>lization,<br>#.  | mputing,<br>Service-   | Busines<br>Oriente   | s<br>d                     | К4                | 12         |  |  |
| v   | Merging the Grid s<br>Architecture: Serve<br>Architecture, #XML<br>description Mecha<br>and Grid Services, M<br>the WS-I Organiza<br>Environment*. | vice-Oriented Arch<br>vice-Oriented Arch<br>messages and Enve<br>nisms, Relationship<br>Web services Intero<br>ation.* Current Tu | re with<br>hitecture<br>eloping#<br>b betwe<br>perabili<br>rends –  | the Web<br>e, Web<br>, Service<br>en Web<br>ty and th<br>Problem | Service<br>Service<br>message<br>Service<br>e role o<br>Solvin | s<br>e<br>e<br>s<br>f<br>g | К5                | 14         |  |  |
|   | ** Self Study.   |   |   |  |  |                            |                   |            |  |  |
|   | <b>CO1:</b> Recall the bas   | ic elements and cor   | ncepts o  | f Grid cor   | nputing  |                            | K1                |            |  |  |
| Course  | <b>CO2</b> : Identify the G  | rid computing tool l  | kits and  | Framewo  | ork.   |                            | К2                |            |  |  |
| Outcome   | CO3: Apply concept   | t of Anatomy of Grid  | d Compu   | iting.   |  |                            | K3                |            |  |  |
|   | <b>CO4:</b> Develop the s  | ervice oriented arch  | nitecture   | 2.   |  |                            | К4                |            |  |  |
|   | <b>CO5:</b> Valid the knowledge on grid and web service architecture. K5   |   |   |  |  |                            |                   |            |  |  |

| Learning Resources |   |   |   |  |  |  |  |  |  |  |  |  |
|--------------------|---|---|---|--|--|--|--|--|--|--|--|--|
| Text<br>Books      | 1 Joshy Joseph and Crai   | 1 Joshy Joseph and Craig Fellen stein, Grid computing, Pearson/IBM Press, PTR, 2004.  |   |  |  |  |  |  |  |  |  |  |
| Reference          | 1. Ahmer Abbas and Gr   | L. Ahmer Abbas and Graig computing, A Practical Guide to technology and applications, |   |  |  |  |  |  |  |  |  |  |
| Books              | Charles River Media,200   | Charles River Media, 2003.  |   |  |  |  |  |  |  |  |  |  |
| Website<br>Link    | <ol> <li><u>https://en.wikipedia.</u></li> <li><u>https://link.springer.c</u></li> <li>https://www.redbool</li> </ol> | org/wiki/Grid_computin<br>com/chapter/10.1007/9<br>ks.ibm.com/redbooks/p              | <u>ng</u><br>9 <u>78-1-84882-409-6_4</u><br>9dfs/sg246778.pdf |  |  |  |  |  |  |  |  |  |
| Self-Study         | 1.https://en.wikipedia.c  | org/wiki/Problem_solvir   | ng_environment  |  |  |  |  |  |  |  |  |  |
| Material           | 2. https://ebookcentral.  | 2. https://ebookcentral.proquest.com/lib/inflibnet-ebooks/reader.action?docID=574578  |   |  |  |  |  |  |  |  |  |  |
|                    | L-Lecture T-Tutorial P-Practical C- Credit  |   |   |  |  |  |  |  |  |  |  |  |

|                       | В.                  | C.A Syll          | abus LO | CF-CB  | CS with e   | ffect fron | n 2023-2 | 024 Onw      | ards      |        |       |     |
|-----------------------|---------------------|-------------------|---------|--|-------------|------------|----------|--------------|-----------|--------|-------|-----|
| Course Code           | 2                   | Cours             | e Title |  | Course      | Туре       | Sem      | Hours        | L         | т      | Р     | С   |
| 23M_UCAE1             | 6 G                 | RID COI           | MPUTIN  | G  | DSE TH      | IEORY      |          | 5            | 3         | 2      | -     | 4   |
|                       |                     |                   |         |  | CO-PO N     | lapping    |          |              |           |        |       |     |
| CO Number             | PO1                 | PO2               | PO3     | PO4  | PO5         | PSO1       | PSO2     | PSO3         | PSO4      | PS     | 05    |     |
| CO1                   | М                   | S                 | L       | M L M S L M L  |             |            |          |              |           |        | L     |     |
| CO2                   | М                   | L                 | М       | L S M L M L  |             |            |          |              |           | S      |       |     |
| CO3                   | S                   | М                 | L       | L L S M L L  |             |            |          |              |           |        | L     |     |
| CO4                   | S                   | S                 | S       | М  | L           | S          | S        | S            | М         |        | L     |     |
| CO5                   | М                   | S                 | L       | М  | S           | М          | S        | L            | М         |        | S     |     |
| Level<br>betwe        | of Corre<br>en CO a | elation<br>and PO |         |  | L-LOW       | I          | Γ        | M-MEDIU      | M         | S      | -STRC | DNG |
| <b>Tutorial Schee</b> | dule                |                   |         | Group Discussion, Quiz program, Model preparation  |             |            |          |              |           |        |       |     |
| Teaching and          | Learnir             | ng Metł           | nods    | Audio Video lecture, Chalk and Board class, Assignment, PPT<br>Presentation and Video presentation |             |            |          |              |           |        |       |     |
| Assessment N          | /lethods            | s                 |         | Class  | s Test, Uni | t Test, As | signmer  | nt, CIA-I, ( | CIA-II an | d ESE  |       |     |
| De                    | esigned             | Ву                |         |  | Verifie     | ed By      |          | ŀ            | Approve   | ed By  |       |     |
| Mrs.K.Gayathri        |                     |                   |         | HOD - Mr.G.Selvakumar Member Secretary - I   |             |            |          |              | - Dr.9    | 5.Shal | hitha |     |





|             | BCA - Syllabus LO   | CF - CBCS with effec  | t from   | 2023-20  | 24 Onv   | wards   |                 |          |
|-------------|---|---|--|--|--|---|-----------------|----------|
| Course Code | Course Title  | Course Type   | Sem  | Hours  | L  | т   | Р               | С        |
| 23M_UCAE17  | CLOUD COMPUTING   | DSE THEORY  |  | 5  | 3  | 2   | -               | 4        |
| Objective   | Students Learn the fur  | ndamental concepts  | and Te   | chnologi   | es of C  | loud Co   | mputing         | J.       |
| Unit        |   | Course Content  |  |  |  | Knov<br>Le  | wledge<br>evels | Sessions |
| 1           | Introduction to Cloud<br>of Cloud Computing –<br>Cloud-based Services<br>Technologies: Virtuali<br>Elasticity –Deploymen<br>Defined Networking<br>Reduce–Identity and<br>Agreements–Billing.  | s<br>d<br>d<br>e<br>p<br>el   | K1   | 10   |  |   |                 |          |
| I           | Cloud and Compute S<br>Google Compute Er<br>Storage Services Ama<br>Storage Windows Az<br>Relational Data Store<br>Google Cloud Data S<br>Windows Azure Table<br>Runtimes and Framew<br>Notification Services-I<br>Amazon Cloud Front<br>Analytics Services: Ar<br>Reduce Service - Goo<br>Deployment and Ma<br>stack Amazon Cloud F<br>Services :Amazon Ide<br>Azure Active Directory<br>Stack– Eucalyptus – O | Services: Amazon Ela<br>ngine-Windows Azu<br>zon Simple Storage<br>aure Storage Databa<br>- Amazon Dynamo D<br>Store - Windows A<br>e Service Application<br>works – Queuing Se<br>Media Services Com<br>Windows Azure Com<br>Mazon Elastic Map<br>ogle Big Query-Wind<br>nagement Services<br>ormation Identity an<br>ntify and Access Ma<br>Open Source Private<br>pen Stack. | astic Co<br>ure Vir<br>Service<br>ase Se<br>B - Goo<br>Azure S<br>azure S<br>rvices-<br>tent De<br>tent De<br>tent De<br>tent De<br>tent De<br>tent De<br>tent Co<br>anagem<br>cloud | mputer<br>rtual M<br>- Googl<br>rvices: A<br>ogle Clou<br>GQL Data<br>ces: App<br>Email Se<br>elivery N<br>e - Goog<br>zure HD<br>on Elasti<br>ss Mana<br>hent - W<br>Software | Cloud<br>achine<br>e Clou<br>Amazo<br>ud SQL<br>abase<br>ilicatio<br>rvices<br>ervices<br>ervices<br>letwor<br>getwor<br>le Ma<br>Insigh<br>ic Bea<br>gemer<br>/indow<br>e: Clou | –<br>d<br>n<br>-<br>n<br>s:<br>k<br>p<br>n<br>t<br>n<br>t<br>s<br>d | K2              | 14       |
|             | <b>Cloud Application De</b><br>For Cloud Applicatio<br>Security –Maintenand<br>Reference Architectu<br>Application Design<br>Architecture(SOA),Clo  | sign: Introduction –<br>ns–Scalability–Reliak<br>ce and Up gradati<br>ures for Cloud A<br>Methodologies:<br>ud Component Mod  | - Design<br>pility and<br>fon –<br>Applicat<br>Serv<br>del,1aaS  | n Consic<br>nd Avai<br>Perform<br>ions –<br>vice C<br>,PaaS ar   | leratio<br>lability<br>ance<br>Clou<br>Driente<br>nd Saa   | n<br>   | K2              | 12       |

|                        | Services for Clou<br>Restful Web Ser<br>Approach (SQL), N  | d Application<br>vices – Data<br>Ion-Relationa   | s, Model View<br>Storage Appr<br>I Approach(NoS  | Controller (MVC),<br>oaches: Relational<br>GQL).  |                                |    |  |  |  |  |
|------------------------|--|--|--|---|--------------------------------|----|--|--|--|--|
| IV                     | Cloud Application<br>Bench marking<br>Characteristics -<br>Consideration for<br>Tools and Types<br>Security: Introdu<br>Authentication (<br>Management –Da<br>in motion –Key M | n Bench mar<br>– Steps ir<br>-Application<br>Bench mark<br>s of Tests -<br>ction – CSA<br>SSO) – Au<br>ta Security: S<br>anagement–A | king and Tunir<br>Bench mark<br>Performance<br>ing Methodolo<br>-Deployment F<br>Cloud Securi<br>thorization–Ide<br>ecuring data at<br>Auditing. | ng: Introduction to<br>king – Workload<br>Metrics– Design<br>gy–Bench marking<br>Prototyping. Cloud<br>ty Architecture –<br>ntity and Access<br>rest, securing data | КЗ                             | 12 |  |  |  |  |
| v                      | Case Studies: Clou<br>For Energy System<br>-Cloud Computing<br>for Education. C<br>technologies*   | К4   | 12   |   |                                |    |  |  |  |  |
|                        | ** Self Study.   |  |  |   |                                |    |  |  |  |  |
|                        | <b>CO1:</b> Define the full Computing.   | chnologies in Cloud  | K1   |   |                                |    |  |  |  |  |
|                        | <b>CO2</b> : Demonstrate pitfalls.   | e various clou   | d service types  | And their uses and  | К2                             |    |  |  |  |  |
| Course                 | CO3: Construct th  | e Cloud Archi  | tecture and Ap   | plication design.   | КЗ                             |    |  |  |  |  |
| Outcome                | <b>CO4</b> : Examine the marking and secu  | e various asp<br>rity in the Clo   | ects of Applica<br>ud.   | tion design, bench  | КЗ                             |    |  |  |  |  |
|                        | CO5: Compare va  | rious Case Stu   | idies in Cloud C   | omputing.   | К4                             |    |  |  |  |  |
|                        | l<br>  | Lea  | rning Resources  | ;   | l                              |    |  |  |  |  |
| Text<br>Books          | 1. Arshdeep Bahga<br>Universities Press (  | , VijayMadise<br>India)Pvt.Ltd.  | tti <i>, CloudCompt</i><br>,2018.  | ıting – AHandsOnAp  | proach,                        |    |  |  |  |  |
| Reference<br>Books     | <ol> <li>Anthony T Velte<br/>Approach, Tata M</li> <li>BarrieSosinsky,</li> <li>DavidCrookes,</li> <li>Dr. KumarSaura</li> </ol>   | e, TobyJVelte,<br>cGraw-Hill,20<br><i>CloudCompu<br/>CloudComput</i><br>abh, <i>CloudCor</i>   | , Robert Elsenpe<br>013.<br><i>tingBible</i> , Wiley<br><i>inginEasySteps</i> ,<br><i>nputing</i> , WileyI                                       | eter, Cloud Computin<br>IndiaPvt.Ltd.,2013.<br>TataMcGrawHill,20<br>ndia,SecondEdition2   | ng :A Practical<br>15.<br>012. |    |  |  |  |  |
| Website<br>Link        | <ol> <li>https://en.wiki</li> <li>https://link.spr</li> <li>https://webobj</li> <li>computing/12183</li> </ol>   | pedia.org/wik<br>inger.com/ch<br>ects.cdw.com<br>8CDW-Cloud  | i/Cloud_compu<br>apter/10.1007/<br>/webobjects/m<br>-Computing-Ref   | iting.<br>978-3-030-34957-8_<br>nedia/pdf/solutions/<br>ference-Guide.pdf.  | _7.<br>cloud-                  |    |  |  |  |  |
| Self-Study<br>Material | 1. https://www.youtube.com/watch?v=jW0Y5SimnwM.  |  |  |   |                                |    |  |  |  |  |
|                        | L-Lecture T-Tutorial P-Practical C-Credit  |  |  |   |                                |    |  |  |  |  |

|   | BC      | A Sylla | bus LO        | CF - CB   | CS wit              | h effe           | ct fron           | n 2023-20             | )24 Onw     | ards                                |        |    |   |
|---|---------|---------|---------------|---|---------------------|------------------|-------------------|-----------------------|-------------|-------------------------------------|--------|----|---|
| Course Code                               | Co      | ourse T | itle          |   | Course              | Туре             |                   | Sem                   | Hours       | L                                   | Т      | Ρ  | С |
| 23M_UCAE17                                | CLOUI   | сомі    | PUTING        | i D   | SE THE              | ORY              |                   |                       | 5           | 3                                   | 2      | -  | 4 |
|   |         |         |               |   | CO-PC               | ) Map            | ping              |                       |             |                                     |        |    |   |
| CO Numbe                                  | er      | PO1     | PO2           | PO3   | PO4                 | P05              | PSO1              | l PSO2                | PSO3        | PSO4                                | PSO5   |    |   |
| CO1                                       |         | S       | S             | S   | М                   | М                | S                 | S S                   |             | М                                   | S      |    |   |
| CO2                                       |         | S       | S             | S   | S                   | М                | S                 | S                     | S           | S                                   | S      |    |   |
| CO3                                       |         | S       | S             | S   | S                   | S                | S                 | S                     | S           | S                                   | S      |    |   |
| CO4                                       |         | S       | S             | S   | М                   | S                | S                 | S                     | S           | ; <u> </u>                          |        |    |   |
| CO5                                       |         | S       | S             | S   | М                   | S                | S                 | S                     | S           | М                                   | S      |    |   |
| Level of Correlation<br>between CO and PO |         |         | l             | L-LOW M-MEDIUM                                    |                     |                  |                   |                       |             | S                                   | -STRON | G  |   |
| Tutorial Schedu                           | ule     |         | Grou          | Group Discussion, Quiz program, Model preparation |                     |                  |                   |                       |             |                                     |        |    |   |
| Teaching and L<br>Methods                 | earning | ;       | Audi<br>Prese | o Video<br>entatio                                | o lectur<br>n and \ | re, Cha<br>/ideo | ilk and<br>preser | l Board cl<br>ntation | ass, Assi   | signment, PPT                       |        |    |   |
| Assessment M                              | ethods  |         | Class         | Test, l   | Jnit Te             | st, As           | signme            | ent, CIA-I            | , CIA-II ar | nd ESE                              |        |    |   |
| Design                                    | ed By   |         |               |   |                     | Verifie          | ed By             |                       |             | Ар                                  | proved | Ву |   |
| Mr.M.Ravi                                 |         |         |               | HoD - Mr.G.Selvakumar                             |                     |                  |                   |                       |             | Member Secretary –<br>Dr.S.Shahitha |        |    |   |



#### MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE



#### (Autonomous) RASIPURAM - 637408.

|                   | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards   |  |   |  |             |               |              |         |  |  |  |  |
|-------------------|---|--|---|--|-------------|---------------|--------------|---------|--|--|--|--|
| Course Code       | Course Title  | Course Type  | Sem   | Hours  | L           | Т             | Ρ            | С       |  |  |  |  |
| 23M_UCAE18        | ARTIFICIAL NEURAL<br>NETWORK  | DSE THEORY   |   | 5  | 3           | 2             | -            | 4       |  |  |  |  |
| Objective         | Students Understand the ball layer and multi - layer percent  | sics of artificial in eptron networks.   | neural ı  | networks   | , learni    | ng prod       | cess, single |         |  |  |  |  |
| Unit              | Cours   | e Content  |   |  | Know<br>Lev | ledge<br>vels | S            | essions |  |  |  |  |
| I                 | Artificial Neural Model - Act<br>and Feedback, Convex S<br>Separability, Non-Linear S<br>Networks. Learning Algorith<br>Descent Rules, Perception<br>Convergence Theorem.   | forward<br>Linear<br>ultilayer<br>Gradient<br>rception   | К   | 1  |             | 12            |              |         |  |  |  |  |
| II                | Introduction, Error correction<br>learning , Hebbian learn<br>Boltzmann learning, credit<br>with and without teacher<br>Adaptation.   | К  | 2   |  | 12          |               |              |         |  |  |  |  |
|                   | Single layer Perception: Int<br>Linear classifier, Simple p<br>algorithm, Modified Percept<br>linear combiner, Continu<br>continuous perception. Limi   | ognition,<br>learning<br>Adaptive<br>hing in   | КЗ  |  |             | 12            |              |         |  |  |  |  |
| IV                | Multi-Layer Perception Netw<br>hidden layers, Simple layer<br>the output layer, Multilayer f<br>continuous perceptions, Gen<br>propagation algorithm  | vorks: Introductic<br>of a MLP, Delta<br>eed forward neur<br>eralized delta lea                        | on, MLP<br>learning<br>al netwo<br>rning ru         | with 2<br>g rule of<br>ork with<br>lle, Back           | K           | 4             |              | 12      |  |  |  |  |
| V                 | Deep learning- Introduction<br>blocks for the DL tech<br>Neocognitron, Deep Co<br>Recurrent Neural Networks<br>Belief Networks, Restricted I<br>DNN and Applications.<br>*Current Trends- Multi Mod<br>** Self Study. | n- Neuro archite<br>niques, Deep<br>nvolutional Neur<br>(RNN), feature e<br>Boltzmann Machin<br>al AI* | ctures<br>Learnin<br>al Ne<br>extractic<br>nes, Tra | building<br>ng and<br>etworks,<br>on, Deep<br>ining of | К           | 5             |              | 12      |  |  |  |  |
|                   | <b>CO1:</b> Remember the basics of  | of artificial neural   | netwo   | rks with   |             |               |              |         |  |  |  |  |
|                   | single layer and multi-layer p  |  | K1  |  |             |               |              |         |  |  |  |  |
| Course<br>Outcome | <b>CO2</b> : Illustrate the Error Con<br>Learning algorithms and task   | rection and variou<br>s.   | S   |  | К           | 2             |              |         |  |  |  |  |
|                   | CO3: Analyse the various Per  | rception Learning  | Algorith  | ım.  | К3          |               |              |         |  |  |  |  |
|                   | CO4: Apply the various Mult   | i-Layer Perception   | n Netwo   | rk.  | К4          |               |              |         |  |  |  |  |

|                        | <b>CO5</b> : Evaluate and its Applicat                            | the Deep Lea<br>ions.   | rning of various I                   | Neural network                       | К5                                  |                        |  |  |  |  |  |
|------------------------|---|---|--------------------------------------|--------------------------------------|-------------------------------------|------------------------|--|--|--|--|--|
|                        |   | Lea   | rning Resources                      |                                      |                                     | •                      |  |  |  |  |  |
| Text<br>Books          | 1. Neural Netw<br>2. Neural Netw<br>Hall, 2nd Editio              | orks A Classrc<br>ork – A Comp<br>n, 1999.  | om Approach – Sa<br>rehensive Founda | atish Kumar, McC<br>tion – Simon Hay | GrawHill – Seco<br>vkins, Pearson P | nd Edition.<br>rentice |  |  |  |  |  |
| Reference<br>Books     | Artificial Neural Networks - B.Yegnanarayana, PHI, NewDelhi 1998. |   |                                      |                                      |                                     |                        |  |  |  |  |  |
|                        | 1.https://www   | w3schools.co  | m/ai/ai_neural_n                     | etworks.asp                          |                                     |                        |  |  |  |  |  |
| Website                | 2.https://en.wi   | kipedia.org/w   | iki/Artificial_neur                  | al_network                           |                                     |                        |  |  |  |  |  |
| Link                   | 3.https://link.s  | oringer.com/c   | hapter/10.1007/9                     | 78-3-642-21004                       | -4_12                               |                        |  |  |  |  |  |
| Self-Study<br>Material | <ol> <li>https://www<br/>trends</li> <li>https://cloud</li> </ol> | <ol> <li>https://www.techtarget.com/searchenterpriseai/tip/9-top-AI-and-machine-learning-<br/>trends</li> <li>https://cloud.google.com/use-cases/multimodal-ai</li> </ol> |                                      |                                      |                                     |                        |  |  |  |  |  |
|                        | L-Lecture   | T-Tutorial  | P-Practical                          |                                      | C-Credit                            |                        |  |  |  |  |  |

| BO  | CA Sylla   | abus L                | OCF -   | CBCS v  | vith effe | ect from | 2023-2     | 024 Onv    | wards          |                  |       |   |
|---|------------|-----------------------|---|---------|-----------|----------|------------|------------|----------------|------------------|-------|---|
| Course Code                                     | Co         | ourse <sup>-</sup>    | Title   |         | Course    | е Туре   | Sem        | Hours      | L              | Т                | Р     | С |
| 23M_UCAE18                                      | ARTIF<br>N | ICIAL I               | NEURA<br>ORK  | L       | DSE TI    | HEORY    |            | 5          | 3              | 2                | -     | 4 |
|   |            |                       |   | CO -    | PO Map    | oping    |            |            |                |                  |       |   |
| CO Number                                       | PO1        | PO2                   | PO3   | PO4     | PO5       | PSO1     | PSO2       | PSO3       | PSO4           | P                | SO5   |   |
| CO1   | S          | Μ                     | М   | М       | М         | М        | S          | М          | М              | L                |       |   |
| CO2   | S          | S                     | М   | М       | М         | S        | М          | S          | М              |                  | S     |   |
| CO3   | М          | Μ                     | S   | S       | М         | S        | L          | М          | MM             |                  | M     |   |
| CO4   | S          | S                     | Μ   | S       | S         | М        | S          | S          | L              |                  | S     |   |
| CO5   | M N        |                       |   | М       | S         | S S S    |            |            | S              |                  | S     |   |
| Level of<br>Correlation<br>between CO and<br>PO |            | L-LOW                 |   |         |           | M        | S-STRONG   |            |                |                  |       |   |
| Tutorial Schedule                               |            | G                     | roup Di   | scussio | n, Quiz   | program  | , Mode     | l prepara  | ition          |                  |       |   |
| Teaching and Lear<br>Methods                    | ning       | Aı<br>Pr              | udio Video lecture, Chalk and Board class, Assignment, PPT<br>Presentation and Video Presentation |         |           |          |            |            |                |                  |       |   |
| Assessment Metho                                | ods        | CI                    | ass Tes   | t, Unit | Test, Ass | ignment  | , CIA-I, ( | CIA-II and | I ESE          |                  |       |   |
| Designed I                                      | Зу         |                       |   |         | Verifi    | ed By    |            |            | Ap             | prov             | ed By |   |
| Mr.A.Raja                                       |            | HoD - Mr.G.Selvakumar |   |         |           |          |            | Mem<br>Dr  | ber S<br>.S.Sh | ecreta<br>ahitha | ıry-  |   |





|             | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards   |   |                       |                           |               |                     |                   |                       |  |  |  |  |  |  |
|-------------|---|---|-----------------------|---------------------------|---------------|---------------------|-------------------|-----------------------|--|--|--|--|--|--|
| Course Code | Course Title  | Course Type   | Sem                   | Hours                     | L             | т                   | Р                 | С                     |  |  |  |  |  |  |
| 23M_UCAE19  | AGILE PROJECT<br>MANAGEMENT   | DSE THEORY  |                       | 5                         | 3             | 2                   | -                 | 4                     |  |  |  |  |  |  |
| Objective   | Students Learn the to demonstrate Agi   | basic concepts of so<br>le development, plar  | ftware c<br>nning, e: | lesign, teo<br>xecution a | chno<br>and t | logies a<br>testing | and AP<br>technio | l's and also<br>ques. |  |  |  |  |  |  |
| Unit        |   | Course Content  |                       |                           |               | Knowl<br>Leve       | edge<br>els       | Sessions              |  |  |  |  |  |  |
| 1           | Introduction: Mode<br>Management Need<br>Project Manageme<br>Principles: Underst<br>the four values of<br>Agile Principles – Ac<br>as a result of Agile<br>Being Agile Works<br>Agile approaches<br>people like being Ag<br>Being Agile: Agile A<br>of Agile approaches<br>Scrum, Extreme<br>Environments in<br>environment – Low<br>communicating –C<br>Action: Establishing | ct<br>le<br>ng<br>.5<br>es<br><b>iy</b><br>w<br>ny<br>la<br>n,<br><b>le</b><br>al<br>ch<br>in | K1                    | -<br>-                    | 12            |                     |                   |                       |  |  |  |  |  |  |
| 111         | Agile Planning and<br>and Roadmap: Agile<br>– Creating a produ<br>backlog. Planning<br>requirements and<br>planning. Working<br>day–Tracking progre<br>shippable functiona<br>Work, Inspecting a<br>sprint retrospective<br>product for deployme<br>product deployme<br>product deployme  | n<br>n<br>ct<br>ng<br>nt<br>ur<br>ng<br>ne<br>ne<br>ne<br>or<br>or                            | K3                    | 5                         | 12            |                     |                   |                       |  |  |  |  |  |  |

| IV            | Agile Management Managing Scope and Procurement:What's different about Agile scope management –Managing Agile scope – What's different about Agileprocurement – Managing Agile procurement. ManagingTime and Cost: What's different about Agile timemanagement – Managing Agile schedules – What'sdifferent about Agile cost management –Managing Agilebudgets. Managing Team Dynamics and Communication:What's different about Agile team dynamics – ManagingAgile team dynamics –What's different about Agilecommunication – Managing Agile communication.Managing Quality and Risk: What's different about Agilequality – Managing Agile quality –What's different aboutAgile risk management – Managing Agile risk. | K4                            | 12                                  |
|---------------|---|-------------------------------|-------------------------------------|
| v             | <ul> <li>Implementing Agile Building a Foundation: Organizational and individual commitment – Choosing the right pilot team members – Creating and environment that enables Agility – Support Agility initially and overtime. Being a Change Agent: Becoming Agile requires change – why change doesn't happen on its own – Platinum Edge's Change Roadmap – Avoiding pitfalls –Signs your changes are slipping. Benefits, Factors for Success and Metrics: Ten key benefits of Agile project management – Ten key factors for project success – Ten metrics for Agile Organizations.</li> <li>*Current Trends: Agile Trends 2024: The Next Wave of Agile Transformation*</li> </ul>                                    | K5                            | 12                                  |
|               | ** Self Study.  |                               |                                     |
|               | <b>CO1:</b> Remember software design, software Technologies and APIs using Agile Management.  | K1                            |                                     |
|               | <b>CO2:</b> Identify the Agile development and testing techniques.  | K2                            |                                     |
| Course        | <b>CO3:</b> Apply the steps of Agile Planning and Execution using Sprint.   | КЗ                            |                                     |
| Outcome       | <b>CO4:</b> Analyze Agile Management Design, scope,<br>Procurement, managing Time and Cost and Quality<br>Check.  | К4                            |                                     |
|               | <b>CO5:</b> Implement Agile testing techniques, factors for success and metrics.  | К5                            |                                     |
|               | Learning Resources  |                               |                                     |
| Text<br>Books | <ol> <li>Mark C.Layton, Steven J.Ostermiller, Agile Project Mana<br/>Edition, Wiley India Pvt. Ltd., 2018.</li> <li>Jeff Sutherland, Scrum – The Art of Doing Twice the<br/>Penguin,2014</li> </ol>   | gement for Du<br>Work in Half | mmies, 2 <sup>nd</sup><br>the Time, |

| Reference<br>Books     | <ol> <li>Mark C.La<br/>2018.</li> <li>Mike Coh<br/>– Wesley</li> <li>Alex Moo</li> <li>Alex Moo</li> <li>Alex Moo</li> <li>Andrew S<br/>Lean, and</li> </ol> | ayton, David Mo<br>n, Succeeding v<br>Signature Serie<br>re, Agile Projec<br>re, Scrum, 2020<br>Stellmanand Jer<br>I Kanban, Shroff | rrow, Scrum for<br>with Agile – Soft<br>s, 2010.<br>t Management,<br>)<br>nnifer Greene, L<br>f / O'Reilly, First | Dummies, 2 <sup>nd</sup> Edition, Wiley India Pvt.Ltd.,<br>ware Development using Scrum, Addison<br>2020.<br>earning Agile: Understanding Scrum, XP,<br>Edition, 2014. |  |  |  |  |  |  |  |  |
|------------------------|--|---|---|--|--|--|--|--|--|--|--|--|
| Website<br>Link        | 1. <u>www.agilea</u>   | alliance.org/res  | ources  |  |  |  |  |  |  |  |  |  |
| Self-Study<br>Material | <ol> <li>https://w<br/>agile-transf</li> </ol>   | ww.holaspirit.c   | om/blog/agile-t   | rends-2024-what-is-the-next-wave-of-   |  |  |  |  |  |  |  |  |
|                        | L-Lecture  | L-Lecture T-Tutorial P-Practical C-Credit   |   |  |  |  |  |  |  |  |  |  |

|   | BCA Syl         | labus L         | OCF -                 | CBCS wi               | th effect            | t fron          | n 2023            | -202      | 24 Onv  | vard             | S                   |        |   |
|---|-----------------|-----------------|-----------------------|-----------------------|----------------------|-----------------|-------------------|-----------|---------|------------------|---------------------|--------|---|
| Course Code                                     | Cours           | e Title         |                       | Cour                  | se Type              |                 | Sem               | H         | ours    | L                | Т                   | Р      | С |
| 23M_UCAE19                                      | AGILE I<br>MANA | PROJEC<br>GEMEN | T<br>IT               | DSE THEORY            |                      |                 |                   |           | 5       | 3                | 2                   | -      | 4 |
|   |                 |                 |                       | CO-P                  | О Марр               | ing             |                   |           |         |                  |                     |        |   |
| CO Number                                       | PO1             | PO2             | PO3                   | PO4                   | PO5                  | PSC             | 01 PS             | 02        | PSO     | 3 F              | SO4                 | PSO5   |   |
| CO1   | S               | М               | Μ                     | М                     | L                    | Μ               | 9                 | 5         | L       |                  | Μ                   | L      |   |
| CO2   | S               | S               | Μ                     | М                     | М                    | S               |                   | _         | Μ       |                  | L                   | S      |   |
| CO3   | М               | М               | Μ                     | S                     | М                    | S               | Ν                 | Л         | L       |                  | L                   | S      |   |
| CO4   | М               | М               | Μ                     | S                     | S                    | S               | Ν                 | Л         | S       |                  | Μ                   | L      |   |
| CO5   | L               | Μ               | S                     | S                     | S                    | Μ               | ∧ S               |           | L       |                  | Μ                   | S      |   |
| Level of<br>Correlation<br>between CO and<br>PO | 1               | L               | L-LOW M-MEDIUM        |                       |                      |                 | 1                 | S-STRONG  |         |                  |                     |        |   |
| <b>Tutorial Schedule</b>                        |                 | G               | roup D                | iscussio              | n, Quiz              | progr           | am, N             | 1ode      | el prep | arat             | ion                 |        |   |
| Teaching and Lea<br>Methods                     | rning           | Aı<br>Pr        | udio V<br>esenta      | ideo lect<br>ation ar | ture, Ch<br>nd Video | alk ar<br>Prese | nd Boa<br>entatio | rd c<br>n | lass, A | ssigi            | nment               | t, PPT |   |
| Assessment Meth                                 | ods             | Cl              | ass Te                | st, Unit <sup>·</sup> | Test, Ass            | ignm            | ent, Cl           | A-I,      | CIA-II  | and              | ESE                 |        |   |
| Designed  | Ву              |                 |                       | V                     | erified I            | Зу              |                   |           |         |                  | Appro               | ved By |   |
| Mrs.N.Padmapriya                                |                 |                 | HOD - Mr.G.Selvakumar |                       |                      |                 |                   |           | Mei     | mber :<br>Dr.S.S | Secretai<br>hahitha | ſγ -   |   |





|             | BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards   |   |  |                                       |                         |                  |                     |                 |  |  |  |  |  |
|-------------|---|---|--|---------------------------------------|-------------------------|------------------|---------------------|-----------------|--|--|--|--|--|
| Course Code | Course Title  | Course Type   | Sem  | Hours                                 | L                       | т                | Ρ                   | С               |  |  |  |  |  |
| 23M_UCAC_   | MICROPROCESSOR<br>AND MICRO<br>CONTROLLER   |   |  | 5                                     | 5                       | -                | -                   | 5               |  |  |  |  |  |
| Objective   | Students Learn the explor peripheral devices, prepa   | e internal organiza<br>ring them for real-  | ation, ins<br>-world a                       | structior<br>pplication               | n sets, ar<br>ons in er | nd inte<br>nbedd | rfacinរ្ទ<br>ed sys | g with<br>tems. |  |  |  |  |  |
| Unit        | Cour  | se Content  |  |                                       | Knowl<br>Leve           | edge<br>els      | Ses                 | Sessions        |  |  |  |  |  |
| I           | Digital Computers -<br>Computer languages Micr<br>operations –Microproce<br>8085 Bus organization –<br>8085 registers - Peri<br>operations. | zation<br>and its<br>s and<br>s and<br>tiated   | K1   |                                       | 12                      |                  |                     |                 |  |  |  |  |  |
| п           | 8085 Microprocessor –<br>block diagram-8085 Instru  | Pin out and Signa<br>uction Set and Clas  | als–Func<br>ssificatic                       | tional<br>ons.                        | K2                      | 2                | 12                  |                 |  |  |  |  |  |
| 111         | BCD to Binary and Binary<br>BCD and BCD to ASCII co<br>ASCII to Binary conversion<br>and Subtraction Multi b<br>Multiplication and Divisio  | y to BCD conversionversions - Binary<br>ns. BCD Arithmetic<br>pyte Addition and<br>n. | ons - AS<br>/ to ASC<br>:-BCD ad<br>  Subtra | SCII to<br>II and<br>dition<br>ction- | K3                      | 5                | 12                  |                 |  |  |  |  |  |
| IV          | The 8085 Interrupts –<br>Programmable Interrup<br>Access (DMA) and 8257 D   | RIMANDSIM inst<br>t Controller Dir<br>MA controller.                                  | ructions<br>ect Me                           | -8259<br>emory                        | K4                      | Ļ                |                     | 12              |  |  |  |  |  |

| v  | Introduction to Micro controller - Micro controller Vs<br>Microprocessor -8051 Micro controller architecture<br>8051 pin description. Timers and Counters–Operatin<br>Modes-Control Registers. Interrupts Interrupts in 8051<br>Interrupts Control Register–Execution of interrupt.<br><b>Current Trends:*Micro controller Vs Microprocessor</b> *  | -<br>g К5<br>-  | 12   |  |  |  |  |  |  |  |  |
|--|---|---|--|--|--|--|--|--|--|--|--|
|  | ** Self Study.  |   |  |  |  |  |  |  |  |  |  |
|  | <b>CO1:</b> Recall the binary concepts are used i Microprocessor programming.   | ר<br>K1   |  |  |  |  |  |  |  |  |  |
|  | <b>CO2:</b> Illustrate the 8085 instruction set and Thei classifications.   | r K2  |  |  |  |  |  |  |  |  |  |
| Course<br>Outcome  | <b>CO3:</b> Applying different types of instructions to conver<br>Binary codes and analyzing the outcome.   | t K3  |  |  |  |  |  |  |  |  |  |
|  | <b>CO4:</b> Analyze peripheral devices are connected t 8085using Interrupts and DMA controller.   | р К4  |  |  |  |  |  |  |  |  |  |
|  | <b>CO5:</b> Assess real time applications using Micro controller.   | р К5  |  |  |  |  |  |  |  |  |  |
|  |   |   |  |  |  |  |  |  |  |  |  |
|  | Learning Resources1.R.S. Gaonkar-"Microprocessor Architecture Programming and Applications with 8085"-5thEdition ,Pen ram International Publications,2009.[For unit I to unit IV]2. Soumitra Kumar Mandal -Microprocessos and Micro controllers Architectures,Programming and Interfacing using 8085,8086,8051,Tata Mc Graw Hill Education  |   |  |  |  |  |  |  |  |  |  |
| Text<br>Books  | Learning Resources<br>1.R.S. Gaonkar-"Microprocessor Architecture Program<br>Edition ,Pen ram International Publications,2009.[For u<br>2. Soumitra Kumar Mandal -Microprocessos and Micro<br>Programming and Interfacing using 8085,8086,8051,Ta<br>Private Limited. [for unit V]  | ming and Applicat<br>Init I to unit IV]<br>Controllers Archi<br>Ita Mc Graw Hill E  | ions with 8085"-5 <sup>th</sup><br>tectures,<br>ducation   |  |  |  |  |  |  |  |  |
| Text<br>Books  | Learning Resources1.R.S. Gaonkar-"Microprocessor Architecture ProgramEdition ,Pen ram International Publications,2009.[For u2. Soumitra Kumar Mandal -Microprocessos and MicroProgramming and Interfacing using 8085,8086,8051,TaPrivate Limited. [for unit V]1. Mathur-Introduction to Microprocessor-3rd Edition  | ming and Applicat<br>Init I to unit IV]<br>controllers Archi<br>Ita Mc Graw Hill E<br>TataMcGraw-Hill   | tions with 8085"-5 <sup>th</sup><br>tectures,<br>ducation<br>-1993.                                      |  |  |  |  |  |  |  |  |
| Text<br>Books  | Learning Resources1.R.S. Gaonkar-"Microprocessor Architecture ProgramEdition ,Pen ram International Publications,2009.[For u2. Soumitra Kumar Mandal -Microprocessos and MicroProgramming and Interfacing using 8085,8086,8051,TaPrivate Limited. [for unit V]1. Mathur-Introduction to Microprocessor-3rd Edition2. RajKamal—Microcontrollers Architecture, Programming  | ming and Applicat<br>init I to unit IV]<br>controllers Archi<br>ita Mc Graw Hill E<br>TataMcGraw-Hill<br>ning, Interfacing a  | tions with 8085"-5 <sup>th</sup><br>tectures,<br>ducation<br>-1993.<br>and System Design,                |  |  |  |  |  |  |  |  |
| Text<br>Books<br>Reference   | Learning Resources1.R.S. Gaonkar-"Microprocessor Architecture ProgramEdition ,Pen ram International Publications,2009.[For u2. Soumitra Kumar Mandal -Microprocessos and MicroProgramming and Interfacing using 8085,8086,8051,TaPrivate Limited. [for unit V]1. Mathur-Introduction to Microprocessor-3rd Edition2. RajKamal—Microcontrollers Architecture, ProgramPearson Education, 2005.  | ming and Applicat<br>init I to unit IV]<br>controllers Archi<br>ta Mc Graw Hill E<br>TataMcGraw-Hill<br>ning, Interfacing a   | tions with 8085"-5 <sup>th</sup><br>tectures,<br>ducation<br>-1993.<br>and System Design,                |  |  |  |  |  |  |  |  |
| Text<br>Books<br>Reference<br>Books  | Learning Resources1.R.S. Gaonkar-"Microprocessor Architecture ProgramEdition ,Pen ram International Publications,2009.[For u2. Soumitra Kumar Mandal -Microprocessos and MicroProgramming and Interfacing using 8085,8086,8051,TaPrivate Limited. [for unit V]1. Mathur-Introduction to Microprocessor-3rd Edition2. RajKamal—Microcontrollers Architecture, ProgrammPearson Education, 2005.3. KrisnaKant,—Microprocessors and Micro controllers   | ming and Applicat<br>init I to unit IV]<br>controllers Archi<br>ta Mc Graw Hill E<br>TataMcGraw-Hill<br>ning, Interfacing a<br>-Architectures, P                        | ions with 8085"-5 <sup>th</sup><br>tectures,<br>ducation<br>-1993.<br>and System Design,<br>rogramming   |  |  |  |  |  |  |  |  |
| Text<br>Books<br>Reference<br>Books  | Learning Resources1.R.S. Gaonkar-"Microprocessor Architecture ProgramEdition ,Pen ram International Publications,2009.[For u2. Soumitra Kumar Mandal -Microprocessos and MicroProgramming and Interfacing using 8085,8086,8051,TaPrivate Limited. [for unit V]1. Mathur-Introduction to Microprocessor-3rd Edition2. RajKamal—Microcontrollers Architecture, ProgrammPearson Education, 2005.3. KrisnaKant,—Microprocessors and Micro controllersAnd System Design 8085,8086,8051,8096,PHI,2008.  | ming and Applicat<br>init I to unit IV]<br>controllers Archi<br>ita Mc Graw Hill E<br>TataMcGraw-Hill<br>ning, Interfacing a<br>-Architectures, P                       | ions with 8085"-5 <sup>th</sup><br>tectures,<br>ducation<br>-1993.<br>and System Design,<br>rogramming   |  |  |  |  |  |  |  |  |
| Text<br>Books<br>Reference<br>Books<br>Website                                   | Learning Resources1.R.S. Gaonkar-"Microprocessor Architecture ProgramEdition ,Pen ram International Publications,2009.[For u2. Soumitra Kumar Mandal -Microprocessos and MicroProgramming and Interfacing using 8085,8086,8051,TaPrivate Limited. [for unit V]1. Mathur-Introduction to Microprocessor-3rd Edition2. RajKamal—Microcontrollers Architecture, ProgramPearson Education, 2005.3. KrisnaKant,—Microprocessors and Micro controllersAnd System Design 8085,8086,8051,8096,PHI,2008.1.Web resources from NDL Library,E-content from operation  | ming and Applicat<br>init I to unit IV]<br>controllers Archi<br>ita Mc Graw Hill E<br>TataMcGraw-Hill<br>ning, Interfacing a<br>-Architectures, P<br>n source libraries | tions with 8085"-5 <sup>th</sup><br>tectures,<br>ducation<br>-1993.<br>and System Design,<br>rogramming  |  |  |  |  |  |  |  |  |
| Text<br>Books<br>Reference<br>Books<br>Website<br>Link                           | Learning Resources1.R.S. Gaonkar-"Microprocessor Architecture ProgramEdition ,Pen ram International Publications,2009.[For u2. Soumitra Kumar Mandal -Microprocessos and MicroProgramming and Interfacing using 8085,8086,8051,TaPrivate Limited. [for unit V]1. Mathur-Introduction to Microprocessor-3rd Edition2. RajKamal—Microcontrollers Architecture, ProgramPearson Education, 2005.3. KrisnaKant,—Microprocessors and Micro controllersAnd System Design 8085,8086,8051,8096,PHI,2008.1.Web resources from NDL Library,E-content from ope2. https://www.bing.com/  | ming and Applicat<br>init I to unit IV]<br>controllers Archi<br>ita Mc Graw Hill E<br>TataMcGraw-Hill<br>ning, Interfacing a<br>-Architectures, P<br>n source libraries | tions with 8085"-5 <sup>th</sup><br>tectures,<br>ducation<br>-1993.<br>and System Design,<br>trogramming |  |  |  |  |  |  |  |  |
| Text<br>Books<br>Reference<br>Books<br>Website<br>Link<br>Self-Study<br>Material | Learning Resources1.R.S. Gaonkar-"Microprocessor Architecture ProgramEdition ,Pen ram International Publications,2009.[For u2. Soumitra Kumar Mandal -Microprocessos and MicroProgramming and Interfacing using 8085,8086,8051,TaPrivate Limited. [for unit V]1. Mathur-Introduction to Microprocessor-3rd Edition2. RajKamal—Microcontrollers Architecture, ProgramPearson Education, 2005.3. KrisnaKant,—Microprocessors and Micro controllersAnd System Design 8085,8086,8051,8096,PHI,2008.1.Web resources from NDL Library,E-content from ope2. https://www.bing.com/1. https://www.theiotacademy.co/blog/microprocessor | ming and Applicat<br>init I to unit IV]<br>controllers Archi<br>ita Mc Graw Hill E<br>TataMcGraw-Hill<br>ning, Interfacing a<br>-Architectures, P<br>n source libraries | ions with 8085"-5 <sup>th</sup><br>tectures,<br>ducation<br>-1993.<br>and System Design,<br>rogramming   |  |  |  |  |  |  |  |  |

|   | BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |  |                          |                     |          |          |           |           |                       |                |                |         |     |
|---|---|--|--------------------------|---------------------|----------|----------|-----------|-----------|-----------------------|----------------|----------------|---------|-----|
| Course T  | itle  | Co                                     | urse Ti                  | itle                | Co       | ourse Ty | ре        | Sem       | Hours                 | L              | т              | Р       | С   |
| 23M_UC/   | AC_   | MICR<br>R A<br>CO                      | OPROC<br>ND MIC<br>NTROL | CESSO<br>CRO<br>LER |          |          |           | 5         | 5                     | -              | -              | 5       |     |
|   |   |  |                          |                     | CO-I     | РО Мар   | ping      |           |                       |                |                |         |     |
| CO<br>Number                                    | PO1   | PO2                                    | PO3                      | PO4                 | PO5      | PSO1     | PSO2      | PSO3      | PSO4                  | PSO4 PSO5      |                |         |     |
| CO1   | М   | S                                      | М                        | S                   | S        | L        | М         | S         | М                     | S              |                |         |     |
| CO2   | L   | М                                      | L                        | S                   | М        | S        | S         | М         | S                     | S              |                |         |     |
| CO3   | М   | S                                      | S                        | М                   | S        | S        | S         | S         | М                     | S              |                |         |     |
| CO4   | S   | М                                      | М                        | S                   | S        | S        | S M M S   |           |                       | М              |                |         |     |
| CO5   | S   | S                                      | М                        | М                   | М        | S        | S         | S         | S                     | S              |                |         |     |
| Level of<br>Correlation<br>between<br>CO and PO |   |  | L-LOW M-MEDIUM           |                     |          |          |           |           | S-S                   | TROI           | NG             |         |     |
| Tutorial Sch                                    | edule   | Group                                  | o Discu                  | ssion, C            | Quiz pro | gram, N  | 1odel pr  | eparatio  | n                     |                |                |         |     |
| Teaching and<br>Learning<br>Methods             | d   | Audio<br>Video                         | Video<br>preser          | lecture             | e, Chalk | and Boa  | ard class | , Assignr | nent, PP <sup>-</sup> | T Pres         | senta          | ition a | and |
| Assessment<br>Methods                           |   | Class                                  | Test, U                  | nit Tes             | t, Assig | nment,   | CIA-I, CI | A-II and  | ESE                   |                |                |         |     |
| Designed  | Ву  |  |                          | Veri                | fied By  |          |           |           | Арр                   | rove           | d By           |         |     |
| Mrs.R.Suguna                                    |   | Verified By A<br>HoD - Mr.G.Selvakumar |                          |                     |          |          |           |           | Memb<br>Dr.S          | er Se<br>.Shał | creta<br>nitha | ary     |     |



# MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE



# (Autonomous)

#### **RASIPURAM - 637408.**

| BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |   |   |     |       |                |     |       |    |  |  |  |  |  |
|---|---|---|-----|-------|----------------|-----|-------|----|--|--|--|--|--|
| Course Code   | Course Title  | Course Type   | Sem | Hours | L              | т   | Р     | с  |  |  |  |  |  |
| 23M_UCAP_   | MICROPROCESSOR AND<br>MICROCONTROLLER   |   | 4   | -     | -              | 4   | 2     |    |  |  |  |  |  |
| Objective   | Students Learn the various instruction set sand classifications AND assembly programs using 8085.   |   |     |       |                |     |       |    |  |  |  |  |  |
| S.No  | List of Experime  | ents / Programmes   | i . |       | Knowle<br>Leve | Ses | sions |    |  |  |  |  |  |
| 1   | Addition and Subtraction<br>1. 8-bit addition<br>2. 16-bit addition<br>3. 8-bit subtraction<br>4. BCD subtraction   |   |     |       | K1             |     |       | 10 |  |  |  |  |  |
| 2   | <ol> <li>II. Multiplication and Division</li> <li>8-bit multiplication</li> <li>BCD multiplication</li> <li>8-bit division</li> </ol>   | <ul><li>II. Multiplication and Division</li><li>1. 8-bit multiplication</li><li>2. BCD multiplication</li><li>3. 8-bit division</li></ul>   |     |       |                |     |       |    |  |  |  |  |  |
| 3   | <ul> <li>III. Sorting and Searching</li> <li>1. Searching for an element</li> <li>2. Sorting in Ascending and</li> <li>3. Finding the largest and s</li> <li>4. Reversing array elements</li> <li>5. Block move.</li> </ul> | <ul> <li>III. Sorting and Searching</li> <li>1. Searching for an element in an array.</li> <li>2. Sorting in Ascending and Descending order.</li> <li>3. Finding the largest and smallest elements in an array.</li> <li>4. Reversing array elements.</li> <li>5. Block move</li> </ul> |     |       |                |     |       |    |  |  |  |  |  |
| 4   | <ul><li>IV. Code Conversion</li><li>1. BCD to Hex and Hex to B</li><li>2. Binary to ASCII and ASCII</li><li>3. ASCII to BCD and BCD to</li></ul>  |   | К4  |       |                | 10  |       |    |  |  |  |  |  |

| 5                 | <ul> <li>V. Simple program</li> <li>1. Addition</li> <li>2. Subtraction</li> <li>3. Multiplication</li> <li>4. Division</li> <li>5. Interfacing Expe</li> <li>I. Realisation of Bo</li> <li>II. Time delay gene</li> <li>III. Display LEDs the</li> </ul> | s on 8051 Mic<br>riments using<br>olean Express<br>ration using su         | S.   | К5  | 10   |  |
|-------------------|---|--|--|---|--|--|
|                   | CO1: Recall the Ba  | sic binary code  | ersions.   | K1  |  |  |
|                   | <b>CO2:</b> Illustrate the Classifications.   | 8085 instructi   |  | k2  |  |  |
| Course<br>Outcome | <b>CO3:</b> Applying diffe<br>Binary codes and a  | erent types of<br>nalyzing the o   | onvert   | КЗ  |  |  |
|                   | <b>CO4:</b> Demonstrate<br>8085 Using Interru   | ected to   | К4   |   |  |  |
|                   | CO5: Assess real ti   | me application   | is using micro co  | ntroller.   | K5   |  |
|                   |   | Learning   | Resources  |   |  |  |
| Text<br>Books     | 1.R.S.Gaonkar-"Micr<br>8085"-5thEdition-Pe<br>2.Soumitra Kumar<br>Programming and<br>Private Limited.[for   | oprocessor Ar<br>nram Internat<br>Mandal-—Mic<br>Interfacing u<br>unit V]. | chitecture-Progr<br>ional Publicatior<br>croprocessors ar<br>sing 8085,8086, | amming a<br>ns, 2009.[1<br>nd Micro<br>.8051  ,Ta | and Applications<br>For unit I to unit<br>controllers–Arc<br>taMcGraw Hill | with<br>IV].<br>hitectures,<br>Education |
| Reference         | <ol> <li>Mathur-—Introdu</li> <li>RajKamal-—Micro<br/>Designil Pearson Edu</li> </ol>   | ction to Micro<br>controllers:Alucation 2005                               | oprocessor  -3rd<br>rchitecture,Prog   | Edition-Ta<br>ramming,                            | taMcGraw-Hill-<br>Interfacing and S  | 1993.<br>System                          |
| Books             | 3. Krishna Kant,—M<br>andSystemDesign80   | icro processor:<br>85,8086,8051,   | s and Micro cont<br>8096  ,PHI,2008.   | rollers–A   | rchitectures,Pro   | gramming                                 |
| Website<br>Link   | 1.https://www.bing.   | com/   |  |   |  |  |
|                   | L-Lecture   | T-Tutorial   | P-Practical  |   | C-Credit   |  |

|   | BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |                 |                  |         |          |          |           |            |       |         |         |   |
|---|---|-----------------|------------------|---------|----------|----------|-----------|------------|-------|---------|---------|---|
| Course Title                                    | Со  | ourse Ti        | tle              | C       | Course   | Туре     | Sem       | Hours      | L     | Т       | Р       | С |
| 23M_UCAP_                                       | MICROP  | ROCESS<br>DCONT | SOR ANI<br>ROLLR | D       |          |          |           | 4          | -     | -       | 4       | 2 |
|   |   |                 |                  |         |          |          |           |            |       |         |         |   |
| CO Number                                       | PO1   | PO2             | PO3              | PO4     | PO5      | PSO1     | PSO2      | PSO3       | PS    | 604     | PSO5    |   |
| CO1   | S   | S               | М                | S       | S        | L        | L         | М          |       | S       | S       |   |
| CO2   | М   | S               | L                | М       | S        | S        | М         | S          |       | S       | S       |   |
| CO3   | S   | L               | S                | S       | М        | S        | S         | М          |       | Μ       | S       |   |
| CO4   | М   | S               | S                | S       | S        | М        | М         | S          |       | S S     |         |   |
| CO5   | М   | S               | М                | М       | М        | S        | М         | S          |       | М       | S       |   |
| Level of<br>Correlation<br>between CO<br>and PO |   | L               | -LOW             |         |          | ٢        | M-MED     | IUM        |       | S       | S-STRON | G |
| Tutorial Schedu                                 | ıle   |                 | Sample           | progr   | ams to   | related  | l topic   |            |       |         |         |   |
| Teaching and Le<br>Methods                      | earning   |                 | Handlir          | ng prad | ctical s | ession t | hrough    | projector  |       |         |         |   |
| Assessment Me                                   | ethods  |                 | Attenda          | ance, ( | Observ   | ation, N | /lodel p  | ractical's |       |         |         |   |
| Design  | ed By   |                 |                  | Veri    | ified By | /        |           |            | Арр   | rove    | d By    |   |
| Mrs.R.S   |   | HoD             | - Mr.(           | G.Selva | akumar   | N        | lember Se | ecret      | ary - | Dr.S.Sh | ahitha  |   |



### MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE



(Autonomous)

| R/ | <b>AS</b> | PU | IRA | Μ | - | 63 | 7408. |  |
|----|-----------|----|-----|---|---|----|-------|--|
|----|-----------|----|-----|---|---|----|-------|--|

| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |  |   |  |   |  |              |                   |          |  |  |  |
|---|---|--|---|--|---|--|--------------|-------------------|----------|--|--|--|
| Course Code   | Course Title  | Course Type  | Sem   | Hours  | L   | т  | •            | Р                 | С        |  |  |  |
| 23M_UCAC_   | SOFTWARE<br>ENGINEERING   |  |   | 5  | 5   | -  |              | -                 | 5        |  |  |  |
| Objective   | Students Learn the techniques, testing  | basics of analysis<br>at various levels  | and des   | ign of so<br>duce an e   | oftware   | e engi<br>nt syst                                      | neer<br>tem. | ing princi        | ples and |  |  |  |
| Unit  |   | Course Cont  | ent   |  |   |  | Kno<br>L     | owledge<br>.evels | Sessions |  |  |  |
| I   | Introduction: The s<br>software products,<br>of software engi<br>development pract<br>Software Life Cyc<br>Classical waterfall r<br>model, evolutiona<br>different life cycle                         | s vs.<br>ence<br>vare<br>odel,<br>ping<br>i of   |   | К1   | 12  |  |              |                   |          |  |  |  |
| II  | Requirements Ar<br>gathering and and<br>(SRS).<br>Software Design: G<br>neat arrangement<br>oriented vs functio   | nalysis and Spe<br>alysis, Software n<br>Good software des<br>t, software des<br>n-oriented design   | ecificatic<br>requirem<br>sign, coho<br>sign ap<br>1.                               | on: Rec<br>nents sp<br>esion and<br>proaches                                   | juirem<br>ecifica<br>d coup<br>s, ob                                | ents<br>ition<br>ling,<br>ject-                        |              | К2                | 12       |  |  |  |
| 111   | Function-Oriented<br>methodology, stru<br>structured design,<br>User-Interface des<br>concepts; types of<br>development, a us   | Software Desi<br>ctured analysis, o<br>detailed design.<br>ign: Characteristic<br>of user interface<br>er interface metho                            | ign: Ov<br>dataflow<br>cs of a go<br>s; comp<br>odology.                            | erview<br>diagran<br>ood inter<br>oonent k                                     | of SA<br>ns (DF<br>face; k<br>based                                 | A/SD<br>D's),<br>Dasic<br>GUI                          |              | КЗ                | 12       |  |  |  |
| IV  | Coding and Testing<br>large vs testing in<br>white-box testing<br>integration testin<br>associated with test<br>Software Reliabil<br>reliability; statistica<br>management syste<br>software process. | g: Coding; code re<br>the small; unit<br>g; debugging;<br>g; system testin<br>sting.<br>ity and Quality<br>al testing; softwar<br>em; SEI capability | view; tes<br>testing;<br>program<br>ng; som<br><b>Manag</b><br>re qualit<br>maturit | sting; tes<br>black-bo<br>a analy<br>e gene<br>gement:<br>y; softwa<br>y model | sting in<br>ox tes<br>sis to<br>ral is<br>Softw<br>are qu<br>; pers | the<br>ting;<br>ools;<br>sues<br>vare<br>ality<br>onal |              | К4                | 12       |  |  |  |

| V                      | Computer Aided Soft<br>CASE environment; C/<br>characteristics of CASE<br>tool; architecture of a<br>Software Maintena<br>maintenance; softw<br>maintenance process<br>Current Trends* : So<br>Metrics | ware Engineering: CAS<br>ASE support in software<br>tools; towards second<br>CASE environment.<br>ance: Characteristic<br>are reverse engine<br>models; estimation of m<br>ftware Metrics – Ben | SE and its scope;<br>e life cycle; other<br>generation CASE<br>of software<br>ering; software<br>naintenance cost.<br>efits of Software | К5   | 12     |  |  |  |  |  |
|------------------------|--|---|---|--|--------|--|--|--|--|--|
|                        | *Self-Study  |   |   |  |        |  |  |  |  |  |
|                        | <b>CO1:</b> Recall the basics  | of Software Engineering   | g Process.  | K1   |        |  |  |  |  |  |
|                        | <b>CO2:</b> Illustrate the sol Techniques.   | ciples and  | К2  |  |        |  |  |  |  |  |
| Course                 | <b>CO3:</b> Demonstrate the Flow Diagrams.   | echniques.<br>O3: Demonstrate the Function-Oriented Design with Data<br>low Diagrams.   |   |  |        |  |  |  |  |  |
| outcome                | CO4: Categorize the C  | oding and Testing Meth  | ods.  | K4   |        |  |  |  |  |  |
|                        | <b>CO5:</b> Evaluate Testing efficient system.   | oduce an  | К5  |  |        |  |  |  |  |  |
|                        |  | Learning Resources  |   |  |        |  |  |  |  |  |
| Text                   | 1. Rajib Mall, Fundame   | entals of Software Engin  | eering, Fifth Edition   | i, Prentice-Ha                                   | ll of  |  |  |  |  |  |
| Books                  | India, 2018.   |   |   |  |        |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Richard Fairley, Soft<br/>company Ltd, Edition</li> <li>Roger S.Pressman, S</li> <li>James A.Senn, Analy</li> <li>Hill International Edition</li> </ol>                                       | ware Engineering Conce<br>1997.<br>Software Engineering, Se<br>ysis & Design of Informa<br>ons.   | epts, TataMcGraw-H<br>eventh Edition, McG<br>tion Systems, Secor  | Hill publishing<br>Graw-Hill.<br>Ind Edition, Mo | cGraw- |  |  |  |  |  |
|                        | 1. https://www.geeks   | forgeeks.org/software-e   | engineering-introdu   | <u>ction-to-softv</u>                            | vare-  |  |  |  |  |  |
| Website                | engineering/   |   |   |  |        |  |  |  |  |  |
| Link                   | 2. <u>https://www.javatp</u>   | oint.com/software-eng   | ineering  |  |        |  |  |  |  |  |
| Self-Study<br>Material | 1. https://stackify.com  | n/track-software-metric   | <u>s/</u>   |  |        |  |  |  |  |  |
|                        | L-Lecture  | T-Tutorial  | P-Practical   | C- C   | redit  |  |  |  |  |  |

|                | B                   | CA Syllab          | ous LOCF       | - CBC         | CS v          | vith effe                          | ct from 2            | 2023           | -2024            | Onward           | s       |       |       |       |
|----------------|---------------------|--------------------|----------------|---------------|---------------|------------------------------------|----------------------|----------------|------------------|------------------|---------|-------|-------|-------|
| Course Code    | 2                   | Cours              | e Title        |               |               | Course 1                           | Гуре                 | S              | em               | Hours            | L       | т     | Р     | С     |
| 23M_UCAC_      | -                   | SOFT<br>ENGINI     | WARE<br>EERING |               |               |                                    |                      |                |                  | 5                | 5       | -     | -     | 5     |
|                |                     |                    |                | CO-PO Mapping |               |                                    |                      |                |                  |                  |         |       |       |       |
| CO Number      | P01                 | PO2                | PO3            | PO            | 94            | PO5                                | PSO1                 | PS             | 502              | PSO3             | PS      | 04    | PSC   | 5     |
| CO1            | S                   | М                  | S              | N             | 1             | S                                  | S                    |                | S                | М                | Ν       | Λ     | S     |       |
| CO2            | S                   | М                  | М              | N             | 1             | S                                  | S M S M              |                |                  |                  | S       |       |       |       |
| CO3            | М                   | М                  | S              | S             |               | М                                  | М                    |                | S                | М                | Ν       | Λ     | Μ     |       |
| CO4            | S                   | М                  | М              | N             | 1             | S                                  | S                    |                | М                | S                | Ν       | Λ     | М     |       |
| CO5            | S                   | S                  | М              | S             |               | S                                  | S                    |                | М                | S                | 9       | 5     | S     |       |
| Leve<br>betw   | l of Cori<br>een CO | relation<br>and PO |                | L-LOW M       |               |                                    |                      | -MEDIUN        | Л                |                  | S-ST    | RONG  |       |       |
| Tutorial Sched | lule                |                    |                | Gro           | up [          | Discussio                          | n, Quiz p            | orogi          | ram, N           | /odel pre        | epara   | tion  |       |       |
| Teaching and   | Learnin             | g Metho            | ds             | Aud<br>Pres   | lio V<br>sent | 'ideo lec <sup>:</sup><br>ation an | ture, Cha<br>d Video | alk ai<br>pres | nd Boa<br>entati | ard class,<br>on | Assi    | gnme  | nt, P | РТ    |
| Assessment M   | lethods             |                    |                | Clas          | is Te         | est, Unit                          | Test, As             | signr          | ment,            | CIA-I, CIA       | A-II ar | nd ES | E     |       |
| C              | esigneo             | d By               |                |               |               | Verified                           | Ву                   |                |                  | Ар               | prove   | ed By |       |       |
| N              | Mr.T.Prabhu         |                    |                |               | D -           | Mr.G.Se                            | lvakuma              | ır             | Mem              | ber Secr         | etary   | - Dr. | S.Sha | hitha |





|             | BCA Syllabus LOC  | CF - CBCS with eff  | ect fro   | m 2023-2  | 024 ( | Dnw | ards |    |  |  |
|-------------|---|---|---|---|-------|-----|------|----|--|--|
| Course Code | Course Title  | Course Type   | Sem   | Hours   | L     | т   | Р    | С  |  |  |
| 23M_UCAC_   | MACHINE LEARNING<br>TECHNIQUES  | 5   | -   | -   | 5     |     |      |    |  |  |
| Objective   | Students Learn the Mac machinelearning algorith   | ions.<br>eate i   | ons. Implement and app ate instant based learnin            |   |       |     |      |    |  |  |
| Unit        | Course Cor  | Course Content  |   |   |       |     |      |    |  |  |
| I           | Introduction Machine L<br>Machine Learning and<br>unsupervised learning,<br>models, parametric n<br>regression Linear Regress<br>Bayes classifier, simple<br>nearest neighbour, supp                    | earning: Differer<br>d Big data. S<br>parametric vs.<br>nodels for cla<br>ssion, Logistic Re<br>e non-parametr<br>ort vector machir   | nce bet<br>non-pa<br>ssificat<br>gressio<br>ric cla<br>nes. | ween Al,<br>sed and<br>arametric<br>ion and<br>n, Naïve-<br>assifier-K- |       | K1  | 12   |    |  |  |
| II          | Neural networks and<br>Network Representatio<br>Multilayer Networks and<br>Advanced Topics– Gene<br>Search–Genetic Program<br>Learning.   | Genetic Algo<br>n Problems –<br>d Back Propagation<br>tic Algorithms Homming–Models of  | rithms:<br>Percep<br>on Algo<br>ypothe<br>Evalua            | Neural<br>otron's –<br>orithms –<br>sis Space<br>ation and              |       | Kź  | 2    | 12 |  |  |
| III         | Bayesian and computation<br>Theorem –Concept Lea<br>Minimum Description Lea<br>Classifier – Gibbs Algo<br>Bayesian Belief Network<br>Learning Sample Com<br>Hypothesis Spaces –<br>Mistake Bound Model. | Learning.<br><b>Bayesian and computational learning Bayes:</b> Bayesian<br>Theorem –Concept Learning Maximum Likelihood –<br>Minimum Description Length Principle – Bayes Optimal<br>Classifier – Gibbs Algorithm – Naïve Bayes Classifier<br>Bayesian Belief Network – EM Algorithm – Probability<br>Learning Sample Complexity – Finite and Infinite<br>Hypothesis Spaces – |   |   |       |     |      |    |  |  |
| IV          | Instant based learning<br>Locallyweighted Regress<br>Based Learning.  | : K-Nearest Nei<br>ion–Radial Basis   | ghbor<br>Functio  | Learning-<br>ons–Case   |       | K4  | Ļ    | 12 |  |  |

|                        | L-Lecture   | T-Tutorial  |  | C-Credit                                    |                                       |                           |
|------------------------|---|---|--|---|---------------------------------------|---------------------------|
| Self-Study<br>Material | https://ww  | w.sciencedirect   | .com/science/a                                       | rticle/abs/pii/S0                           | <u>957417422013(</u>                  | <u>)33</u>                |
| WebsiteLink            | https://www   | w.javatpoint.co   | m/robotics-tuto                                      | orial                                       |                                       |                           |
| Reference<br>Books     | 1. Ethem A<br>Machine Le<br>2. Stephen I            | lpaydin, Introd<br>arning), The MI<br>Marsland, Mach        | uction to Mach<br>T Press 2004.<br>iine Learning: A  | ine Learning (A<br>n Algorithmic Pe         | daptive Comput                        | ation and<br>Press, 2009. |
| Text<br>Books          | 1. Tom.M. I<br>Limited,201<br>2.Bengio, Yo<br>Press | Mitchell, Machi<br>3.<br>oshua, IanJ.Goo                    | ne Learning, Mo<br>dfellow, and Aa                   | cGraw-Hill Educa                            | ation (India) Priv<br>eeplearning"201 | ate<br>.5, MIT            |
|                        |   | Lear  | ning Resources                                       |   |                                       |                           |
|                        | learning fro  | m data.   |  |   | К5                                    |                           |
|                        | CO4: Asses<br>and mather<br>required.<br>CO5: Comp  | s the algorithmi<br>natically deep e<br><br>ose the appreci | c topics of mac<br>nough to introc<br>ation for what | hine learning<br>luce the<br>is involved in | К4                                    |                           |
| Course<br>Outcome      | CO3: Mark algorithms a                              | the very broad<br>and problems                              | collection of ma                                     | achine learning                             | КЗ                                    |                           |
|                        | <b>CO2</b> : Relate                                 | К2  |  |   |                                       |                           |
|                        | <b>CO1:</b> Recall analytics so                     | the importance<br>lution.                                   | К1   |   |                                       |                           |
|                        | ** Self S   | tudy.   | seu machine le                                       | arning                                      |                                       |                           |
|                        | Q- Learning   | – Temporal Diff   | erence Learnin                                       | g.  |                                       |                           |
|                        | Learning-Pe   | erfect Domain   | Theories Exp<br>Reinforcement                        | olanation Base                              |                                       |                           |
| v                      | Inverted D  | eduction Inv  | erting Resolu  | tion-Analytical                             | К5                                    | 12                        |
|                        | Sequential (  | Covering Algorit  | hm – Learning<br>st. Order, Bule                     | Rule Set – First                            |                                       |                           |
|                        | mining, sei   | ntiment analys  | is - Learning  | Sets of Rules                               |                                       |                           |
|                        | Advanced  | earning: Reco   | mmendation sy  | stems opinion                               |                                       |                           |

|   | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |                 |                      |                      |                        |                      |                   |           |       |      |         |     |
|---|---|-----------------|----------------------|----------------------|------------------------|----------------------|-------------------|-----------|-------|------|---------|-----|
| Course Code                                     | Co  | ourse T         | itle                 |                      | Cours                  | e Type               | Sem               | Hours     | L     | Т    | Р       | С   |
| 23M_UCAC_                                       | MACHI<br>TE   | NE LEA<br>CHNIQ | RNING<br>UES         |                      |                        |                      |                   | 5         | 5     | -    | -       | 5   |
|   |   |                 |                      | CO-P                 | O Mappi                | ng                   |                   |           |       |      |         |     |
| CO Number                                       | PO1   | PO2             | PO3                  | PO4                  | PO5                    | PSO1                 | PSO2              | PSO3      | PS    | 04   | PSO5    |     |
| CO1   | L   | М               | S                    | S                    | S                      | S                    | М                 | S         |       | М    | S       |     |
| CO2   | S   | М               | М                    | S                    | S                      | S                    | S                 | S         |       | М    | S       |     |
| CO3   | S   | S               | М                    | S                    | S                      | S                    | М                 | S         |       | М    | S       |     |
| CO4   | М   | S               | S                    | М                    | S                      | S                    | М                 | S         |       | М    | S       |     |
| CO5   | S   | S               | S                    | S                    | S                      | S                    | М                 | S         |       | S    | S       |     |
| Level of<br>Correlation<br>between CO and<br>PO | L-I   | LOW             |                      |                      |                        |                      | M-MED             | IUM       |       |      | S-STRC  | NG  |
| Tutorial Schedule                               |   | Gr              | oup Di               | scussio              | n, Quiz p              | rogram,              | , Model           | prepara   | tion  |      |         |     |
| Teaching and Learr<br>Methods                   | ning  | Au<br>Pr        | idio Vic<br>esenta   | deo lect<br>tion an  | ture, Cha<br>d Video p | lk and B<br>presenta | oard cla<br>ation | ass, Assi | gnme  | ent, | PPT     |     |
| Assessment Metho                                | ods   | Cla             | ass Tes <sup>.</sup> | t, Unit <sup>·</sup> | Test, Ass              | signmen              | t, CIA-I,         | CIA-II ar | nd ES | δE   |         |     |
| Designed  | Designed By   |                 |                      |                      |                        |                      | A                 | pproved   | Ву    |      |         |     |
| Mr.M.Puru                                       | Mr.M.Purusothaman HOD - N                                   |                 |                      |                      |                        | mar                  | Membe             | er Secret | ary - | Dr.  | S.Shahi | tha |





| BCA LOCF - CBCS with effect from 2023-2024 Onwards |   |   |     |               |                     |   |          |   |  |
|--|---|---|-----|---------------|---------------------|---|----------|---|--|
| Course Code  | Course Title  | Course Type                               | Sem | Hours         | L                   | т | Р        | с |  |
| 23M_UCAP_  | MACHINE LEARNING  |   |     | 5             | -                   | - | 5        | 3 |  |
| Objective  | Students Learn the concepts of Machine Learning to solve real world problems<br>and to implement basic algorithms in clustering & classification applied to text &<br>numeric data. |   |     |               |                     |   |          |   |  |
| S.No.  | List of Experiments / Programmes  |   |     | Knowl<br>Leve | Knowledge<br>Levels |   | Sessions |   |  |
| 1  | Solving Regression & Classification using Decision Trees  |   |     | K1            | K1                  |   | 6        |   |  |
| 2  | Root Node Attribute Selection for Decision Trees using<br>Information Gain  |   |     | К2            |                     | 6 |          |   |  |
| 3  | Bayesian Inference in Gene Expression Analysis  |   |     | К1            |                     | 6 |          |   |  |
| 4  | Pattern Recognition Application using Bayesian Inference  |   |     | К2            |                     | 6 |          |   |  |
| 5  | Bagging in Classification   |   |     | К3            |                     | 6 |          |   |  |
| 6  | Bagging, Boosting applications using Regression Trees   |   |     | К2            |                     | 6 |          |   |  |
| 7  | Data & Text Clustering usir   | & Text Clustering using K-means algorithm |     |               | К1                  |   | 6        |   |  |
| 8  | Using Weka tool for SV domain application   | M classification for ch                   | К3  |               | 6                   |   |          |   |  |
| 9  | Data & Text Clustering usir   | sing K-means algorithm                    |     |               | К3                  |   | 6        |   |  |
| 10   | Data & Text Clustering using Gaussian Mixture Models  |   |     | Ka            | К3                  |   | 6        |   |  |
|                    | CO1: Name uses of  | f various machine le  | arning tools                                      | К1  |  |  |  |  |  |
|--------------------|--|---|---|---|--|--|--|--|--|
| Course             | <b>CO2:</b> Summarize t algorithms   | the procedures for  | machine learning                                  | К2  |  |  |  |  |  |
| Outcome            | <b>CO3:</b> Model Pytl learning algorithm  | hon programs for<br>s   | various machine                                   | КЗ  |  |  |  |  |  |
|                    | <b>CO4:</b> Inspect app Learning algorithm   | propriate data sets<br>ns   | to the Machine                                    | КЗ  |  |  |  |  |  |
|                    | <b>CO5:</b> Design the grass specific data sets                                      | with K4   |   |   |  |  |  |  |  |
|                    |  | Learning Resou  | rces  |   |  |  |  |  |  |
|                    | 3. Tom.M. Mitche   | ll, Machine Learning  | , McGraw-Hill Educa                               | ition (India) Private                               |  |  |  |  |  |
| Text               | Limited,2013.  |   |   |   |  |  |  |  |  |
| Books              | 4.Bengio, Yoshua,<br>Press   | lanJ.Goodfellow, and  | l AaronCourville, "De                             | eplearning"2015, MIT                                |  |  |  |  |  |
| Reference<br>Books | <ol> <li>Ethem Alpaydir</li> <li>Machine Learning</li> <li>Stephen Marsla</li> </ol> | n, Introduction to M<br>), The MIT Press 200<br>nd, Machine Learnin | lachine Learning (A<br>4.<br>g: An Algorithmic Pe | daptive Computation and rspective, CRC Press, 2009. |  |  |  |  |  |
| Website            | https://www.javatpoint.com/dbms-tutorial   |   |   |   |  |  |  |  |  |
| LIIIK              | <u>incepsity</u> internation   |   |   |   |  |  |  |  |  |

|                             | BCA LOCF - CBCS with effect from 2 |        |          |     |       |            |            |            | ards      |             |        |   |
|-----------------------------|------------------------------------|--------|----------|-----|-------|------------|------------|------------|-----------|-------------|--------|---|
| Course Code                 |                                    | Cours  | e Title  |     | Cour  | se Type    | Sem        | Hours      | L         | т           | Р      | С |
| 23M_UCAP_                   | MA                                 | ACHINE | LEARN    | ING |       |            |            | 5          | -         | -           | 5      | 3 |
|                             |                                    |        |          |     | CO-F  | РО Марр    | ing        |            |           |             |        |   |
| CO Number                   | PO1                                | PO2    | PO3      | PO4 | PO5   | PSO1       | PSO2       | PSO3       | PSO4      | PSO5        |        |   |
| CO1                         | Μ                                  | S      | М        | S   | S     | М          | М          | S          | S         | S           |        |   |
| CO2                         | М                                  | S      | S        | S   | S     | S          | М          | S          | S         | S           |        |   |
| CO3                         | S                                  | S      | S        | S   | S     | S          | S          | S          | S         | S           |        |   |
| CO4                         | S                                  | S      | М        | S   | S     | S          | М          | S          | S         | S           |        |   |
| CO5                         | М                                  | S      | М        | Μ   | Μ     | S          | S          | S          | S         | S           |        |   |
| Level of Corr<br>between CO | elatior<br>and PC                  | n<br>D | L-       | LOW |       |            | M- ME      | DIUM       |           | S-ST        | RONG   |   |
| Tutorial Schedu             | ule                                |        |          |     |       | Sample     | program    | s to relat | ed topics | ;           |        |   |
| Teaching and L              | earnin                             | g Metl | hods     |     |       | Handlin    | g practic  | al sessior | through   | projecto    | or     |   |
| Assesment Me                | thods                              |        |          |     |       | Attenda    | ince, Obs  | servation  | , Model F | Practical's | 5.     |   |
| De                          | esigned By Verified By             |        |          |     |       |            |            |            |           | Approv      | ved By | 1 |
| Mr.M.Puru                   | HoD -                              | Mr.G.S | elvakuma | ar  | Membe | er Secreta | ary - Dr.S | .Shahi     | itha      |             |        |   |





|                   | B.C.A Syllabus LOCF-CBCS with effect from 2023-2024 Onwards  |  |  |   |   |                                    |          |                 |      |         |  |  |  |
|-------------------|--|--|--|---|---|------------------------------------|----------|-----------------|------|---------|--|--|--|
| Course Code       | Course Title   | Course Type  | Sem  | Hours   | L   |                                    | т        | Р               |      | С       |  |  |  |
| 23M_UCAC_         | NETWORK<br>SECURITY  |  |  | 5   | 4   |                                    | 1        | -               |      | 4       |  |  |  |
| Objective         | Student Learn the other cryptosystem   | fundamental princ<br>ns and analyze their  | iples of<br>mecha  | public-kennisms.  | ey crypt  | ogra                               | aphy,    | including       | g RS | SA and  |  |  |  |
| Unit              |  | Course Conte   | ent  |   |   |                                    | Kno<br>L | wledge<br>evels | Se   | essions |  |  |  |
| I                 | Model of network<br>–OSI security arch<br>Block cipher Princ<br>principles–Block ci<br>AES – RC4 - Diffe<br>encryption functio | security – Security<br>itecture Classical e<br>iples DES–Strength<br>pher mode of opera<br>rential and linear<br>n –traffic confidenti | attacks,<br>ncryptic<br>of DES<br>ation –E<br>cryptan<br>jality. | services<br>on techni<br>Block cip<br>valuation<br>alysis Pla | and atta<br>ques–S<br>bher des<br>criteria<br>acement | icks<br>DES<br>sign<br>for<br>: of |          | К1              |      | 12      |  |  |  |
| II                | Number Theory-<br>algorithm-Fermet's<br>remainder theored<br>and RSA –Key dist<br>exchange Elliptic c                          | Prime number–Mo<br>s and Euler's theo<br>m Discrete logarith<br>ribution –Key mana<br>urve cryptography                                | odular<br>prem –<br>m–Publ<br>agemen                             | arithmet<br>Primality<br>ic key cr<br>t Diffie H              | ic Eucl<br>y –Chin<br>yptogra<br>ellman               | id's<br>ese<br>phy<br>key          |          | К2              |      | 12      |  |  |  |
|                   | Authentication red<br>function–Security<br>Digital signature ar  | <b>quirement</b> —Authent<br>of hash function ar<br>nd authentication p  | tication<br>nd MAC<br>rotocols                                   | function<br>–SHA-HN<br>–DSS.                                  | Mac-H<br>Iac-Cm                                       | ash<br>AC-                         |          | К3              |      | 12      |  |  |  |
| IV                | Authentication ap<br>services-E mail sec   | oplications – Kerb<br>urity–IP security – W  | eros X.<br>Veb secu  | .509 Aut<br>urity   | henticat  | ion                                |          | К4              |      | 12      |  |  |  |
| v                 | Intruder – Intrusio<br>Countermeasures<br>Practical implemen<br>Trends - IoT Securi  | n detection system<br>Firewalls design<br>ntation of cryptogr<br>ity*.   | – Virus<br>principle<br>aphy ar                                  | and relate<br>es–Truste<br>nd securit                         | ed threa<br>ed syste<br>cy <b>.*Curr</b>              | ats–<br>ems<br>e <b>nt</b>         |          | К5              |      | 12      |  |  |  |
|                   | ** Self Study.   |  |  |   |   |                                    |          |                 |      |         |  |  |  |
|                   | <b>CO1:</b> Recall the conblock ciphers.   | ncepts of classical e  | ncryptic   | on technic  | ques and  | ł                                  |          | К1              |      |         |  |  |  |
|                   | <b>CO2</b> : Describe pub cryptosystems.   | lic-key cryptography   | y, RSA a   | nd other  | public-k  | xey                                |          | К2              |      |         |  |  |  |
| Course<br>Outcome | <b>CO3:</b> Design the keed design User Auther   | ey management and<br>ntication.  | l distribi   | ution sche  | emes an   | d                                  |          | КЗ              |      |         |  |  |  |
|                   | <b>CO4:</b> Analyze and signatures.  | <b>CO4:</b> Analyze and design hash and MAC algorithms, and digital K4   |  |   |   |                                    |          |                 |      |         |  |  |  |
|                   | CO5: Summarize the Intruders and Intruder Detection K5 mechanisms, Types of Malicious software.                                |  |  |   |   |                                    |          |                 |      |         |  |  |  |
|                   | · · · ·  | Learning R   | esource  | es  |   |                                    |          |                 | ·    |         |  |  |  |

| Text       | William Stallings,—Cryp  | tography & Network Se                                   | ecurity  , Pearson Educat | ion, Fourth        |  |  |  |  |  |  |  |  |
|------------|--|---|---------------------------|--------------------|--|--|--|--|--|--|--|--|
| DOOKS      |  |   |                           |                    |  |  |  |  |  |  |  |  |
|            | 1. Charlie Kaufman, Rad  | lia Perlman, Mike Speci                                 | ner,—Network Security     | , Private          |  |  |  |  |  |  |  |  |
| Poforonco  | communication in publi   | c world∥, PHI Second Ec                                 | lition,2002               |                    |  |  |  |  |  |  |  |  |
| Books      | 2. Bruce Schneier, Neils   | Ferguson,—Practical Ci                                  | ryptography∥, Wiley Dre   | am tech India Pvt  |  |  |  |  |  |  |  |  |
| DOOKS      | Ltd, First Edition, 2003.  |   |                           |                    |  |  |  |  |  |  |  |  |
|            | 3. Douglas R Simson—Cryptography– Theory and practice   ,CRC Press, First Edition,1995 |   |                           |                    |  |  |  |  |  |  |  |  |
|            | 1. https://www.javatpo   | 1. https://www.javatpoint.com/computer-network-security |                           |                    |  |  |  |  |  |  |  |  |
| Website    | 2. <u>https://www.tutorials</u>  | point.com/information                                   | security cyber law/ne     | etwork security.ht |  |  |  |  |  |  |  |  |
| Link       | m  |   |                           |                    |  |  |  |  |  |  |  |  |
|            | 3. https://www.geeksfo   | rgeeks.org/network-se                                   | curity/                   |                    |  |  |  |  |  |  |  |  |
|            | 1.https://www.thinkcor   | nsulting.com/whats-new                                  | w/the-top-five-latest-tre | ends-in-network-   |  |  |  |  |  |  |  |  |
| Self-Study | security/  |   |                           |                    |  |  |  |  |  |  |  |  |
| Waterial   | 2. https://ebookcentral.proquest.com/lib/inflibnet-ebooks/reader.action?docID=821875   |   |                           |                    |  |  |  |  |  |  |  |  |
|            | L-LectureT-TutorialP-PracticalC- Credit  |   |                           |                    |  |  |  |  |  |  |  |  |

| B.C.A Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |                 |                       |         |                |                          |                          |                       |             |           |                  |                  |      |
|---|-----------------|-----------------------|---------|----------------|--------------------------|--------------------------|-----------------------|-------------|-----------|------------------|------------------|------|
| Course Code   | 9               | Course                | e Title |                | Course                   | Туре                     | Sem                   | Hours       | L         | т                | Р                | С    |
| 23M_UCAC  | _ N             | ETWORK                | SECUR   | ΙΤΥ            |                          |                          |                       | 5           | 4         | 1                | -                | 4    |
|   |                 |                       |         |                | CO-PO N                  | /lapping                 |                       |             |           |                  |                  | •    |
| CO Number   | P01             | P02                   | P03     | P04            | P05                      | PSO1                     | PSO2                  | PSO3        | PSO4      | l PS             | 05               |      |
| CO1   | S               | М                     | Μ       | L              | L                        | Μ                        | L                     |             | L         |                  |                  |      |
| CO2   | М               | М                     | Μ       | М              | М                        | М                        | М                     | Μ           | ſ         | N                |                  |      |
| CO3   | S               | М                     | Μ       | М              | L                        | S                        | М                     | М           |           | L                |                  |      |
| CO4   | S               | М                     | S       | L              | L                        | S                        | S                     | L           |           | L                |                  |      |
| CO5   | S               | М                     | S       | L              | L                        | S                        | М                     | S           | L         |                  | L                |      |
| Level<br>betwe  | of Cor<br>en CO | rrelation<br>) and PO |         |                | L-LOW                    | 1                        | Μ                     | S           | -STRO     | NG               |                  |      |
| <b>Tutorial Sche</b>  | dule            |                       |         | Grou           | p Discuss                | ion, Quiz                | orogram               | , Model p   | prepara   | tion             |                  |      |
| Teaching and  | Learn           | ning Met              | hods    | Audio<br>Prese | o Video le<br>entation a | ecture, Cha<br>Ind Video | alk and B<br>presenta | loard clas  | ss, Assig | nmen             | it, PP           | Т    |
| Assessment I  | Vetho           | ods                   |         | Class          | Test, Uni                | t Test, As               | signmen               | t, CIA-I, ( | CIA-II an | nd ESE           |                  |      |
| De  | esigne          | d By                  |         |                |                          | Verified B               | у<br>У                |             | A         | pprov            | ed By            |      |
| Mrs   | s.K.Gay         | yathri                |         |                | HoD -                    | Mr.G.Selv                | vakumar               |             | Mem<br>Dr | ber Se<br>.S.Sha | ecreta<br>ahitha | ry - |





# (Autonomous)

| BCA - Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |  |   |   |  |                                   |               |             |           |  |  |  |
|---|--|---|---|--|-----------------------------------|---------------|-------------|-----------|--|--|--|
| Course Code   | Course Title   | Course Type   | Sem   | Hours  | L                                 | т             | Р           | С         |  |  |  |
| 23M_UCAC_   | DATA MINING AND<br>WAREHOUSING   |   |   | 5  | 5                                 | -             | -           | 4         |  |  |  |
| Objective   | To Provide the know  | ledge on Data Mining  | and W   | /arehousi  | ing c                             | oncepts       | and te      | chniques. |  |  |  |
| Unit  |  | Course Content  |   |  |                                   | Knowl<br>Leve | edge<br>els | Sessions  |  |  |  |
| I   | Introduction: Data mining – Functionalities–Classification –<br>Introduction to Data Warehousing– Data Reprocessing:<br>Processes sing the Data – Data cleaning – Data Integration and<br>Transformation–Data Reduction. |   |   |  |                                   |               |             |           |  |  |  |
| II  | Data Mining Primitiv<br>Data Mining – Primi<br>Architecture of Data<br>Characterization And<br>Generalization and Su<br>- Mining Class Compa   | es: Languages and Sy<br>tives – Data Mining<br>mining Systems. Con<br>Comparison: Concept<br>ummarization - Analyt<br>rison – Statistical Mea | stem A<br>Query<br>cept D<br>Descri<br>ic Char<br>asures. | rchitectu<br>Languag<br>escriptio<br>ption - D<br>racterizat | ire:<br>e -<br>on -<br>ata<br>ion | KZ            | 2           | 12        |  |  |  |
| 111   | Mining Association R<br>Boolean Association<br>Multilevel Associatio<br>Multi dimension Asso<br>and Data Warehouse   | ules: Basic Concept –<br>Rules From Transa<br>n Rules from transa<br>ociation Rules from R<br>s.  | Single I<br>ction I<br>ction c<br>elation                 | Dimensio<br>Database<br>database:<br>al Databa               | onal<br>s -<br>s –<br>ase         | Ka            | 3           | 12        |  |  |  |
| IV  | <b>Classification and Pre</b><br>Tree Induction–Bayes<br>Propagation. Classif<br>Association Rule M<br>Introduction–Classif  | ediction: Introduction<br>sian Classification – Cla<br>ication Based on<br>ining – Other Meth<br>ier Accuracy.                                | – Issue<br>assifica<br>Cono<br>ods. P                     | s – Decis<br>tion of B<br>cepts fr<br>redictior              | ion<br>ack<br>om<br>n –           | Ka            | 3           | 12        |  |  |  |
| v   | Cluster Analysis: Inf<br>Analysis - Petitioning M<br>Based Methods – GRI<br>Method. Current Tre  | roduction – Types of<br>Methods – Hierarchica<br>D Based Method–Mod<br>nds : * Data mining ne   | of Data<br>I Metho<br>el base<br><b>ew trer</b>           | a in Clus<br>ods-Dens<br>dCluster<br><b>nd *</b>             | ster<br>sity<br>ing               | Κź            | Ļ           | 12        |  |  |  |
|   | ** Self Study.   |   |   |  |                                   |               |             |           |  |  |  |
|   | <b>CO1:</b> Recall the basic various data mining a   |   | K1  |  |                                   |               |             |           |  |  |  |
| Course<br>Outcome   | CO2: Illustrate the concepts of Data mining systemK2architectures.K2   |   |   |  |                                   |               |             |           |  |  |  |
|   | CO3: Describe the pri  | nciples of association  | rules.  |  |                                   | Ka            | 3           |           |  |  |  |
|   | CO4: Analyse Classific   | cation and prediction i   | nethoo  | J.   |                                   | Ka            | }           |           |  |  |  |

|                        | CO5: Apply knowled   | lge on Cluster   | analysis and its me  | thods.   | К4  |                  |  |  |  |  |
|------------------------|--|--|--|--|---|------------------|--|--|--|--|
|                        |  | Learnin  | g Resources  |  |   |                  |  |  |  |  |
| Text<br>Books          | <ol> <li>Han and M.Kambe</li> <li>Ltd, New Delhi.</li> <li>Tortora, G.J., Funk</li> <li>Edition. A La Carte F</li> </ol>   | er,—DataMini<br>ke, B.R., Case,O<br>Pearson.                               | ngConceptsandTecl<br>C.L. (2013). Microbi  | nniques  ,2<br>ology. An I                         | 2001,Harcourt I<br>Introduction 11                          | ndia Pvt.<br>.th |  |  |  |  |
| Reference<br>Books     | <ul> <li>1.K.P.Soman,ShyamDiwakar,V.Ajay—Insight into Data Mining Theory and<br/>Practice—,Prentice Hall of India Pvt.Ltd, New-Delhi.</li> <li>2.Parteek Bhatia, Data Mining and Data Warehousing :Principles and Practical<br/>Techniques', Cambridge University Press,2019.</li> </ul> |  |  |  |   |                  |  |  |  |  |
| Website<br>Link        | 1. https://www.top<br>mining#:~:text=Data<br>%20data%20wareho<br>2https://www.java<br>3. https://www.tuto  | coder.com/th<br>a%20warehou<br>ouse.<br>at point.com/c<br>orials point.com | rive/articles/data-v<br>sing%20is%20a%20<br>lata-mining-cluster-<br>m/Data-Warehousi | varehousii<br>)method,c<br>-vs-data-w<br>ng-and-Da | ng-and-data<br>ompiled%20in%<br>varehousing.<br>ita-Mining. | %20 the          |  |  |  |  |
| Self-Study<br>Material | https://www.youtube.com/watch?v=m4fsyny5ofc.   |  |  |  |   |                  |  |  |  |  |
|                        | L-Lecture  | T-Tutorial   | P-Practical  |  | C-Credit  |                  |  |  |  |  |

|   | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |               |                   |                      |                   |                       |                       |                    |            |          |          |       |     |
|---|---|---------------|-------------------|----------------------|-------------------|-----------------------|-----------------------|--------------------|------------|----------|----------|-------|-----|
| Course Code                                   |   | Со            | urse Ti           | itle                 |                   | Course                | Туре                  | Sem                | Hours      | L        | т        | Р     | С   |
| 23M_UCAC_                                     | [   | DATA I<br>WAR | MININ<br>EHOU     | G AND<br>SING        |                   |                       |                       |                    | 5          | 5        | -        | -     | 4   |
|   |   |               |                   |                      | С                 | D-PO M                | apping                |                    |            |          |          |       |     |
| CO Number                                     | r   | PO1           | PO2               | PO3                  | PO4               | PO5                   | PSO1                  | PSO2               | PSO3       | PSO4     | PSO5     |       |     |
| CO1   |   | S             | S                 | S                    | S                 | S                     | S                     | S                  | S          | S        | S        |       |     |
| CO2   |   | S             | S                 | М                    | S                 | М                     | S                     | S                  | S          | S        | М        |       |     |
| CO3   |   | Μ             | М                 | S                    | S                 | S                     | М                     | М                  | М          | S        | S        |       |     |
| CO4   |   | S             | S S M M L S S S M |                      |                   |                       |                       |                    |            |          |          |       |     |
| CO5   |   | L             | S                 | S                    | S                 | S                     | L                     | S                  | S          | S        |          |       |     |
| Level of<br>Correlation<br>between CO a<br>PO | and   |               |                   | L-LOW                | ,                 |                       | М                     | -MEDIUM S-STRONG   |            |          |          |       |     |
| Tutorial Schedu                               | ule   |               | C                 | Group D              | iscuss            | ion, Qui              | iz progra             | m, Mod             | el prepa   | ration   |          |       |     |
| Teaching and L<br>Methods                     | earni   | ing           | /<br>F            | Audio Vi<br>Presenta | deo le<br>ation a | ecture, C<br>and Vide | Chalk and<br>o preser | d Board<br>ntation | class, As  | signmer  | nt, PPT  |       |     |
| Assessment Me                                 | etho  | ds            | C                 | Class Tes            | st, Uni           | it Test,              | Assignm               | ent, CIA           | -I, CIA-II | and ESE  |          |       |     |
| Designed By Verified By                       |   |               |                   |                      |                   |                       |                       |                    |            | Approve  | ed By    |       |     |
| Mr.M  | .Ravi   |               |                   | HoD                  | - Mr.0            | G.Selval              | kumar                 | Me                 | ember Se   | ecretary | – Dr.S.S | Shahi | tha |





|             | BCA Syllabus LOCF - CB   | CS with effect fr  | om 202   | 23-2024   | Onw                        | ards           |            |          |
|-------------|--|--|--|---|----------------------------|----------------|------------|----------|
| Course Code | Course Title   | Course Type  | Sem  | Hours   | L                          | т              | Р          | С        |
| 23M_UCAC_   | MOBILE APPLICATION<br>DEVELOPMENT  |  |  | 5   | 5                          | -              | -          | 5        |
| Objective   | Student Learn the Androi options, manage data effe   | d architecture an<br>ectively with file  | nd feat<br>handli  | ures, imp<br>ng.  | olem                       | ent diffe      | rent v     | view     |
| Unit        | Сон  | urse Content   |  |   |                            | Knowle<br>Leve | edge<br>Is | Sessions |
| I           | Android Fundamentals:<br>Features of Android – Ar<br>Android Environment (Ec<br>Anatomy of an Androi<br>Application Development  |  | 12   |   |                            |                |            |          |
| II          | Android User Interface:<br>and Scroll View) - Manag<br>Views: Text View, Button<br>Box, Radio Button, Ra<br>Complete Text View, List   | Layouts (Linear<br>ing changes to S<br>n, Image Buttor<br>dio Group, Pro<br>Views, and Web                       | , Relat<br>creen<br>, Edit<br>ogress<br>View.            | ive, Frai<br>Orientati<br>Text, Ch<br>Bar, A                        | me,<br>on.<br>eck<br>uto   | К2             |            | 12       |
| 111         | Data Persistence: Saving<br>Handling: File System -<br>Permissions - File Mani<br>SQLite: Creation of dar<br>Updation of records.  | and Loading Use<br>Internal and E<br>pulation - Mar<br>tabase, Insertio  | er Prefe<br>Externa<br>naging<br>n, Ret                  | erences.<br>I Storag<br>Data us<br>rieval, a                        | File<br>e -<br>sing<br>and | КЗ             |            | 12       |
| IV          | SMS Messaging: Sending<br>E-mail. Networking:<br>Downloading Text Files.   | and Receiving n<br>Downloading   | nessago<br>Binary  | es - Senc<br><sup>7</sup> Data                                      | ling<br>-                  | К4             |            | 12       |
| V           | Location Based Services:<br>control - Changing view<br>location - Geocoding. I<br>Preparing for publishing -<br>Current Trends- *Interne<br>** Self Study.<br>CO1: Find the importance | Displaying maps<br>- Adding Mark<br>Publishing And<br>Deploying APK I<br>t of Things (IoT)<br>e of visualization | - Disp<br>kers -<br>roid A<br>-iles.<br>App In<br>in the | laying zo<br>Getting<br><b>pplicatic</b><br><b>tegratio</b><br>data | om<br>the<br>ons:<br>n*.   | К5             |            | 12       |
|             | analytics solution.  |  |  |   |                            | K1             |            |          |

|                        | CO2: Use struc   | tured thinking   | d problems.                                      | К2                                 |                              |                      |
|------------------------|--|--|--|------------------------------------|------------------------------|----------------------|
| Course                 | <b>CO3</b> : Build a w problems.   | ide range of ma  | achine learning                                  | algorithms and                     | К3                           |                      |
| Outcome                | <b>CO4</b> : Learn alg mathematicall   | orithmic topics<br>y deepen to int                                 | of machine lear<br>roduce the requ               | rning and<br>uired theory.         | К4                           |                      |
|                        | <b>CO5</b> : Develop involved in lea   | an understandi<br>rning from data                                  | ng of the compl<br>a.                            | exities                            | К5                           |                      |
|                        |  | Learn  |  |                                    |                              |                      |
| Text<br>Books          | WeiMeng Lee (2<br>Publications (Joł  | nent", Wrox  |  |                                    |                              |                      |
| Reference<br>Books     | EdBurnette, "He<br>3 <sup>rd</sup> edition, 2010<br>Reto Meier,"Pr<br>(John Wiley, Nev | llo Android: Int<br>), Th Pragmatic<br>ofessionalAndro<br>w York). | roducing Googl<br>Publishers.<br>oid4Application | e's Mobile Devel<br>Development",2 | opment Platfo<br>012,Wrox Pu | orm",<br>Iblications |
| Website<br>Link        | https://www.tu   | torialspoint.con   | n/mobile_devel                                   | <u>opment tutoria</u>              | l <u>s.htm</u>               |                      |
| Self-Study<br>Material | https://www.ga   | rtner.com/en/i   | nology/glossary                                  | ı/iot-integratio                   | <u>on</u>                    |                      |
|                        | L-Lecture  | T-Tutorial   |  | C-Credit                           |                              |                      |

|   | CA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |                |                 |                     |                |                    |                   |              |              |             |                                   |        |       |        |      |   |
|---|--|----------------|-----------------|---------------------|----------------|--------------------|-------------------|--------------|--------------|-------------|-----------------------------------|--------|-------|--------|------|---|
| Course Code                                   |  | Cou            | rse Tit         | le                  |                | Course             | тур               | be           | Sen          | n           | Но                                | urs    | L     | т      | Р    | С |
| 23M_UCAC_                                     | MO<br>[  | BILE /<br>DEVE | APPLIC<br>LOPME | ATION<br>NT         |                |                    |                   |              |              |             | 5                                 | 5      | 5     | -      | -    | 5 |
|   |  |                |                 |                     | СО             | )-PO M             | appi              | ing          |              |             |                                   |        |       |        |      |   |
| CO Number                                     | r I  | PO1            | PO2             | PO3                 | PO             | 4 PC               | )5                | PS           | 01           | PS          | 02                                | PSC    | )3    | PSO4   | PSO5 |   |
| CO1   |  | L              | Μ               | S                   | S              | S                  |                   | S            | 5            | Ν           | Л                                 | S      |       | М      | S    |   |
| CO2   |  | S              | S M M S S S     |                     |                |                    |                   |              | 5            | S S         |                                   |        |       | Μ      | S    |   |
| CO3   |  | S              | S S M S S S M   |                     |                |                    |                   |              | Л            | S           |                                   | Μ      | S     |        |      |   |
| CO4   |  | Μ              | S               | S S M S S           |                |                    |                   |              |              | Ν           | M S                               |        |       | Μ      | S    |   |
| CO5   |  | S              | S               | S S S S M S         |                |                    |                   |              |              | S           |                                   | S      | S     |        |      |   |
| Level of<br>Correlation<br>between CO a<br>PO | and  |                | L               | -LOW                |                |                    | M-MEDIUM S-STRONG |              |              |             |                                   |        |       | Ĵ      |      |   |
| Tutorial Schedu                               | ule  |                | Gr              | oup Dis             | scuss          | sion, Q            | uiz p             | rog          | ram,         | Mo          | odel                              | prep   | arat  | ion    |      |   |
| Teaching and L<br>Methods                     | earning  | g              | Aı<br>Pr        | idio Vid<br>esentat | eo le<br>ion a | ecture,<br>and Vic | Cha<br>leo p      | lk a<br>pres | nd B<br>enta | oar<br>tior | d cla<br>n                        | ass, A | ssig  | nment, | PPT  |   |
| Assessment Me                                 | ethods   | ;              | Cl              | ass Test            | ., Un          | it Test,           | Ass               | signi        | ment         | :, C        | IA-I,                             | CIA-   | ll an | d ESE  |      |   |
| Designed By Verified By                       |  |                |                 |                     |                |                    |                   | Арр          | roved B      | y           |                                   |        |       |        |      |   |
| Mr.E.Na                                       |  |                | Ho              | D - Mr.(            | G.Se           | lval               | kuma              | ar           |              |             | Member Secretary<br>Dr.S.Shahitha |        |       |        |      |   |





|             | BCA LOCF - CBCS with effect from 2023-2024 Onwards         |  |                     |       |      |                    |            |      |        |  |  |  |  |
|-------------|--|--|---------------------|-------|------|--------------------|------------|------|--------|--|--|--|--|
| Course Code | Course Title   | Course Type                              | Sem                 | Hour  | rs   | L                  | т          | Ρ    | С      |  |  |  |  |
| 23M_UCAP_   | MOBILE APPLICATION<br>DEVELOPMENT                          |  |                     | 5     |      | -                  | -          | 5    | 2      |  |  |  |  |
| Objective   | Students Learn the user-or<br>the creation of cookies ar   | defined functions and sessions.          | and the             | conce | epts | of classes         | , dei      | mon  | strate |  |  |  |  |
| S.No.       | List of Experim  | ents / Programme                         | es                  |       | Kn   | iowledge<br>Levels | S          | essi | ons    |  |  |  |  |
| 1           | Develop an application fo                                  | or Simple Counter.                       |                     |       |      | K1                 |            | 3    |        |  |  |  |  |
| 2           | Develop an application to using GUI Components.            | tails                                    |                     | К2    |      | 3                  |            |      |        |  |  |  |  |
| 3           | Develop a Simple Calculat<br>and Text View.                | IS                                       |                     | K1    |      | 3                  |            |      |        |  |  |  |  |
| 4           | Develop an application th                                  | y.                                       |                     | К2    |      | 3                  |            |      |        |  |  |  |  |
| 5           | Develop an application th                                  |  |                     | КЗ    |      | 3                  |            |      |        |  |  |  |  |
| 6           | Develop an application to                                  | o display a Splash S                     | creen.              |       |      | К2                 | 3          |      |        |  |  |  |  |
| 7           | Develop an application th                                  | at uses Layout Ma                        | inagers             |       |      | K1                 |            |      |        |  |  |  |  |
| 8           | Develop an application th<br>Menus.                        | at uses different t                      | ypes of             | :     |      | КЗ                 | 3          |      |        |  |  |  |  |
| 9           | Develop an application th<br>mobile to another mobile      | at sends messages                        | s from              | one   |      | КЗ                 |            |      |        |  |  |  |  |
| 10          | Develop an application th                                  | at sends E-mail.                         |                     |       |      | КЗ                 |            | 3    |        |  |  |  |  |
| 11          | Develop an application th                                  | at plays Audio and                       | d Video             | •     |      | К4                 |            | 3    |        |  |  |  |  |
| 12          | Develop an application fo                                  | or Local File Storage                    | e.                  |       |      | К4                 |            | 4    |        |  |  |  |  |
| 13          | Develop an application fo                                  | r Login Page using                       | SQLite              |       |      | КЗ                 |            | 4    |        |  |  |  |  |
| 14          | Develop an application fo<br>processing using SQLite.      | r Student Mark sh                        | eet                 |       |      | К4                 |            | 3    |        |  |  |  |  |
|             | <b>CO1:</b> Recall the concepts                            | of counter and dia                       | logs.               |       |      | I                  | K1         |      |        |  |  |  |  |
| Course      | <b>CO2:</b> Comprehend the control To perform sending emai | oncepts of Layout<br>I, audio, and video | Mana                | gers. |      | I                  | ٢2         |      |        |  |  |  |  |
| Outcome     | <b>CO3:</b> Enable the applica apply Local File Storage a  | tion of audio and nd development o       | d video<br>f files. | ). То |      |                    | <b>K</b> 3 |      |        |  |  |  |  |
|             | <b>CO4:</b> Determine the conc<br>apply searching pages.   | cepts of Simple An                       | imatio              | n. To |      | l                  | (3         |      |        |  |  |  |  |

|                    | <b>CO5:</b> Utilize the usage preparation in MAD.   | e of student n  | nark sheet  | К4       |  |  |  |  |  |
|--------------------|---|---|-------------|----------|--|--|--|--|--|
|                    |   | Learning R  | esources    |          |  |  |  |  |  |
| Text<br>Books      | 1. WeiMeng Lee (2012), "Beginning Android Application Development", Wrox Publications (John Wiley, New York). |   |             |          |  |  |  |  |  |
| Reference<br>Books | 1.EdBurnette, "Hell<br>Platform",3 <sup>rd</sup> editior<br>2.Retoeier,"Professio<br>Publications (John V     | <ul> <li>1.EdBurnette, "Hello Android: Introducing Google's Mobile Development<br/>Platform", 3<sup>rd</sup> edition, 2010, Th Pragmatic Publishers.</li> <li>2.Retoeier, "ProfessionalAndroid4ApplicationDevelopment", 2012, Wrox<br/>Publications (John Wiley, New York)</li> </ul> |             |          |  |  |  |  |  |
| Website<br>Link    | https://www.tutorialspo   | https://www.tutorialspoint.com/mobile_development_tutorials.htm   |             |          |  |  |  |  |  |
|                    | L-Lecture   | T-Tutorial  | P-Practical | C-Credit |  |  |  |  |  |

|                                   |                      | E                | BCA LO                       | CF - CBCS v | vith eff                                       | ect from  | 2023-2     | 024 Onv   | vards | ;     |         |    |
|-----------------------------------|----------------------|------------------|------------------------------|-------------|--|-----------|------------|-----------|-------|-------|---------|----|
| Course Co                         | de                   | Со               | urse Tit                     | le          | Course   | Туре      | Sem        | Hours     | L     | т     | Р       | С  |
| 23M_UCA                           | νP_                  | N<br>APP<br>DEVE | AOBILE<br>PLICATIO<br>ELOPMI | ON<br>ENT   |  |           |            | 5         | -     | -     | 5       | 2  |
| CO-PO Mapping                     |                      |                  |                              |             |  |           |            |           |       |       |         |    |
| CO<br>Number                      | PO<br>1              | PO<br>2          | PO3                          | PO4         | PO5  | PSO1      | PSO2       | PSO3      | PSC   | 94 P  | SO5     |    |
| CO1                               | М                    | S                | М                            | S           | S  | М         | М          | S         | S     |       | S       |    |
| CO2                               | М                    | S                | S                            | S           | S  | S         | М          | S         | S     |       | S       |    |
| CO3                               | S                    | S                | S                            | S           | S  | S         | S          | S         | S     |       | S       |    |
| CO4                               | S                    | S                | М                            | S           | S  | S         | М          | S         | S     |       | S       |    |
| CO5                               | Μ                    | S                | М                            | М           | Μ  | S         | S          | S         | S     |       | S       |    |
| Level<br>Correla<br>between<br>PO | of<br>ation<br>CO an | d                | L-I                          | -OW         |  | M-MI      | EDIUM      |           |       | S     | S-STRO  | NG |
| Tutorial Sc                       | hedul                | le               |                              |             | Sam  | nple prog | rams to    | related   | topio | CS    |         |    |
| Teaching a                        | nd Le                | arning           | Metho                        | ods         | Han  | dling pra | actical se | ession th | nroug | h pro | ojector |    |
| Assessmer                         | nt Me                | thods            |                              |             | Atte   | endance,  | Observ     | ation, M  | lodel | prac  | tical   |    |
| Desig                             | ned B                | у                |                              | Ve          | rified B                                       | y         |            |           | A     | ppro  | oved By | 1  |
| Mr.E.Natarajan HOD - Mr.          |                      |                  |                              | r.G.Selv    | G.Selvakumar Member Secretary<br>Dr.S.Shahitha |           |            |           | ary   |       |         |    |





|             | BCA Syllabus LO  | CF - CBCS with effe   | ct fron                                  | n 2023-2                              | 024 O                                 | nwards |    |    |  |  |  |  |  |
|-------------|--|---|--|---------------------------------------|---------------------------------------|--------|----|----|--|--|--|--|--|
| Course Code | Course Title   | Course Type   | Sem                                      | Hours                                 | L                                     | т      | Р  | С  |  |  |  |  |  |
| 23M_UCAC_   | INTRODUCTION<br>TO DATA SCIENCE  |   |  | 5                                     | 5                                     | -      | -  | 5  |  |  |  |  |  |
| Objective   | To Learn the variou predictive modellin  | To Learn the various data collection and integration, exploratory data analysis, predictive modelling, descriptive modelling and effective communication. |  |                                       |                                       |        |    |    |  |  |  |  |  |
| Unit        |  | Kno   | owledge<br>.evels                        | Sessions                              |                                       |        |    |    |  |  |  |  |  |
| I           | Introduction: Bene<br>science process – B  | a   | K1                                       | 12                                    |                                       |        |    |    |  |  |  |  |  |
| II          | The Data science<br>retrieving data - tra<br>– Model building - [  | -   | К2                                       | 12                                    |                                       |        |    |    |  |  |  |  |  |
| 111         | Algorithms: Mach<br>process – Types -<br>supervised.   | ine learning algo<br>– Supervised – L   | orithms<br>Jnsupe                        | – Mo<br>rvised -                      | dellin <sub>ê</sub><br>Semi           | -      | К3 | 12 |  |  |  |  |  |
| IV          | Introduction to Har replacing Map Redu   | <b>adoop:</b> Hadoop fi<br>ice– No SQL – ACID   | ramew<br>– CAP                           | ork – S<br>– BASE –                   | park -<br>types                       | -      | К3 | 12 |  |  |  |  |  |
| V           | Case Study: Predict<br>Data retrieval – pre<br>- presentation and a<br>Current Trends* : N<br>deep learning – Ma | tion of Disease - Se<br>paration - explorat<br>automation.<br><b>Machine Leraning</b> -<br>achine Learning M  | etting r<br>ion - D<br>• Machi<br>ethods | esearch<br>isease p<br>ine Learı<br>* | goals<br>rofilinរ្<br>ning <b>ប</b> ះ | 5      | К4 | 12 |  |  |  |  |  |

|                        | <b>CO1:</b> Recall the scope and  | d applications of data so                        | cience.                              | K1   |       |  |  |  |  |  |
|------------------------|---|--|--------------------------------------|------|-------|--|--|--|--|--|
|                        | CO2: Summarize the Data   | a Science Process.                               |                                      | К2   |       |  |  |  |  |  |
| Course<br>Outcome      | <b>CO3:</b> Utilize the basic learning.   | principles and techniq                           | ues of machine                       | К3   |       |  |  |  |  |  |
|                        | <b>CO4:</b> Develop the Hadoo   | p framework and it type                          | es.                                  | К3   |       |  |  |  |  |  |
|                        | <b>CO5:</b> Examine the differe learning.   | nt fields of data science                        | e and machine                        | K4   |       |  |  |  |  |  |
|                        | Learning Resources  |  |                                      |      |       |  |  |  |  |  |
| Text<br>Books          | <ol> <li>Davy Cielen, Arno D. B. Meysman, Mohamed Ali, "Introducing Data Science", manning<br/>publications 2016</li> <li>Roger Peng, "The Art of Data Science", lulu.com 2016.</li> <li>MurtazaHaider, "Getting Started with Data Science – Making Sense of Data with<br/>Analytics", IBM press, E-book.</li> </ol>  |  |                                      |      |       |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Davy Cielen, Arno D.B. Meysman, Mohamed Ali, "Introducing Data Science: Big Data,<br/>Machine Learning, and More, Using Python Tools", Dreamtech Press 2016.</li> <li>Annalyn Ng, Kenneth Soo, "Numsense! Data Science for the Layman: No Math Added",<br/>2015,1st Edition</li> <li>Cathy O'Neil, Rachel Schutt, "Doing Data Science Straight Talk from the Frontline",<br/>O'Reilly Media 2013.</li> <li>Lillian Pierson, "Data Science for Dummies", 2015 II Edition</li> </ol> |  |                                      |      |       |  |  |  |  |  |
| Website<br>Link        | 1. <u>https://www.w3schoo</u><br>2. <u>https://www.geeksforg</u>  | ls.com/datascience/ds<br>geeks.org/introduction- | introduction.asp<br>to-data-science/ |      |       |  |  |  |  |  |
| Self-Study<br>Material | <ol> <li>https://www.ibm.com/topics/machine-learning</li> <li>https://www.manning.com/books/introducing-data-science</li> </ol>   |  |                                      |      |       |  |  |  |  |  |
|                        | L-Lecture   | T-Tutorial                                       | P-Practical                          | C- C | redit |  |  |  |  |  |

|                 | BC                   | A Syllabu                      | s LOCF - (       | CBCS wit  | h effect                | from 2           | 2023         | 8-202          | 24 Onw             | ards     |        |      |        |    |
|-----------------|----------------------|--------------------------------|------------------|---|-------------------------|------------------|--------------|----------------|--------------------|----------|--------|------|--------|----|
| Course Code     |                      | Course                         | Title            | Co  | ourse Typ               | e                | Se           | em             | Hour               | s L      |        | т    | Р      | С  |
| 23M_UCAC_       | IN                   | TRODUC <sup>®</sup><br>DATA SC | FION TO<br>IENCE |   |                         |                  |              | 5              | 5                  |          | -      | -    | 5      |    |
|                 |                      |                                |                  | CO-PO   | ) Mappiı                | ng               |              |                |                    |          |        |      |        |    |
| CO Number       | PO1                  | PO2                            | PO3              | PO4   | PO5                     | PSO              | 1            | Ρ              | SO2                | PSO3     | PS     | 04   | PSC    | )5 |
| CO1             | S                    | S                              | М                | S   | S                       | S                |              |                | S                  | Μ        | Ν      | Λ    | S      |    |
| CO2             | S                    | S                              | S                | S   | S                       | S                |              |                | Μ                  | S        | Ν      | Λ    | S      |    |
| CO3             | S                    | М                              | S                | S   | S                       | М                |              |                | S                  | М        | Ν      | Λ    | Μ      |    |
| CO4             | S                    | S                              | М                | S   | S                       | М                |              |                | S                  | S        | Ν      | Λ    | Μ      |    |
| CO5             | S                    | S                              | М                | S   | S                       | S                |              |                | Μ                  | S        |        | 5    | S      |    |
| Level<br>betwe  | of Corre<br>een CO a | elation<br>and PO              |                  | L-LOW   |                         |                  |              | M-             | MEDIU              | м        | S-9    | STRO | ONG    |    |
| Tutorial Schedu | le                   |                                |                  | Group Discussion, Quiz program, Model preparation |                         |                  |              |                |                    |          |        |      |        |    |
| Teaching and Le | earning              | Method                         | 5                | Audio V<br>Present                                | /ideo lect<br>ation and | ure, C<br>d Vide | halk<br>o pr | c and<br>resei | d Board<br>ntation | class, A | ssigr  | חme  | nt, PF | ΡŢ |
| Assessment Me   | thods                |                                |                  | Class Te  | est, Unit <sup>-</sup>  | Test, A          | Assig        | gnm            | ent, CIA           | -I, CIA- | ll and | d ES | E      |    |
| D               | esigned              | Ву                             |                  | ١   | /erified E              | Зу               |              |                |                    | Approv   | ved B  | By   |        |    |
| Μ               | HoD - M              | ۸r.G.Selv                      | /akum            | ar  | Me                      | mber S           | ecretar      | y - D          | r.S.S              | Shahit   | ha     |      |        |    |

### List of Skill Based Elective Course (SEC) for B.C.A., SYLLABUS - LOCF-CBCS Pattern EFFECTIVE FROM THE ACADEMIC YEAR 2023-2024 Onwards

| S.No. | SEM |            | TITLE OF THE COURSE                    |
|-------|-----|------------|--|
| 1     |     | 23M_UCAS01 | Fundamentals of Information Technology |
| 2     |     | 23M_UCAS02 | Introduction to HTML                   |
| 3     |     | 23M_UCAS03 | Web Designing                          |
| 4     |     | 23M_UCAS04 | PHP Programming                        |
| 5     |     | 23M_UCAS05 | Software Testing                       |
| 6     |     | 23M_UCAS06 | Problem Solving Techniques             |
| 7     |     | 23M_UCAS07 | Office Automation                      |
| 8     |     | 23M_UCAS08 | Quantitative Aptitude                  |
| 9     |     | 23M_UCAS09 | Open Source Software Technologies      |
| 10    |     | 23M_UCAS10 | Multimedia Systems                     |
| 11    |     | 23M_UCAS11 | Advanced Excel                         |
| 12    |     | 23M_UCAS12 | Biometrics                             |
| 13    |     | 23M_UCAS13 | Cyber Forensics                        |
| 14    |     | 23M_UCAS14 | Pattern Recognition                    |
| 15    |     | 23M_UCAS15 | Enterprise Resource Planning           |
| 16    |     | 23M_UCAS16 | Robotics and Applications              |
| 17    |     | 23M_UCAS17 | Simulation and Modelling               |
| 18    |     | 23M_UCAS18 | Organization Behavior                  |
| 19    |     | 23M_UCAS19 | Understanding Internet                 |





|             | BCA Syllabus LOCF-CBC  | BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards   |  |                      |                       |      |     |   |  |  |  |  |  |  |
|-------------|--|---|--|----------------------|-----------------------|------|-----|---|--|--|--|--|--|--|
| Course Code | Course Title   | Course Type   | Sem  | Hours                | L                     | т    | Р   | С |  |  |  |  |  |  |
| 23M_UCAS01  | FUNDAMENTALS OF<br>INFORMATION<br>TECHNOLOGY   | SEC THEORY  |  | 2                    | 2                     | -    | -   | 2 |  |  |  |  |  |  |
| Objective   | Students understand basic c  | oncepts and termind   | ology of i                                     | nformatio            | on tech               | nolo | gy. |   |  |  |  |  |  |  |
| Unit        | Cours  | Kn  | owledg<br>Levels                               | ge                   | Sessions              |      |     |   |  |  |  |  |  |  |
| 1           | Introduction to Computers<br>Data and Information –<br>Software – Hardware – Inp<br>Types of Operating System.   | <br>-<br>5 -  | К1   |                      | 6                     |      |     |   |  |  |  |  |  |  |
| 11          | MS Word: Introduction –<br>Folders and Directories –<br>Paste, Drag and Drop – Tex<br>Face and Colors (Both fo<br>Alignment - Bullets and No<br>watermark – inserting obje<br>document) – Table creation | es,<br>oy,<br>ze,<br>–<br>ter<br>on   | К2   |                      |                       |      |     |   |  |  |  |  |  |  |
| III         | Ms Excel: Introduction – Inse<br>rows and columns – Impler<br>series - Functions in excel<br>objects – Filter – Sorting – Ir   | erting rows and colur<br>menting formulas –<br>– Creation of Chart<br>nserting worksheet.               | nns – Sizi<br>Generati<br>– Inserti            | ng<br>ng<br>ng       | К3                    |      |     |   |  |  |  |  |  |  |
| IV          | MS PowerPoint: Introduc<br>(Inserting new, Copy, paste<br>Slide show– Types of Vie<br>Inserting Objects – Implem<br>Audio) – Templates (Built-in   | ction – Slides M<br>, delete and duplica<br>ws – Types of An<br>enting multimedia<br>and User-Defined). | anipulati<br>te slides<br>imations<br>(Video a | on<br>) —<br>_<br>nd | on<br>—<br>— K3<br>nd |      |     |   |  |  |  |  |  |  |
| v           | Internet: Introduction to Int<br>Internet -Domain Name –<br>Browsers – Search Engine -E<br>Mail –.How to send grou<br>Signature – Digital Curre<br>transaction.  | of<br>of<br>E-<br>tal<br>nd   | K4   |                      | 6                     |      |     |   |  |  |  |  |  |  |

|                    | <b>CO1:</b> Le required use it.   | arn the basics of compu<br>things in computer, learn   | iter, Construct the struct how to   | ure of the  | K1        |  |  |  |  |  |  |
|--------------------|---|--|---|---|-----------|--|--|--|--|--|--|
|                    | <b>CO2:</b> Devices p   | velop organizational struct<br>present currently under in  | ture using for the<br>put or output unit.   |   | К2        |  |  |  |  |  |  |
| Course Outcome     | CO3: Des<br>namely F  | sign the concept of storing<br>RAM and ROM with differe  | g data in computer using tv<br>ent types.   | wo headers  | К4        |  |  |  |  |  |  |
|                    | <b>CO4:</b> Ap  | ply different software and   | its applications.   |   | К3        |  |  |  |  |  |  |
|                    | CO5: Exa<br>betweer   | amine the system softwar<br>a software and hardware.   | re which really acts as an  | interpreter   | К4        |  |  |  |  |  |  |
|                    |   | Learning F   | Resources   |   |           |  |  |  |  |  |  |
| Text<br>Books      | 1.Anoop<br>Technolog<br>2.Alexis<br>Edition.<br>3.S. K Ba   | Anoop Mathew, S. KavithaMurugeshan (2009), — Fundamental of Information<br>chnology  , Majestic Books.<br>Alexis Leon, Mathews Leon,   Fundamental of Information Technology  , 2nd<br>lition. |   |   |           |  |  |  |  |  |  |
| Reference<br>Books | 1.Bhardv<br>2.GG WI<br>3.A Ravi<br>Book Pul   | wajSushilPuneet Kumar, —<br>LKINSON, —Fundamentals<br>chandran, —Fundamenta<br>blishing.   | Fundamental of Informati<br>s of Information Technolog<br>Ils of Information Technolo | on Technology  <br>gy  , Wiley-Black<br>ogy  , Khanna | <br>kwell |  |  |  |  |  |  |
| Website<br>Link    | 1.https://testbook.com/learn/computer-fundamentals<br>2.https://www.tutorialsmate.com/2020/04/computer-fundamentals-tutorial.html<br>3.https://www.javatpoint.com/computer-fundamentals-tutorial<br>4.https://www.tutorialspoint.com/computer_fundamentals/index.htm<br>5.https://www.nios.ac.in/media/documents/sec229new/Lesson1.pdf. |  |   |   |           |  |  |  |  |  |  |
| L-Leo              | ture  | T-Tutorial   | P-Practical   | C   | -Credit   |  |  |  |  |  |  |

|                 |                                    | BCAS                   | Syllabu            | us LOCF            | - CBCS   | with effe              | ect from             | 2023-20           | 24 On     | ware     | ds   |       |        |     |   |   |
|-----------------|------------------------------------|------------------------|--------------------|--------------------|--|------------------------|----------------------|-------------------|-----------|----------|------|-------|--------|-----|---|---|
| Course Coo      | de                                 | Cours                  | e Title            |                    | Cou  | rse Type               | Sem                  | Hours             | L         | ٦        | r    |       | Р      | С   |   |   |
| 23M_UCAS0       | 1 F                                | UNDAN<br>INFOR<br>TECH | IENTA<br>MATIONOLO | ls of<br>DN<br>GY  | SEC  | THEORY                 |                      | 2                 | 2         |          | -    |       | -      |     | - | 2 |
|                 |                                    |                        |                    | -                  | СС   | D-PO Map               | oping                |                   |           |          |      |       |        |     |   |   |
| CO Number       | P01                                | PO2                    | PO3                | PO4                | PO5  | PSO1                   | PSO2                 | PSO3              | PSO3 PSO4 |          | PSO5 |       |        |     |   |   |
| CO1             | М                                  | S                      | М                  | S                  | S  | L                      | М                    | М                 | S         |          |      | S     |        |     |   |   |
| CO2             | М                                  | S                      | S                  | S                  | S  | S                      | М                    | S                 | S         |          |      | S     |        |     |   |   |
| CO3             | S                                  | S                      | S                  | S                  | S  | S                      | S                    | М                 | S         | I        |      | S     |        |     |   |   |
| CO4             | S                                  | S                      | М                  | S                  | S  | S                      | Μ                    | S                 | S         | 1        |      | S     |        |     |   |   |
| CO5             | М                                  | S                      | М                  | L                  | L  | S                      | Μ                    | М                 | S         | I        |      | S     |        |     |   |   |
| ا<br>Co<br>betw | evel c.<br>rrelati<br>een CC<br>PO | of<br>on<br>D and      |                    | L-LOW              |  |                        |                      | M-M               | EDIUN     | 1        |      |       | S-STRC | )NG |   |   |
| Tutorial Schee  | dule                               |                        |                    | Group D            | roup Discussion, Quiz program, Model preparation |                        |                      |                   |           |          |      |       |        |     |   |   |
| Teaching and    | Learn                              | ing Me                 | thods              | Audio V<br>Present | ideo le<br>ation a                               | cture, Ch<br>and Video | halk and<br>D Presen | Board c<br>tation | lass, A   | ssigr    | nme  | nt, P | PT     |     |   |   |
| Assessment N    | <b>Aetho</b>                       | ds                     |                    | Class Te           | st, Uni  | t Test, As             | signmer              | nt, CIA-I,        | CIA-II a  | and I    | ESE  |       |        |     |   |   |
| De              | signed                             | d By                   |                    |                    | Ver  | rified By              |                      |                   |           |          | Ap   | oprov | ved By |     |   |   |
| Mrs.N<br>Mr.K   | HoD – Dr.V.Vijayadeepa Me          |                        |                    |                    |  | nber S                 | ecre                 | etary             | y — Di    | r.S.Shah | itha |       |        |     |   |   |





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| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |   |                  |                           |         |                   |      |          |  |  |  |  |  |
|---|---|---|------------------|---------------------------|---------|-------------------|------|----------|--|--|--|--|--|
| Course Code   | Course Title  | Course Type   | Sem              | Hours                     | L       | Т                 | Р    | С        |  |  |  |  |  |
| 23M_UCAS02  | INTRODUCTION TO HTML  | SEC THEORY  |                  | 2                         | 2       | -                 | -    | 2        |  |  |  |  |  |
| Objective   | Students Learn the Concept<br>Create a web page.  | s of ordered an   | id uno           | rdered lis                | ts with | in a web          | page | and      |  |  |  |  |  |
| Unit  | Cours   | e Content   |                  |                           | K       | nowledg<br>Levels | ge   | Sessions |  |  |  |  |  |
| I   | Introduction: Web Basics: V<br>– What is Webpage – HTMI   | 5   | K1               |                           | 6       |                   |      |          |  |  |  |  |  |
| II  | Tags for Document struct<br>Block level text element<br>tag).Font style elements: (<br>strike, big tags). | ags for Document structure (HTML, Head, Body Tag).<br>Block level text elements: Headings paragraph (ag).Font style elements: (bold, italic, font, small, strong, K2 6<br>trike, big tags). |                  |                           |         |                   |      |          |  |  |  |  |  |
|   | Lists: Types of lists: Ordere<br>Other tags: Marquee, HR<br>Hyperlinks.                                   | ed, Unordered -<br>, BR Using Ima   | - Nest<br>ages - | ing Lists -<br>- Creating | -       | K3                | 6    |          |  |  |  |  |  |
| IV  | Tables: Creating basic Tab<br>Table and cell alignment – R  | ile, Table elem<br>owspan, Colspa   | ents,<br>n –Ce   | Caption -<br>Il padding   | -       | КЗ                |      | 6        |  |  |  |  |  |
| v   | Frames: Frameset – Targete<br>Input, Text area, Select, Op  | ed Links – No fra<br>tion.  | ame.             | Forms                     | :       | K4                |      | 6        |  |  |  |  |  |
|   | <b>CO1:</b> To Discuss about th Concept of resources in HT  | e basic concep<br>ML.   | ot in I          | HTML and                  | d       | K1                |      |          |  |  |  |  |  |
|   | <b>CO2:</b> To Identify the Concept of save the files.  | ot of Meta Data,  | Unde             | rstand the                | e       | К2                |      |          |  |  |  |  |  |
| Course  | <b>CO3:</b> To Execute the page f   | К3  |                  |                           |         |                   |      |          |  |  |  |  |  |
| Outcome   | <b>CO4:</b> To Differentiate Links creating link to email addre   | and Know the c<br>ss.   | oncep            | ot of                     |         | К3                |      |          |  |  |  |  |  |
|   | <b>CO5:</b> To Design the Concep<br>Understand the table creat  | t of adding imag<br>ion.  | ges an           | d                         |         | К4                |      |          |  |  |  |  |  |

| Learning Resources |                      |  |   |                            |  |  |  |  |  |  |
|--------------------|----------------------|--|---|----------------------------|--|--|--|--|--|--|
| Text<br>Book       | "Master              | Mastering HTML5 and CSS3 Made Easy", TeachUComp Inc., 2014.            |   |                            |  |  |  |  |  |  |
| Reference Book     | Thomas               | omas Michaud, "Foundations of Web Design: Introduction to HTML & CSS". |   |                            |  |  |  |  |  |  |
| Website<br>Link    | https://<br>https:// | www.teachucomp.com/<br>www.w3schools.com/ht                            | samples/html/5/manuals<br>ml/default.asp. | s/Mastering-HTML5-CSS3.pdf |  |  |  |  |  |  |
| L-Lec              | ture                 | T-Tutorial   | P-Practical                               | C-Credit                   |  |  |  |  |  |  |

|                                      | I                   | BCA Sy            | llabus L | OCF - CI   | BCS wi  | th effect      | from 20 | 23-2024 (    | Dnwards   |          |         |       |
|--------------------------------------|---------------------|-------------------|----------|--|---------|----------------|---------|--------------|-----------|----------|---------|-------|
| Course Code                          |                     | Cours             | se Title |  | C       | Course<br>Type | Sem     | Hours        | L         | т        | Р       | С     |
| 23M_UCAS02                           | INTR                | ODUC              |          | HTML   | SEC     | THEORY         | ,       | 2            | 2         | -        | -       | 2     |
|                                      |                     |                   |          |  | CO-P    | O Mappi        | ng      |              |           |          |         |       |
| CO Number                            | PO1                 | PO2               | PO3      | PO4  | PO5     | PSO1           | PSO2    | PSO3 PSO4 PS |           | 4 PSC    | 05      |       |
| CO1                                  | М                   | S                 | Μ        | S  | S       | L              | Μ       | М            | S         | S        |         |       |
| CO2                                  | М                   | S                 | S        | S  | S       | S              | М       | S            | S         | S        |         |       |
| CO3                                  | S                   | S                 | S        | S  | S       | S              | S       | М            | S         | S        |         |       |
| CO4                                  | S                   | S                 | М        | S  | S       | S              | М       | S            | S         | S        |         |       |
| CO5                                  | М                   | S                 | Μ        | L  | L       | S              | Μ       | М            | S         | S        |         |       |
| Level o<br>betwe                     | of Corre<br>en CO a | elation<br>and PO |          | L-L  | .OW     |                | M       | -MEDIUM      |           | S-S      | TRONG   | ì     |
| Tutorial Sched                       | ule                 |                   |          | Group Discussion, Quiz program, Model preparation  |         |                |         |              |           |          |         |       |
| Teaching and I<br>Methods            | earnin              | g                 |          | Audio Video lecture, Chalk and Board class, Assignment, PPT<br>Presentation and Video Presentation |         |                |         |              |           |          |         |       |
| Assessment M                         | ethods              |                   |          | Class Te   | est, Un | it Test, A     | ssignme | nt, CIA-I, ( | CIA-II an | d ESE    |         |       |
| Des                                  | signed              | Ву                |          |  | Ver     | ified By       |         |              |           | Approv   | ed By   |       |
| Mrs.N.Padmavathi<br>Mr.K.Vijayakumar |                     |                   |          | Ho   | ) - Mr. | G.Selvak       | umar    | Membe        | r Secret  | ary — Dr | .S.Shał | nitha |





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| BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |  |   |   |  |                |            |      |       |  |  |  |  |
|---|--|---|---|--|----------------|------------|------|-------|--|--|--|--|
| Course Code   | Course Title   | Course Type   | Sem   | Hours                                  | L              | т          | Ρ    | С     |  |  |  |  |
| 23M_UCAS03  | WEB DESIGNING  | SEC THEORY  |   | 3                                      | 1              | 2          | -    | 2     |  |  |  |  |
| Objective   | Students learn the b<br>concepts of XML and I  | basics of HTML and it<br>DHTML, Java script&t   | ts comp<br>the conc                                       | onents,<br>ept of A                    | Graphi<br>jax. | ics in     | HTML | , the |  |  |  |  |
| Unit  | С  | Course Content  |   |  | Knowle<br>Leve | edge<br>Is | Ses  | sions |  |  |  |  |
| I   | HTML: HTML Introdu<br>Adding comments we<br>line break. Emphasizin<br>list-font size, face a<br>frames.  | uction- tag basics- pa<br>orking with texts, par<br>ng test Heading and hor<br>and color Alignment  | ige struc<br>agraphs<br>izontal r<br>links-ta             | cture<br>and<br>ules-<br>bles-         | К1             |            |      | 5     |  |  |  |  |
| II  | Forms & Image Using<br>to work efficiently w<br>maps, GIF animation,<br>with html forms text b<br>text area, tools for Bu                            | <b>Html:</b> Graphics Introd<br>vith images in web p<br>adding multimedia, da<br>box, password, list box<br>ilding web page front p           | duction.<br>bages, in<br>ata colleo<br>, combo<br>bage.   | How<br>nage<br>ction<br>box,           | К2             |            |      | 6     |  |  |  |  |
|   | XML & DHTML: Casca<br>Why we use CSS-addii<br>styles Extensible mark   | CSS-<br>iping   | К3  |  | 5              |            |      |       |  |  |  |  |
| IV  | <b>Dynamic HTML</b> : Do<br>Accessing HTML & CS<br>styles & positioning<br>JavaScript: Client-side<br>to develop Java Scri<br>functions, conditions, | ocument object moo<br>S through DCOM Dyna<br>g-Event bubbling da<br>scripting, What is Jav<br>ipt, simple Java Scrip<br>loops and repetition, | del (DCC<br>amic cor<br>ata bino<br>aScript,<br>ot, varia | DM)-<br>ntent<br>ding.<br>How<br>bles, | K4             |            |      | 6     |  |  |  |  |
| v   | Advance script, Java S<br>objects, the DOM and<br>and validations.<br>*Current Trends: Adv   | Script and objects, Jav<br>web browser environ<br>ance script*  | a Script<br>ments, fo                                     | own<br>orms                            | К5             |            |      | 6     |  |  |  |  |
|   | ** Self Study.   |   |   |  |                |            | _    |       |  |  |  |  |
|   | CO1: Identify the worl<br>CO2: Describe the pu<br>Mark-up Language (H  | king knowledge of HTN<br>ublish Web pages usii<br>TML).   | ИL<br>ng Hype   | rtext                                  | K1<br>K2       |            | -    |       |  |  |  |  |
| Course<br>Outcome   | <b>CO3:</b> Assess to optim<br>Cascading Style Sheet   | CO3: Assess to optimize page styles and layout with Cascading Style Sheets (CSS).   |   |  |                |            |      |       |  |  |  |  |
|   | CO4: Develop a java se   | cript using CSS   |   |  | K4             |            |      |       |  |  |  |  |
|   | CO5: Create a web ap   | plication using Ajax.   |   |  | K5             |            |      |       |  |  |  |  |
|   |  | Learning Resources  |   |  |                |            |      |       |  |  |  |  |
| Text<br>Books   | 1. PankajSharma, Wek<br>2. MikeMcgrath, JavaS  | 1. PankajSharma, Web Technology, SkKataria & Sons Bangalore 2011.<br>2. MikeMcgrath, JavaScript, 1stEdition DreamTechPress2006.               |   |  |                |            |      |       |  |  |  |  |

|                        | 3 AchyutSGodbole & AtulKahate, Web Technologies, 2ndEdition ,2002.               |  |  |  |  |  |  |  |  |  |  |
|------------------------|--|--|--|--|--|--|--|--|--|--|--|
| Reference<br>Books     | 1.LauraLemay,Rafe<br>Publishing,2016.<br>2. DTEditorialServi<br>XHTML, AJAX, PHP | 1.LauraLemay,RafeColburn,JenniferKyrnin,—Mastering HTML,CSS & Javas cript Web<br>Publishing,2016.<br>2. DTEditorialServices(Author),—HTML5BlackBook(CoversCSS3,JavaScript,XML,<br>XHTML, AJAX, PHP, jQuery), 2ndEdition, Paperback 2016. |  |  |  |  |  |  |  |  |  |
| Website<br>Link        | 1.https://www.gee  | 1.https://www.geeksforgeeks.org  |  |  |  |  |  |  |  |  |  |
| Self-Study<br>Material | https://www.netcl  | https://www.netclues.com/blog/top-web-development-trends   |  |  |  |  |  |  |  |  |  |
|                        | L-Lecture T-Tutorial P-Practical C-Credit  |  |  |  |  |  |  |  |  |  |  |

|  | BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |          |                       |                     |                  |                    |                   |                                  |           |       |          |         |   |  |
|--|---|----------|-----------------------|---------------------|------------------|--------------------|-------------------|----------------------------------|-----------|-------|----------|---------|---|--|
| Course Title   | Cours   | e Title  |                       | Cou                 | Irse Ty          | pe                 | Sem               | ŀ                                | lours     | L     | Т        | Р       | С |  |
| 23M_UCAS03   | WEB DE  | SIGNI    | NING SEC THEOR        |                     |                  | RY                 |                   |                                  | 3         | 1     | 2        | -       | 2 |  |
|  |   |          |                       | CO-                 | PO Ma            | pping              |                   |                                  |           |       |          |         |   |  |
| CO Number         PO1         PO2         PO3         PO4         PO5         PS01         PS02         PS03         PS04         PS05 |   |          |                       |                     |                  |                    |                   |                                  |           |       |          |         |   |  |
| CO1  | М   | S        | Μ                     | S                   | S                | L                  | Μ                 |                                  | S         |       | Μ        | S       |   |  |
| CO2  | L   | М        | L                     | S                   | М                | S                  | S                 |                                  | М         |       | S        | S       |   |  |
| CO3  | М   | S        | S                     | М                   | S                | S                  | S                 |                                  | S         |       | Μ        | S       |   |  |
| CO4  | S   | S M M    |                       |                     | S                | S                  | M                 |                                  | М         |       | S        | М       |   |  |
| CO5  | S   | S        | Μ                     | Μ                   | М                | S                  | S                 | S S                              |           |       | S        | S       |   |  |
| Level of<br>Correlation<br>between CO and<br>PO  |   |          | L-LOW                 | I                   |                  | M-MEDIUM           |                   |                                  |           |       | S-STRONG |         |   |  |
| <b>Tutorial Schedule</b>   |   | G        | roup D                | iscussi             | on, Qu           | iiz prog           | ram, I            | Мо                               | del pre   | para  | tion     |         |   |  |
| Teaching and Lear<br>Methods   | rning   | Aı<br>Pr | udio V<br>esenta      | ideo leo<br>ation a | cture,<br>nd Vid | Chalk a<br>eo Pres | nd Boa<br>sentati | ard<br>on                        | class,    | Assig | gnme     | nt, PPT |   |  |
| Assessment Meth  | ods   | CI       | ass Te                | st, Unit            | : Test, A        | Assignn            | nent, C           | CIA-                             | ·I, CIA-I | I and | ESE      |         |   |  |
| Designed   | Verified By   |          |                       |                     | Approved By      |                    |                   |                                  |           |       |          |         |   |  |
| Mrs.R.Suguna   |   |          | HoD – Mr.G.Selvakumar |                     |                  |                    |                   | Member Secretary - Dr.S.Shahitha |           |       |          |         |   |  |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |  |   |  |   |                  |        |     |             |  |  |  |  |
|---|--|---|--|---|------------------|--------|-----|-------------|--|--|--|--|
| Course Code   | Course Title   | Course Type   | Sem                                      | Hours                                       | L                | т      | Р   | С           |  |  |  |  |
| 23M_UCAS04  | PHP PROGRAMMING  | SEC THEORY  |  | 3   | 1                | 2      | -   | 2           |  |  |  |  |
| Objective   | Students Learn the nece development techniques a   | ssary knowledg<br>and knowledge c   | e to d<br>on OOP                         | esign ar<br>S                               | d de             | evelop | web | application |  |  |  |  |
| Unit  | Course   | K   | nowl<br>Leve                             | edge<br>els                                 | Sessions         |        |     |             |  |  |  |  |
| I   | Introduction to PHP: Ba<br>Dynamic Website- Scope<br>Installation.   | -   | K1                                       | L   | 8                |        |     |             |  |  |  |  |
| II  | Basics of PHP Programm<br>PHP in HTML Embedding<br>Understanding Data Ty<br>Conditional Statements -It<br>Statement.   | <b>hing:</b> Syntax of<br>HTML in PHP.<br>ppes Using Op<br>f(), else if() and   | PHP-Er<br>PHP \<br>perator<br>else if    | mbeddin<br>/ariable<br>s -Usin<br>conditio  | 8<br>-<br>8<br>1 | K2     | 2   | 8           |  |  |  |  |
|   | <b>Control Statements and</b><br>Using the while() Loop-Usi<br>PHP Functions-Creating<br>Elements Processing Arra<br>Selections with<br>Arrays-Using Array Functio | Functions: Swite<br>ng the for() Loop<br>an Array-M<br>ays with Loops<br>ons.   | ch() Sta<br>o PHP F<br>odifyin<br>-Group | itements<br>functions<br>g Arra<br>ing Forn | -<br>y<br>n      | Ka     | 3   | 8           |  |  |  |  |
| IV  | <b>PHP File Concepts</b> : Read Datafrom a file.   | ling and Writing  | g Files                                  | -Readin                                     | g                | K4     | Ļ   | 8           |  |  |  |  |
| v   | Managing Sessions and Usi<br>Session Storing Data in Co<br><b>Current Trends- * The evo</b>  | ng Sessions and Using Session Variables-Destroying a<br>Storing Data in Cookies-Setting Cookies.<br>K5<br><b>Trends- * The evolution of PHP web applications*</b> |  |   |                  |        | 5   | 8           |  |  |  |  |
|   | ** Self Study.   |   |  |   |                  |        |     |             |  |  |  |  |
|   | <b>CO1:</b> Learn the PHP scripts  |   | K1                                       | <u> </u>                                    |                  |        |     |             |  |  |  |  |
| Course Outcome  | <b>CO2:</b> Outline the regular operators, and meta chara  | expressions inc<br>acters.  | luding                                   | modifier                                    | rs, K2           |        |     |             |  |  |  |  |
|   | CO3: Construct the Progra  | m using the con   | cept of                                  | array.                                      |                  | KB     |     |             |  |  |  |  |
|   | CO4: Select the uses of var  | rious PHP library   | function                                 | ons   |                  | K4     | ł   |             |  |  |  |  |
|   | <b>CO5:</b> Create a website.  |   | K5                                       |   |                  |        |     |             |  |  |  |  |

| Learning Resources     |   |   |                                  |        |  |  |  |  |  |  |  |  |
|------------------------|---|---|----------------------------------|--------|--|--|--|--|--|--|--|--|
| Text Books             | 1.Lynnmighley ar<br>2009<br>2.Alan Forbes, T<br>WebApplication                              | <ul> <li>1.Lynnmighley and Michael Morrison, Head First PHP &amp; MySQL: A Brain-Friendly Guide-<br/>2009</li> <li>2.Alan Forbes, The Joy of PHP: A Beginner's Guide to Programming Interactive<br/>WebApplications with PHP and MySQL</li> </ul> |                                  |        |  |  |  |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Steven Holzne</li> <li>DTEditorial Se<br/>XML,</li> <li>XHTML, AJAX, PH</li> </ol> | <ol> <li>Steven Holzner, PHP: The Complete Reference.</li> <li>DTEditorial Services (Author), HTML5 Black Book (CoversCSS3, JavaScript,<br/>XML,</li> <li>XHTML, AJAX, PHP, iQuery), Paperback 2016, 2nd Edition.</li> </ol>                      |                                  |        |  |  |  |  |  |  |  |  |
| WebsiteLink            | 1. Refer MOOC C<br>2. <u>https://www.</u>   | ourses like NPT<br>w3schools.com  | EL and SWAYAN<br>/php/default.as | м<br>р |  |  |  |  |  |  |  |  |
| Self-Study<br>Material | https://www.sci   | https://www.sciencedirect.com/science/article/abs/pii/S0950584915002062   |                                  |        |  |  |  |  |  |  |  |  |
|                        | L-Lecture T-Tutorial P-Practical C-Credit   |   |                                  |        |  |  |  |  |  |  |  |  |

|  | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |         |                      |  |         |          |               |      |          |         |            |          |          |       |
|--|---|---------|----------------------|--|---------|----------|---------------|------|----------|---------|------------|----------|----------|-------|
| Course Code                                    |   | Со      | urse T               | itle   | Со      | urse Ty  | pe            | Ser  | m Ho     | urs     | L          | Т        | Р        | С     |
| 23M_UCAS04                                     | PH  | IP PRO  | GRAN                 | 1MING  | SEC     | THEOF    | EORY          |      |          |         | 1          | 2        | -        | 2     |
|  |   |         |                      |  | CO-PO   | Mappi    | ng            |      |          |         |            |          | ·        |       |
| CO Numbe                                       | er  | PO1     | PO2                  | PO3  | PO4     | PO5      | PS            | 501  | PSO2     | PSC     | <b>D</b> 3 | PSO4     | PSO5     |       |
| CO1  |   | L       | М                    | S  | S       | S        | S             | 5    | Μ        | S       |            | Μ        | S        |       |
| CO2  |   | S       | М                    | S  | S       | S        | N             | Λ    | S        | S       |            | Μ        | S        |       |
| CO3  |   | М       | М                    | М  | S       | S        | S             | 5    | S        | S       |            | М        | S        |       |
| CO4  |   | М       | S                    | S  | М       | S        | 5             | 5    | Μ        | Μ       |            | S        | S        |       |
| CO5  |   | S       | S                    | S  | Μ       | S        | S             | 5    | Μ        | S       |            | S        | S        |       |
| Level of<br>Correlation<br>between CO ar<br>PO | nd  |         | L-1                  | _OW  |         |          | M-MEDIUM S-ST |      |          |         |            |          | S-STRO   | NG    |
| Tutoria  | al Sc   | hedule  | Gr                   | Group Discussion, Quiz program, Model preparation  |         |          |               |      |          |         |            |          |          |       |
| Teaching and<br>Metho                          | d Lea<br>ods  | arning  | Aı<br>Pr             | Audio Video lecture, Chalk and Board class, Assignment, PPT<br>Presentation and Video Presentation |         |          |               |      |          |         |            |          |          |       |
| Assessme                                       | nt N  | /lethod | l <mark>s</mark> Cla | ass Test, I  | Unit Te | st, Assi | gnm           | ent, | CIA-I, C | IA-II a | and        | ESE      |          |       |
| Designe  | ed By   | y       |                      |  | Ver     | rified B | y             |      |          | Аррі    | rove       | ed By    |          |       |
| Mr.M.Purusothaman                              |   |         | n                    | HOD - Mr.G.Selvakumar  |         |          |               |      |          | ıber S  | ecr        | etary -E | Dr.S.Sha | hitha |



### MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (Autonomous)

**RASIPURAM - 637408.** 



#### BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards Т Ρ **Course Code Course Title Course Type** Sem Hours L С SOFTWARE 2 23M\_UCAS05 **SEC THEORY** 2 2 **TESTING** Students understand the basic black box software testing concepts, and communicate Objective testing progress with your project team. Knowledge Session Unit **Course Content** Levels S Introduction: Purpose–Productivity and Quality in Software– Testing Vs Debugging– Model for Testing– Bugs– Types of Bugs – Testing and L 6 Κ1 Design Style. Flow / Graphs and Path Testing – Achievable paths – Path Ш К2 6 instrumentation – Application– Transaction Flow Testing Techniques Data Flow Testing Strategies - Domain Testing: Domains and Paths -III К3 6 Domains and Interface Testing Linguistic-Metrics - Structural Metric - Path Products and Path IV КЗ 6 Expressions. Syntax Testing– Formats–Test Cases. Logic Based Testing – Decision Tables–Transition Testing– States, State V Graph, State Testing. К4 6 \*Current Trends - The Future of Digital Experience Testing\*. \*.....\* Self Study. **CO1:** Recall the basic concepts of functional (black box) software Κ1 testing. **CO2:** Identify the basic application of techniques used to identify useful К2 ideas for tests. Course **CO3:** Construct the mission and communicate the status of your КЗ Outcome testing with the rest of your project team **CO4:** Characterize a good bug report, peer-review the reports of your КЗ colleagues, and improve your own report writing **CO5:** Design testing concepts within the context of unified processes. К4 **Learning Resources** 1. B.Beizer, "Software Testing Techniques", Dream Tech India, New Delhi, 2003. Text 2. K.V.K.Prasad, "Software Testing Tools", DreamTech. India, New Delhi, 2005. **Books** 1. Burn stein, 2003, "PracticalSoftwareTesting", Springer International Edn. Reference 2. Kit, 1995, "Software Testing in the Real World: Improving the Process", Pearson Education, Delhi. Books 3. R.Rajani and P, P.Oak, 2004, "SoftwareTesting", TataMcgrawHill, NewDelhi 1. https://www.techtarget.com/whatis/definition/software-testing Website 2.https://www.testim.io/blog/software-testing-basics/ Link https://www.lambdatest.com/blog/software-testing-trends/ Self-Study Material **P-Practical** C- Credit L-Lecture **T-Tutorial**

|                      |                  | BCA Sy            | /llabus I | LOCF-         | CBCS witl               | h effect fi           | rom 202              | 3-2024 C          | nwards   | S              |       |            |
|----------------------|------------------|-------------------|-----------|---------------|-------------------------|-----------------------|----------------------|-------------------|----------|----------------|-------|------------|
| Course Code          | e                | Cours             | e Title   |               | Course                  | Туре                  | Sem                  | Hours             | L        | т              | Р     | С          |
| 23M_UCAS0            | 5 SO             | FTWAR             | E TESTI   | NG SEC THEORY |                         |                       |                      | 2                 | 2        | -              | -     | 2          |
| CO-PO Mapping        |                  |                   |           |               |                         |                       |                      |                   |          |                |       | ·          |
| CO Number            | PO1              | PO2               | PO3       | PO4           | 4 PO5                   | PSO1                  | PSO2                 | PSO3              | PSO4     | PS             | 05    |            |
| CO1                  | М                | S                 | М         | S             | S                       | М                     | М                    | S                 | S        |                | S     |            |
| CO2                  | М                | S                 | S         | S             | S                       | S                     | М                    | S                 | S        |                | S     |            |
| CO3                  | S                | S                 | S         | S             | L                       | S                     | S                    | S                 | S        | 1              | N     |            |
| CO4                  | S                | S                 | М         | S             | S                       | S                     | М                    | S                 | S        |                | S     |            |
| CO5                  | М                | S                 | М         | М             | М                       | S                     | S                    | S                 | S        |                | S     |            |
| Level<br>betwe       | of Corr<br>en CO | elation<br>and PO |           | L-LOW M-M     |                         |                       |                      | /-MEDIU           | M        |                | S-ST  | rong       |
| <b>Tutorial Sche</b> | dule             |                   |           | Grou          | up Discuss              | sion, Qui             | z progra             | m, Mode           | el prepa | ratio          | n     |            |
| Teaching and         | Learni           | ng Met            | thods     | Aud<br>Pres   | io Video le<br>entation | ecture, C<br>and Vide | halk and<br>o Preser | l Board on tation | lass, As | signn          | nent, | РРТ        |
| Assessment M         | Method           | ls                |           | Clas          | s Test, Un              | it Test, A            | ssignme              | nt, CIA-I,        | CIA-II a | nd ES          | E     |            |
| De                   | esigned          | Ву                |           |               | Ve                      | erified By            |                      |                   | А        | ppro           | ved B | у          |
| Mr.E.Natarajan       |                  |                   |           |               | HOD - M                 | r.G.Selva             | kumar                |                   | Mer<br>D | nber<br>r.S.Sł | Secre | tary<br>Ia |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |   |     |       |   |                |            |          |  |  |  |  |
|---|---|---|-----|-------|---|----------------|------------|----------|--|--|--|--|
| Course Code   | Course Title  | Course Type   | Sem | Hours | L | т              | Р          | С        |  |  |  |  |
| 23M_UCAS06  | PROBLEMSEC THEORY31SOLVINGSEC THEORY31TECHNIQUES  |   |     |       |   |                | -          | 2        |  |  |  |  |
| Objective   | Students understand a recognition, abstraction,   | Students understand about the problem-solving techniques, including patter recognition, abstraction, and systematic debugging.  |     |       |   |                |            |          |  |  |  |  |
| Unit  | Co  | ourse Content   |     |       |   | Knowle<br>Leve | edge<br>Is | Sessions |  |  |  |  |
| I   | Introduction: Notion<br>Requirements for solvin<br>problem-solving aspect:<br>started on a problem<br>Similarities Among probl<br>solution–General probl<br>solving using to p-down<br>algorithms–The concept | Introduction: Notion of algorithms and programs–<br>Requirements for solving problems by computer – The<br>problem-solving aspect: Problem definition phase, Getting<br>started on a problem, The use of specific examples,<br>Similarities Among problems, Working backwards from the<br>solution–General problem solving strategies- Problem<br>solving using to p-down design– Implementation of |     |       |   |                |            |          |  |  |  |  |
| II  | Fundamental Algorithm<br>variables – Counting –<br>Factorial computation<br>Fibonacci Series genera<br>integer – Base Conversio   | <b>Fundamental Algorithms</b> : Exchanging the values of two<br>variables – Counting – Summation of a set of numbers-<br>Factorial computation-Sine function computation -<br>Fibonacci Series generation - Reversing the digits of an<br>integer – Base Conversion   |     |       |   |                |            |          |  |  |  |  |
| 111   | <b>Factoring Methods</b> : Find<br>The smallest divisor of an<br>of two integers - Generat<br>prime factors of an integ<br>numbers - Raising a numb<br>nth Fibonacci number.                                  | <b>Factoring Methods</b> : Finding the square root of a number –<br>The smallest divisor of an integer – Greatest common divisor<br>of two integers - Generating prime numbers – Computing the<br>prime factors of an integer – Generation of pseudo-random<br>numbers - Raising a number to a large power– Computing the   |     |       |   |                |            |          |  |  |  |  |
| IV  | Array Techniques: Array<br>his to graming – Finding<br>Removal of duplicates fi<br>array– Finding the k sr<br>Longest monotone sub s  | Array order reversal – Array counting or<br>inding the maximum number in a set -<br>ates from an ordered array- Partition in K4<br>k smallest element–<br>sub sequence  |     |       |   |                |            | 8        |  |  |  |  |
| V   | Text Processing and Pa<br>adjustment – Left and ri<br>searching in text – Text I<br>Recursive algorithms:<br>generation<br>Current Trends-* Reflect   | gth<br>ord<br>rch.<br>tion  | К5  | 8     |   |                |            |          |  |  |  |  |
|   | Sell Study.   |   |     |       |   |                |            |          |  |  |  |  |

|                        | <b>CO1:</b> Rememl<br>implementati<br>concept of Re | per the logic of<br>on of algorithm<br>cursion.  | problem and ar<br>and Top Dowr                          | nalyses<br>n approach and                            | K1   |                    |  |  |  |  |  |  |
|------------------------|---|--|---|--|--|--------------------|--|--|--|--|--|--|
| Course                 | <b>CO2:</b> Unders<br>Fibonacci, Rev                | tand the Sequ<br>versing, Base Co  | ence of Numb<br>onversion.                              | ers and Series                                       | К2   |                    |  |  |  |  |  |  |
| Outcome                | CO3: Apply to do Algebraic operations. K3           |  |   |  |  |                    |  |  |  |  |  |  |
|                        | CO4: Analyze  | of Arrays and it   | К4  |  |  |                    |  |  |  |  |  |  |
|                        | <b>CO5:</b> Create Approach                         | Text Process   | К5  |  |  |                    |  |  |  |  |  |  |
|                        | Learning Resources                                  |  |   |  |  |                    |  |  |  |  |  |  |
| Text Books             | R.G.Dromey,H  | lowtoSolveitby   | Computer,Pear   | sonIndia,2007  |  |                    |  |  |  |  |  |  |
| Reference Bool         | 1. George Po<br>WithHints and<br>2. GregW. Scra     | lya, Jeremy Kilı<br>dSolutions,Dove<br>agg, Problem Sc                                   | oatrick, The Sta<br>erPublications,2<br>olving with Com | nford Mathema<br>009(KindleEditic<br>puters,Jones&Ba | tics Problem<br>on2013).<br>artlett1steditio | Book:<br>on, 1996. |  |  |  |  |  |  |
| Website Link           | <u>https://www.</u><br>solving                      | https://www.linkedin.com/advice/3/what-your-approach-staying-current-problem-<br>solving |   |  |  |                    |  |  |  |  |  |  |
| Self-Study<br>Material | https://www.  | https://www.javatpoint.com/problem-solving-techniques-in-ai                              |   |  |  |                    |  |  |  |  |  |  |
|                        | L-Lecture T-Tutorial P-Practical C-Credit           |  |   |  |  |                    |  |  |  |  |  |  |

|  |        | BC            | A Sylla    | bus LO                | CF -         | CBCS w              | <b>/ith e</b>   | ffect         | from         | n 2023-                            | 2024 (   | Dnwards   | 5       |    |
|--|--------|---------------|------------|-----------------------|--------------|---------------------|-----------------|---------------|--------------|------------------------------------|----------|-----------|---------|----|
| Course Code                                    |        |               | Cours      | e Title               |              | Cours               | е Тур           | e S           | Sem          | Hour                               | s L      | Т         | Р       | С  |
| 23M_UCAS06                                     | PF     | ROBLE<br>TECH | VING<br>ES | NG SEC THEORY         |              |                     |                 |               | 3            | 1                                  | 2        | -         | 2       |    |
|  |        |               |            |                       |              |                     |                 |               |              |                                    |          |           |         |    |
| CO Numbe                                       | er     | PO1           | PO2        | PO3                   | РС           | 04 P                | 05              | PSO1          | 1 P          | SO2                                | PSO3     | PSO4      | PSO5    |    |
| CO1  |        | L             | Μ          | S                     | S            | S                   |                 | S             |              | М                                  | S        | М         | S       |    |
| CO2  |        | S             | Μ          | М                     | S            | S                   |                 | S             |              | S                                  | S        | М         | S       |    |
| CO3  |        | S             | S          | М                     | S            | S                   |                 | S             |              | М                                  | S        | М         | S       |    |
| CO4  |        | Μ             | S          | S                     | Μ            | S                   |                 | S             |              | М                                  | S        | М         | S       |    |
| CO5  |        | S S S         |            | S                     | S            | S                   | S               |               |              | М                                  | S        | S         | S       |    |
| Level of<br>Correlation<br>between CO ar<br>PO | nd     |               | L-L(       | WC                    | / M-MEDIUM   |                     |                 |               |              |                                    | S-STRONG |           |         |    |
| Tutorial Schedule                              | 9      |               |            | Grou                  | ıp Di        | iscussio            | on, Q           | uiz pr        | rogra        | im, Mo                             | odel pr  | eparatio  | n       |    |
| Teaching and Lea<br>Methods                    | irning | ß             |            | Audi<br>Pres          | o Vi<br>enta | deo lec<br>ation ar | ture,<br>nd Vic | Chal<br>deo P | k an<br>rese | d Board<br>ntation                 | d class  | , Assigni | ment, P | PT |
| Assessment Met                                 | hods   |               |            | Class                 | s Tes        | st, Unit            | Test,           | Assig         | gnme         | ent, CIA                           | -I, CIA  | -II and E | SE      |    |
| Designed By                                    |        |               |            |                       |              | Ve                  | rified          | By            |              |                                    |          | Appr      | oved By | /  |
| Mr. V. Vengadesh                               |        |               |            | HOD - Mr.G.Selvakumar |              |                     |                 |               |              | Member Secretary<br>Dr. S.Shahitha |          |           |         |    |





(Autonomous)

| BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |   |  |   |   |                |          |      |           |  |  |  |  |
|---|---|--|---|---|----------------|----------|------|-----------|--|--|--|--|
| Course Code   | Course Title  | Course Type  | Sem   | Hours   | L              | т        | Р    | С         |  |  |  |  |
| 23M_UCAS07  | OFFICE<br>AUTOMATION  | SEC THEORY   |   | 3   | 1              | 2        | -    | 2         |  |  |  |  |
| Objective   | Provide students wit proficiency in editor, s   | h practical training preadsheet, and pr  | g in M<br>esentat                                 | icrosoft(<br>ion softw                                  | Office<br>are. | , and e  | nhar | nce their |  |  |  |  |
| Unit  | c   |  | Kno   | owledge<br>Levels                                       | 2              | Sessions |      |           |  |  |  |  |
| I   | Introductory concept<br>Devices: Key board, M<br>Monitor, Printer. Intro<br>features: DOS– U<br>Programming Languag   | - Input<br>devices:<br>ems &its<br>tion to   |   | K1  |                | 6        |      |           |  |  |  |  |
| II  | Word Processing: Ope<br>Editing text – tools, f<br>Document formatt<br>indentation, headers<br>Preview, options, mer  | en, Save and close w<br>ormatting, bullets;<br>ing – Paragrap<br>and footers, numb<br>ge.                                  | vord do<br>Spell C<br>h ali<br>ering; p           | cument;<br>hecker -<br>gnment,<br>printing–             |                | K2       |      | 6         |  |  |  |  |
| 111   | Spreadsheets: Excel-<br>formatting, navigating<br>copying; Charts–crea<br>analysis tables, prep<br>introduction to data a                                   | d data,<br>dling and<br>printing,<br>cements,  | К3  |   |                | 6        |      |           |  |  |  |  |
| IV  | Database Concepts:<br>management system<br>Sorting and indexing<br>queries, and reports;<br>Programming environ<br>drive application sin q                  | The concept of<br>; Data field, reco<br>data; Searching rec<br>Linking of data files;<br>ment in DBMS; De<br>uery language | of dat<br>rds, ai<br>ords. D<br>Under<br>evelopir | a base<br>nd files,<br>resigning<br>standing<br>ng menu |                | К4       |      | 6         |  |  |  |  |
| v   | Power point: Introdu<br>Understanding slide<br>creating slide shows.<br>objects & pictures – S<br>audio inclusion, timer<br>*Current Trends -<br>Solutions* | atures –<br>slides –<br>ncluding<br>effects,<br>omation  |   | К5  |                | 6        |      |           |  |  |  |  |
|   | ** Self Study.  | and its  |   |   |                |          |      |           |  |  |  |  |
|   | components.   | cs of computer sy  | ystems  | and its   |                | K1       |      |           |  |  |  |  |
| Course<br>Outcome   | <b>CO2:</b> Understand the package.   | basic concepts of a v  | vord pr   | ocessing  |                | К2       |      |           |  |  |  |  |
|   | <b>CO3:</b> Apply the basic application   | eadsheet   | " КЗ  |   |                |          |      |           |  |  |  |  |
|                        | CO4: Implement th   | ne database m   | anagement syste  | em. | К4 |  |  |  |  |  |
|------------------------|---|-----------------|------------------|-----|----|--|--|--|--|--|
|                        | CO5: Create a pres  | sentation using | g PowerPoint too | ol. | K5 |  |  |  |  |  |
|                        |   | Learning        | g Resources      |     |    |  |  |  |  |  |
| Text<br>Books          | Text       1. Peter Norton, "Introduction to Computers", 6th Edition, Tata McGraw Hill         Books       1. Peter Norton, "Introduction to Computers", 6th Edition, Tata McGraw Hill                      |                 |                  |     |    |  |  |  |  |  |
| Reference<br>Books     | 1. Joyce Cox, Curtis Frye, M. Dow Lambert III, Steve Lambert, John Pierce, Joan Preppernau, "Microsoft office system 2007", 2nd Edition, PHI Learning pvt.  |                 |                  |     |    |  |  |  |  |  |
| Website<br>Link        | 1.https://www.w3schools.com/sql<br>2. https://www.tutorialspoint.com/sql  |                 |                  |     |    |  |  |  |  |  |
| Self-Study<br>Material | 1.https://start.docuware.com/glossary/cloud-office-automation<br>2.https://ebookcentral.proquest.com/lib/inflibnet-<br>ebooks/reader.action?docID=1449748&query=Cloud-<br>Based+Office+Automation+Solutions |                 |                  |     |    |  |  |  |  |  |
|                        | L-Lecture T-Tutorial P-Practical C-Credit   |                 |                  |     |    |  |  |  |  |  |

|   | BCA Syll  | abus L         | OCF-CE  | SCS wit           | h effec            | t fror           | n 20          | 23-2          | 024 On    | ward  | s       |         |   |
|---|-----------|----------------|---|-------------------|--------------------|------------------|---------------|---------------|-----------|-------|---------|---------|---|
| Course Title                                    | Cou       | rse Titl       | е   | Cou               | irse Typ           | be               | Ser           | n             | Hours     | L     | Т       | Р       | С |
| 23M_UCAS07                                      | O<br>AUTO | FFICE<br>MATIC | ON  | SEC THEORY        |                    |                  | 3             | 1             | 2         | -     | 2       |         |   |
|   |           |                |   | CO-P              | O Map              | ping             |               |               |           |       |         |         |   |
| CO Number                                       | PO1       | PO2            | PO3   | PO4               | PO5                | PSC              | )1            | PSO           | 2 PSO3    | 8 PS  | 604     | PSO5    |   |
| CO1   | М         | S              | М   | S                 | S                  | L                |               | Μ             | S         |       | S       | S       |   |
| CO2   | М         | S              | S   | S                 | S                  | S                |               | Μ             | S         |       | S       | S       |   |
| CO3   | S         | S              | S   | S                 | S                  | S                |               | S             | S         |       | S S     |         |   |
| CO4   | S         | S              | М   | S                 | S                  | S                |               | Μ             | S         |       | S       | S       |   |
| CO5   | М         | S              | М   | L                 | L                  | S                |               | S             | S         |       | S       | S       |   |
| Level of<br>Correlation<br>between CO and<br>PO |           |                | L-LOW   |                   |                    |                  | M-N           | ЛЕDI          | UM        |       | S       | S-STRON | G |
| Tutorial Schedule                               |           | Gr             | oup Dis   | cussio            | n, Quiz            | prog             | gram          | , M           | odel pre  | para  | tion    |         |   |
| Teaching and Learn<br>Methods                   | ing       | Au<br>Pre      | dio Vid<br>esentat                                    | eo lect<br>ion an | ure, Cl<br>d Video | nalk a<br>o Pres | nd E<br>senta | Boar<br>atior | d class,  | Assig | nme     | nt, PPT |   |
| Assessment Metho                                | ds        | Cla            | iss Test  | , Unit 1          | Test, As           | signr            | nent          | , CIA         | -I, CIA-I | I and | ESE     |         |   |
| Designed By                                     |           |                |   | Verifie           | d By               |                  |               |               |           | Арр   | rove    | d By    |   |
| Mrs.V.Krishnaveni                               |           |                | HOD – Mr.G.Selvakumar Member Secretary – Dr.S.Shahiti |                   |                    |                  |               |               |           |       | nahitha |         |   |





|             | BCA Syllabus LOCF - C  | BCS with effect from   | n <mark>2023</mark> -              | -2024 Oı              | าพล        | irds                  |   |   |  |  |  |
|-------------|--|--|------------------------------------|-----------------------|------------|-----------------------|---|---|--|--|--|
| Course Code | Course Title   | Course Type  | Sem                                | Hours                 | L          | т                     | Ρ | С |  |  |  |
| 23M_UCAS08  | QUANTITATIVE<br>APTITUDE   | SEC THEORY   |                                    | 3                     | 1          | 2                     | - | 2 |  |  |  |
| Objective   | Students learn various thereby reducing the tir  | principles involved<br>ne taken for perforr  | in solv                            | ving ma<br>o functio  | the<br>ns. | ematical problems and |   |   |  |  |  |
| Unit        | C  |  | Knowled<br>Levels                  | se s                  | essions    |                       |   |   |  |  |  |
| I           | Numbers - HCF and LCN<br>Simplification – Square Problems on Numbers.                                  | K1   |                                    | 6                     |            |                       |   |   |  |  |  |
| II          | Problems on Ages - Sur<br>and loss - ratio and prop  | ds and Indices- per<br>portion -partnership  | centage<br>- Chain                 | e - profit<br>rule.   | S          | К2                    |   | 6 |  |  |  |
| 111         | Time and work - pipes<br>problems on trains - Boa<br>- compound interest - L<br>area - races and Games | Time and work - pipes and cisterns-Time and Distance -<br>problems on trains - Boats and streams - simple interest<br>- compound interest - Logarithms Area Volume and surface<br>area - races and Games of skill. |                                    |                       |            |                       |   |   |  |  |  |
| IV          | Permutation and combined Bankers Discount – He Series.   | ination - probability<br>ight and Distances  | 7 True D<br>Odd m                  | Discount              | -<br>&     | K4                    |   | 6 |  |  |  |
| v           | Calendar - Clocks - stock<br>Tabulation – Bar Graphs<br>*Current Trends : Facto                        | s and shares - Data<br>- Pie charts-Line gr<br>rials ,Shortcuts in a   | represe<br>aphs.<br><b>verages</b> | entation              |            | К5                    |   | 6 |  |  |  |
|             | ** Self Study.   |  |                                    |                       |            |                       |   |   |  |  |  |
|             | <b>CO1:</b> Recall the basic cor   | ncepts of numbers  |                                    |                       |            | K1                    |   |   |  |  |  |
| Course      | <b>CO2:</b> Understand the co  | ncept of percentage  | e, profit                          | & loss.               |            | К2                    |   |   |  |  |  |
| Outcome     | <b>CO3:</b> Apply the basic con  | ncepts of time and v   | vork, in<br>on. pr                 | terests.<br>obability | /.         | КЗ                    |   |   |  |  |  |
|             | discounts.   | epts of data represe   | ntation                            | , graphs.             |            | K4<br>K5              |   |   |  |  |  |
|             |  |  |                                    |                       |            |                       |   |   |  |  |  |

|                        | Learning Resources   |  |                |                     |  |  |  |  |  |  |  |  |  |
|------------------------|--|--|----------------|---------------------|--|--|--|--|--|--|--|--|--|
| Text<br>Books          | 1.Quantitative A   | ptitude,R.S.AG   | GARWAL.,S. Cha | and & Company Ltd., |  |  |  |  |  |  |  |  |  |
| Website                | 1. <u>https://www</u>  | I. https://www.javatpoint.com/aptitude/quantitative                            |                |                     |  |  |  |  |  |  |  |  |  |
| Link                   | <ol> <li><u>https://www.toppr.com/guides/quantitative-aptitude/</u></li> </ol> |  |                |                     |  |  |  |  |  |  |  |  |  |
| Self-Study<br>Material | https://www.im   | ttps://www.imsindia.com/blog/cat/how-to-prepare-for-cat-quantitative-aptitude/ |                |                     |  |  |  |  |  |  |  |  |  |
|                        | L-Lecture T-Tutorial P-Practical C-Credit                                      |  |                |                     |  |  |  |  |  |  |  |  |  |

|  | BCA Syl    | labus L               | OCF - C            | BCS wi             | ith ef          | fect fr         | om 2        | 2023-            | 202             | 4 On  | iwa       | rds      |        |   |
|--|------------|-----------------------|--------------------|--------------------|-----------------|-----------------|-------------|------------------|-----------------|-------|-----------|----------|--------|---|
| Course Code                                    | Cou        | rse Titl              | е                  | Со                 | urse            | Туре            |             | Sem              | Но              | ours  | L         | т        | Р      | С |
| 23M_UCAS08                                     | QUAN<br>AP | ITITATI<br>TITUDE     | TIVE SEC TI        |                    |                 | ORY             |             |                  |                 | 3     | 1         | 2        | -      | 2 |
|  |            |                       |                    | <b>CO</b> - I      | PO M            | appin           | 3           |                  |                 |       |           |          |        |   |
| CO Number                                      | PO1        | PO2                   | PO3                | PO4                | PO              | 5 P             | SO1         | PS               | 02              | PSC   | )3        | PSO4     | PSO!   | 5 |
| CO1  | L          | S                     | S                  | S                  | S               |                 | S           | N                | 1               | S     |           | S        | S      |   |
| CO2  | S          | Μ                     | М                  | S                  | S               |                 | S           | S                | 5               | S     |           | S        | S      |   |
| CO3  | S          | S                     | М                  | S                  | S               |                 | S           | N                | 1               | S     |           | М        | S      |   |
| CO4  | S          | S                     | S                  | М                  | S               |                 | М           | M S S S          |                 |       |           |          |        |   |
| CO5  | М          | S                     | S                  | S                  | S               |                 | S           | N                | 1               | S S S |           |          |        |   |
| Level of<br>Correlation<br>between CO ar<br>PO | nd         | L-LOW                 |                    |                    |                 |                 | M-          | MED              | MEDIUM S-STRONG |       |           |          | G      |   |
| <b>Tutorial Schedul</b>                        | е          | G                     | roup Di            | scussio            | n, Qi           | uiz pro         | grar        | m, M             | lode            | l pre | par       | ation    |        |   |
| Teaching and Le<br>Methods                     | arning     | Aı<br>Pr              | udio Vio<br>esenta | deo lec<br>tion ar | ture,<br>nd Vic | Chalk<br>leo Pr | and<br>esen | l Boar<br>ntatio | d c<br>n        | lass, | Ass       | ignment  | t, PPT |   |
| Assessment Met                                 | thods      | CI                    | ass Tes            | t, Unit            | Test,           | Assigr          | mer         | nt, Cl           | ۹-I, (          | CIA-I | l an      | d ESE    |        |   |
| Designe  | d By       |                       |                    | Verifi             | ed By           | /               |             |                  |                 |       | Ар        | proved   | Ву     |   |
| Mrs. N.Hyr                                     |            | HoD - Mr.G.Selvakumar |                    |                    |                 |                 |             | emt              | oer S           | ecre  | etary - D | or.S.Sha | hitha  |   |







| BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |   |  |                                       |                                      |           |               |    |     |       |  |  |
|---|---|--|---------------------------------------|--------------------------------------|-----------|---------------|----|-----|-------|--|--|
| Course Code   | Course Title  | Course Type  | Sem                                   | Hours                                | L         | т             | Р  | ,   | С     |  |  |
| 23M_UCAS09  | OPEN SOURCE SOFTWARE<br>TECHNOLOGIES  | SEC THEORY   |                                       | 3                                    | 1         | 2             | -  |     | 2     |  |  |
| Objective   | Students Learn the Basics of Op   | en Source Technolog  | gies.                                 |                                      |           |               |    |     |       |  |  |
| Unit  | Course  | Content  |                                       |                                      | Kno<br>Le | wled<br>evels | ge | Ses | sions |  |  |
| I   | <b>Open Source</b> –open source vs. co<br>Free Software–Where I can use<br>Distributions.   |  | K1                                    |                                      | Ş         | 8             |    |     |       |  |  |
| II  | Introduction Linux Essential C<br>Standard Files –The Linux Secu<br>Unix Components Unix Files –<br>Standard I/O–Redirection–Pipes<br>Editor. | <b>Commands</b> –File Sys<br>rity Model – Introdu<br>- File Attributes an<br>s and Filters–Grep an | atem of<br>action<br>d Per<br>ad Stre | concept<br>to Unix<br>mission<br>eam |           | К2            |    | ٤   | 8     |  |  |
| 111   | Introduction-Apache Explained<br>Apache–Modifying the Default of<br>Securing Apache–Set user and G  | estarting  | КЗ                                    |                                      |           | 8             |    |     |       |  |  |
| IV  | <b>MySQL:</b> Introduction to MySQL<br>The USE command–Create Data<br>Table–Select, Insert, Update and  | <ul> <li>The show databas</li> <li>base and Tables-Des</li> <li>d Delete statement d</li> </ul>    | es and<br>scribe<br>lataba            | l table –<br>se.                     | -<br>K4   |               |    | 8   | 8     |  |  |
| V   | Introduction–PHP Form proces<br>PHP–MySQL, MySQL Functions<br>Records–Deleting Records–Upd<br>*Current Trends-Open Source S                   | ssing–Database Acc<br>–Inserting Records S<br>ate Records.<br>Software for Sustaina                | ess w<br>Selecti<br><b>ability</b>    | ith<br>ing<br>*.                     |           | К5            |    | 8   | 3     |  |  |
|   | **Self Study.   |  |                                       |                                      |           |               |    |     |       |  |  |
| Course  | <b>CO1:</b> Recall the basic concepts i Concepts.   | n Java application of  | OOPS                                  |                                      | K1        |               |    |     |       |  |  |
| Outcome   | <b>CO2</b> : Describe the knowledge al Making statements.   | pout operators and d   | lecisio                               | n-                                   |           | К2            |    |     |       |  |  |
|   | <b>CO3:</b> Identify the significance an Arrays and interfaces and analyz   |  | КЗ                                    |                                      |           |               |    |     |       |  |  |
|   | <b>CO4:</b> Apply the applications of O   | К4   |                                       |                                      |           |               |    |     |       |  |  |
|   | Overriding and packages through java programs.CO5: Create window-based programming using applet andK5Graphics programming                     |  |                                       |                                      |           |               |    |     |       |  |  |
|   | Learn   | ing Resources  |                                       |                                      |           |               |    |     |       |  |  |

| Text               | 1 James Lee and Brent Ware—Open Source Web Development with LAMPusing?        |  |   |                           |  |  |  |  |  |  |  |  |  |
|--------------------|---|--|---|---------------------------|--|--|--|--|--|--|--|--|--|
| Books              | 2.Dorling Kinderslev-LIN  | UX Apache MySOL Per  | andPHPIL.2008   |                           |  |  |  |  |  |  |  |  |  |
|                    | 1.Eric Roseb rock, Eric Fi<br>PHP and working togeth<br>2.Anthony Butcher,—Te | lson,—Setting up LAMP<br>er∥, John Wiley and Sor<br>ach Yourself MySQL in                    | : Getting Linux, Apache<br>ns,2004.<br>21days  ,2 <sup>nd</sup> Edition,Sam | , MySQL and sPublication. |  |  |  |  |  |  |  |  |  |
| Reference<br>Books | Sams Publication.   | pez Ridreejo, AlianLiska   | ,—Apache Administrati   | or's Hand book  ,         |  |  |  |  |  |  |  |  |  |
|                    | 4.Tammy Fox,—Red H  | .Tammy Fox,—Red Hat Enterprise Linux 5 Administration Unleashed∥, Sams                       |   |                           |  |  |  |  |  |  |  |  |  |
|                    | ublication.   |  |   |                           |  |  |  |  |  |  |  |  |  |
|                    | 5.Nara more Eligabette,   | 5.Nara more Eligabette, Gerner Jason, Wrox Press, Wiley DreamtechPress,                      |   |                           |  |  |  |  |  |  |  |  |  |
|                    | —BeginningPHP5,Apach  | e,MySQLWebDevelopr   | nent  ,2005.  |                           |  |  |  |  |  |  |  |  |  |
| Website            | 1.Introduction to Open-   | Source and its benefits-   | Geeks for Geeks   |                           |  |  |  |  |  |  |  |  |  |
| Link               | 2.https://www.bing.com  | ו/   |   |                           |  |  |  |  |  |  |  |  |  |
|                    | 1.https://binariks.com/b  | log/emerging-blockcha  | in-technology-  |                           |  |  |  |  |  |  |  |  |  |
|                    | trends/#:~:text=Blockcha  | ain%20trends%20are%2   | Ochanging%20business  | very%20popular,           |  |  |  |  |  |  |  |  |  |
| Self-Study         | %20and%20constantly%  | 20growing.   |   |                           |  |  |  |  |  |  |  |  |  |
| Material           | 2. <u>https://ebookcentral.p</u>  | 2. <u>https://ebookcentral.proquest.com/lib/inflibnet-ebooks/detail.action?docID=3039658</u> |   |                           |  |  |  |  |  |  |  |  |  |
|                    |   |  |   |                           |  |  |  |  |  |  |  |  |  |
|                    | L-Lecture   | T-Tutorial   | P-Practical   | C-Credit                  |  |  |  |  |  |  |  |  |  |

|                       | В.                  | C.A Syll                 | abus LC                  | OCF-CB          | CS with e                          | effect from            | n 2023-2              | 2024 Onv           | vards      |      |        |     |
|-----------------------|---------------------|--------------------------|--------------------------|-----------------|------------------------------------|------------------------|-----------------------|--------------------|------------|------|--------|-----|
| Course Coo            | le                  | Со                       | urse Titl                | le              | Course                             | Туре                   | Sem                   | Hours              | L          | т    | Р      | С   |
| 23M_UCAS              | 09<br>T             | OPEN S<br>SOFT<br>ECHNOI | Source<br>Ware<br>Logies | E SEC THEORY    |                                    |                        |                       | 3                  | 1          | 2    | -      | 2   |
|                       |                     |                          |                          |                 | CO - PO N                          | Mapping                |                       |                    |            |      |        |     |
| CO Number             | PO1                 | PO2                      | PO3                      | PO4             | 1 PO5                              | PSO1                   | PSO2                  | PSO3               | B PSO4     | I P  | SO5    |     |
| CO1                   | М                   | S                        | М                        | S               | S                                  | L                      | М                     | S                  | S          |      | S      |     |
| CO2                   | М                   | S                        | S                        | S               | S                                  | S                      | М                     | S                  | S          |      | S      |     |
| CO3                   | S                   | S                        | S                        | S               | S                                  | S                      | S                     | S                  | S          |      | S      |     |
| CO4                   | S                   | S                        | Μ                        | S               | S                                  | S                      | М                     | S                  | S          |      | S      |     |
| CO5                   | М                   | S                        | Μ                        | L               | L                                  | S                      | S                     | S                  | S          |      | S      |     |
| Level<br>betwe        | of Corre<br>en CO a | elation<br>and PO        |                          | L-LOW M-N       |                                    |                        |                       |                    | JM         |      | S-STR  | ONG |
| <b>Tutorial Schee</b> | dule                |                          |                          | Group           | Discussio                          | on, Quiz p             | orogram               | , Model            | preparat   | ion  |        |     |
| Teaching and          | Learnir             | ng Meth                  | ods                      | Audio<br>Preser | Video leo<br>ntation a             | cture, Cha<br>nd Video | alk and E<br>Presenta | Board cla<br>ation | iss, Assig | nmer | nt, PP | Ϋ́Τ |
| Assessment N          | lethods             | 5                        |                          | Class 1         | Fest, Unit                         | Test, Ass              | ignment               | , CIA-I, C         | IA-II and  | ESE  |        |     |
| De                    | esigned             | Ву                       |                          |                 | ١                                  | Verified B             | ý                     |                    |            | Appr | oved   | Ву  |
| Mrs.K.Gayathri        |                     |                          |                          |                 | Member Secretary-<br>Dr.S.Shahitha |                        |                       |                    |            |      |        |     |





(Autonomous)

|                   | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards         Durse Code       Course Title       Course Type       Sem       Hours       L       T       P  |  |   |  |                 |                  |          |          |  |  |  |  |
|-------------------|--|--|---|--|-----------------|------------------|----------|----------|--|--|--|--|
| Course Code       | Course Title   | Course Type  | Sem   | Hours  | L               | т                | Р        | С        |  |  |  |  |
| 23M_UCAS10        | MULTIMEDIA SYSTEMS   | SEC THEORY   |   | 2  | 2               | -                | -        | 2        |  |  |  |  |
| Objective         | Students Learn the multin<br>Animation and Digital Vide  | media systems, Ir<br>o Containers and  | nage F<br>Multin                                    | ile and S<br>nedia Pro                                 | Sound<br>oject. | s Audio          | o File   | Formats, |  |  |  |  |
| Unit              | Cou  | rse Content  |   |  | K               | nowled<br>Levels | lge<br>S | Sessions |  |  |  |  |
| I                 | Multimedia Text: About<br>Multimedia -Computers a<br>Tools-Hypermedia and Hyp  | า<br>า   | K1  |  | 6               |                  |          |          |  |  |  |  |
| II                | Iools-Hypermedia and Hypertext.         Images : Plan Approach-Organize Tools Configure Computer         Workspace- Making Still Images Color -Image File Formats –         Sound :The Power of Sound Digital Audio- Midi Audio - Midi         vs Digital Audio Multimedia System Sounds Audio File         Formats - Vaughan's Law of Multimedia Minimums Adding         Sound to Multimedia Project. |  |   |  |                 |                  |          |          |  |  |  |  |
| 111               | Animation: The Power of<br>Animation by Computer-<br>Video: Using Video -Worki<br>Video Containers - obtainin<br>Video.  | -<br><br>I   | K2  |  | 6               |                  |          |          |  |  |  |  |
| IV                | Making Multimedia: The<br>Intangible Needs -The Harc<br>-An Authoring Systems Nee  | Stage of Multime<br>dware Needs - The<br>eds- Multimedia P   | edia Pr<br>Softwa<br>roducti                        | oject-The<br>are Need<br>on Team                       | e<br>s          | КЗ               |          | 6        |  |  |  |  |
| v                 | Planning and Costing :Th<br>Scheduling Estimating -R<br>and Producing- Content<br>Ownership of Content Cre<br>Current Trends : * Der<br>Multimedia Systems *   | e Process of Maki<br>FPs and Bid Prop<br>and Talent: Accented for reject Accented for reject Accented for reject Accented or | ng Mul<br>osals. I<br>quiring<br>cquiring<br>n Hard | ltimedia<br>Designin<br>Conten<br>g Talent.<br>Iware b | -<br>g<br>t     | K3               |          | 6        |  |  |  |  |
|                   | ** Self Study.   |  |   |  |                 |                  |          |          |  |  |  |  |
|                   | <b>CO1:</b> Understand the conc<br>The process of developing   | epts, importance,<br>g multimedia.   | applic  | ation and  |                 | K1               |          |          |  |  |  |  |
|                   | CO2: Identify Basic know<br>image related proce  | vledge and under<br>essing   | rstandi   | ng abou  | t               | K2               |          |          |  |  |  |  |
| Course<br>Outcome | <b>CO3</b> : Develop the frame v animations.   | work of frames ar  | nd Bit i  | mages to   | D               | К3               |          |          |  |  |  |  |
|                   | CO4: Classify about the m<br>requirement in phase  | nultimedia project<br>s of project.  | ts and  | stages o   | f               | K4               |          |          |  |  |  |  |
|                   | <b>CO5</b> : Simplify the concep planning, designing, and p  | t of cost involved roducing.   | d in M  | ultimedia  | a               | K4               |          |          |  |  |  |  |

|                        | Learning Resources                        |   |                 |                           |  |  |  |  |  |  |  |  |
|------------------------|---|---|-----------------|---------------------------|--|--|--|--|--|--|--|--|
| Text                   | 1.TayVaughan,"Mul                         | 1.TayVaughan,"Multimedia:MakingItWork",8thEdition,Osborne/McGraw Hill,2001. |                 |                           |  |  |  |  |  |  |  |  |
| Books                  |   |   |                 |                           |  |  |  |  |  |  |  |  |
| Reference              | 1.Ralf Steinmetz &                        | 1.Ralf Steinmetz & Klara Nahrstedt "Multimedia Computing, Communication     |                 |                           |  |  |  |  |  |  |  |  |
| Books                  | &Applications" Pears on Education,2012.   |   |                 |                           |  |  |  |  |  |  |  |  |
| Website                | 1.https://www.geel<br>characteristics.    | ksforgeeks.or   | rg/multimedia-s | systems-with-features-or- |  |  |  |  |  |  |  |  |
| LIIIK                  | 2. https://www.you                        | tube.com/w  | atch?v=ZXUTIpy  | /tCdo.                    |  |  |  |  |  |  |  |  |
| Self-Study<br>Material | 1.https://www.you                         | tube.com/wa   | atch?v=81omTrl  | «O5uw.                    |  |  |  |  |  |  |  |  |
|                        | L-Lecture T-Tutorial P-Practical C-Credit |   |                 |                           |  |  |  |  |  |  |  |  |

|   | E     | BCA Sy | llabus   | LOCF -              | CBCS w             | vith eff                        | ect from            | n 2023-            | 2024 On    | wards    |         |      |       |
|---|-------|--------|----------|---------------------|--------------------|---------------------------------|---------------------|--------------------|------------|----------|---------|------|-------|
| Course Code                                   |       | Cou    | rse Titl | e                   | С                  | ourse 1                         | Гуре                | Sem                | Hours      | L        | Т       | Ρ    | С     |
| 23M_UCAS10                                    | м     | ILTIME | DIA SY   | SYSTEMS SEC THEROY  |                    |                                 |                     | 2                  | 2          | -        | -       | 2    |       |
|   |       |        |          |                     | CO-                | PO Ma                           | pping               |                    |            |          |         |      |       |
| CO Number                                     | r     | PO1    | PO2      | PO3                 | PO4                | PO5                             | PSO1                | PSO2               | PSO3       | PSO4     | PSO5    |      |       |
| CO1   |       | S      | S        | S                   | М                  | М                               | S                   | S                  | S          | S        | S       |      |       |
| CO2   |       | S      | S        | S                   | S                  | М                               | М                   | S                  | S          | S        | S       |      |       |
| CO3   |       | S      | S        | S                   | S                  | S                               | S                   | S                  | S          | S        | S       |      |       |
| CO4   |       | S      | S        | S                   | М                  | S                               | М                   | S                  | S          | S        | S       |      |       |
| CO5   |       | S      | S        | S                   | М                  | S                               | S                   | S                  | S          | S        | S       |      |       |
| Level of<br>Correlation<br>between CO a<br>PO | and   |        |          | L-LOW               | ,                  | M-MEDIUM                        |                     |                    |            |          | S-STRC  | NG   |       |
| <b>Tutorial Sched</b>                         | ule   |        | G        | roup Di             | scussic            | on, Qui                         | z progra            | im, Mc             | odel prep  | paration |         |      |       |
| Teaching and L<br>Methods                     | earni | ng     | Aı<br>Pı | udio Vio<br>resenta | deo lec<br>tion ar | ture, C<br>nd Vide              | chalk an<br>o Prese | d Boarc<br>ntation | l class, A | Assignm  | ent, PP | Т    |       |
| Assessment M                                  | ethoo | ls     | CI       | ass Tes             | t, Unit            | Test, A                         | ssignme             | ent, CIA           | -I, CIA-II | and ESE  | Ξ       |      |       |
| Design  | ed By | /      |          |                     | Verifie            | ed By                           |                     |                    |            | Approv   | ed By   |      |       |
| Mr.M.Ravi                                     |       |        |          | HoD -               | Mr.G.S             | Mr.G.Selvakumar Member Secretar |                     |                    |            |          | – Dr.S. | Shał | nitha |





(Autonomous)

|             | BCA Syllabus LOCF -  | CBCS with effect f  | rom 20  | 23-2024   | Onwa   | rds                  |                  | _                       |
|-------------|--|---|---|---|--|----------------------|------------------|-------------------------|
| Course Code | Course Title   | Course Type   | Sem   | Hours   | L  | т                    | Р                | С                       |
| 23M_UCAS11  | ADVANCED EXCEL   | SEC THEORY  |   | 2   | 2  | -                    | -                | 2                       |
| Objective   | Students Learn Handle<br>into categories and su<br>data.   | e large amounts of ubcategories, Filter   | data, A<br>ing, sor   | ggregate<br>rting, and  | nume<br>d grou   | ric data<br>ping dat | and s<br>ta or s | summarize<br>subsets of |
| Unit        |  | Course Content  |   |   |  | Knowl<br>Leve        | edge<br>els      | Sessions                |
| I           | Basics of Excel - Custo<br>relative cells-Protectin<br>- Working with Functi<br>logical functions-looku<br>with Exact Match , Ap<br>Exact Match - HLoo<br>Nested HLookUP w<br>consolidate Data from  | Basics of Excel - Customizing common options - Absolute and<br>relative cells-Protecting and un-protecting worksheets and cells<br>- Working with Functions - Writing conditional expressions –<br>logical functions-lookup and reference functions - HLookUP<br>with Exact Match , Approximate Match-Nested HLookUP with<br>Exact Match - HLookUP with Tables, Dynamic Ranges-<br>Nested HLookUP with Exact Match-Using HLookUP to |   |   |  |                      |                  | 6                       |
| II          | Data Validations - Spec<br>a list of valid values -<br>formula -Working with<br>template -templates<br>Sorting and Filtering<br>sorting - custom sor<br>advanced filter optic<br>subtotals - Multiple - le   | cifying a valid range<br>Specifying custom<br>Templates Design<br>for standardizati<br>Data - Sorting ta<br>ting-Filtering data<br>ons - Working w<br>evel subtotal.  | e of valu<br>validat<br>ning the<br>on of<br>ables-m<br>for se<br>ith Rep | es - Spec<br>ions base<br>structure<br>workshe<br>ultiple -<br>lected vi<br>ports Cre | ifying<br>ed on<br>e of a<br>ets -<br>level<br>iew -<br>eating | K2                   | 2                | 6                       |
| 111         | Consolidating data from multiple sheets and files using Pivot<br>tables-external data sources-data consolidation feature to<br>consolidate data-Show Value As % of Row, %of Column,<br>Running Total, Compare with Specific Field-Viewing Subtotal<br>under Pivot-Creating SlicersK3 |   |   |   | 3  | 6                    |                  |                         |
| IV          | More Functions Date<br>Database functions-Po<br>formatting option for v<br>option for rows, colum<br>Data Tables-Data Con  | More Functions Date and time functions-Text functions-<br>Database functions-Power Functions – Formatting Using auto<br>formatting option for worksheets-Using conditional formatting<br>option for rows, columns and cells- WhatIf Analysis- Goal Seek-<br>Data Tables-Data Connection-Scenario Manager  |   |   |  |                      |                  |                         |
| v           | Charts -Formatting C<br>together-Secondary<br>PowerPoint / MS Wor<br>Spark lines-Macros-Inc<br>Current Trends - *Pivo  | Charts -Formatting Charts-3D Graphs-Bar and Line Chart<br>cogether-Secondary Axis in Graphs-Sharing Charts with<br>PowerPoint / MS Word, Dynamically- New Features Of Excel<br>Spark lines-Macros-Indexing-Overview of all the new features.<br>Current Trends - *Pivot Tables*   |   |   |  |                      |                  |                         |
|             | ** Self Study.   | ools and its analysis   | stachni   | 01165   |  | <b>1</b>             |                  |                         |
|             | COT: Recall big data to  | ools and its analysis   | stechni   | ques  |  | K1                   | _                |                         |

|            | <b>CO2</b> : Analyze d algorithms.        | ata by utilizi   | ng clustering an   | d classification      | К2  |  |  |  |  |  |
|------------|---|--|--------------------|-----------------------|-----|--|--|--|--|--|
| Course     | CO3:Apply differ                          | ent mining alg   | orithms and        | 1                     | К3  |  |  |  |  |  |
| Outcome    | recommendation                            | n systems for  | arge volumes of (  | lata.                 |     |  |  |  |  |  |
|            | CO4: Demonstra                            | te the analytic  | cs on data stream  | s.                    | К4  |  |  |  |  |  |
|            | CO5: Assess No-                           | nt.  | К5                 |                       |     |  |  |  |  |  |
|            |   | Learning Resources   |                    |                       |     |  |  |  |  |  |
| Text       | 1.Excel 2019 All                          |  |                    |                       |     |  |  |  |  |  |
| Books      | 2.Microsoft Exce                          | 2.Microsoft Excel 2019 Pivot Table Data Crunching                  |                    |                       |     |  |  |  |  |  |
| Reference  | 1 Mactoring Adv                           | ancod Excol D  | porback 21 July    | 12022 by Ditu Ar      | ora |  |  |  |  |  |
| Books      | 1. Wastering Auv                          |  | aperback – 21 July | / 2025 DY RILU AN     | Old |  |  |  |  |  |
| Website    | 1. <u>https://www.t</u>                   | utorialspoint.   | com/advanced_e     | <u>xcel/index.htm</u> |     |  |  |  |  |  |
| Link       | 2. <u>https://www.v</u>                   | w3schools.cor  | n/EXCEL/index.ph   | p                     |     |  |  |  |  |  |
| Self-Study | 1. <u>https://en.wiki</u>                 | pedia.org/wik  | i/Pivot table      |                       |     |  |  |  |  |  |
| Material   | 2.https://www.s                           | 2.https://www.simplilearn.com/tutorials/excel-tutorial/pivot-table |                    |                       |     |  |  |  |  |  |
|            | L-Lecture T-Tutorial P-Practical C-Credit |  |                    |                       |     |  |  |  |  |  |

|   | BCA S       | yllabus               | LOCF -              | CBCS \           | with ef            | fect from | n 2023-  | 2024 On     | wards   |          |         |         |
|---|-------------|-----------------------|---------------------|------------------|--------------------|-----------|----------|-------------|---------|----------|---------|---------|
| Course Code                                     | Со          | urse Tit              | le                  | Co               | ourse T            | уре       | Sem      | Hours       | L       | т        | Ρ       | С       |
| 23M_UCAS11                                      | ADVA        | NCED E                | XCEL                | SE               | SEC THEORY         |           |          | 2           | 2       | -        | -       | 2       |
|   |             |                       |                     | CO               | -PO Ma             | apping    |          | <u> </u>    | •       | <u> </u> |         |         |
| CO Number                                       | PO1         | PO2                   | PO3                 | PO4              | PO5                | PSO1      | PSO2     | PSO3        | PSO4    | PSO!     | 5       |         |
| CO1   | S           | М                     | Μ                   | М                | М                  | М         | М        | М           | L       | S        |         |         |
| CO2   | S           | S                     | Μ                   | М                | М                  | S         | М        | М           | L       | L        |         |         |
| CO3   | Μ           | М                     | Μ                   | S                | S                  | S         | М        | L           | М       | L        |         |         |
| CO4   | Μ           | М                     | Μ                   | S                | S                  | S         | S        | М           | М       | M        |         |         |
| CO5   | Μ           | М                     | S                   | М                | М                  | S         | М        | L           | S       | L        |         |         |
| Level of<br>Correlation<br>between CO and<br>PO |             |                       | L-LOW               |                  |                    | N         | 1-MEDIU  | JM          |         | S-ST     | RONG    |         |
| Tutorial Schedule                               |             | Gr                    | oup Dis             | cussio           | n, Quiz            | prograr   | n, Mode  | el prepara  | ation   |          |         |         |
| Teaching and Lear<br>Methods                    | ning        | Au<br>an              | idio Vid<br>d Videc | eo lect<br>prese | ure, Ch<br>ntation | alk and   | Board c  | lass, Assi  | ignment | t, PPT   | Prese   | ntation |
| Assessment Meth                                 | ods         | Cla                   | ass Test            | , Unit T         | est, A             | ssignme   | nt, CIA- | I, CIA-II a | nd ESE  |          |         |         |
| Designed  | Verified By |                       |                     |                  | Approved By        |           |          |             |         |          |         |         |
| Mr.A.Raj  |             | HoD - Mr.G.Selvakumar |                     |                  |                    |           | Membe    | er Secre    | tary- I | Or.S.Sł  | nahitha |         |







|             | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards  |   |  |  |   |        |        |           |  |  |  |  |  |
|-------------|--|---|--|--|---|--------|--------|-----------|--|--|--|--|--|
| Course Code | Course Title   | Course Type   | Sem  | Hours  | L   | т      | Р      | С         |  |  |  |  |  |
| 23M_UCAS12  | BIOMETRICS   | SEC THEORY  |  | 2  | 2   | -      | -      | 2         |  |  |  |  |  |
| Objective   | Students Learn the<br>Biometrics, Types, Ar  | basic concepts and chitecture and its Ap  | the fu<br>plication  | inctional<br>ons.  | ity of  | the Bi | ometri | ics, Face |  |  |  |  |  |
| Unit        |  |   | Know<br>Lev  | ledge<br>vels  | Sessions  |        |        |           |  |  |  |  |  |
| I           | Introduction: What is<br>Traits, General arch<br>working of biometric<br>performance measu<br>Applications of bio<br>authentication meth<br>Background of Face<br>System, Neural Netw<br>in Video Sequences<br>Recognition Methods   | Introduction: What is Biometrics, History, Types of biometricTraits, General architecture of biometric systems, Basicworking of biometric matching, Biometric system error andperformance measures, Design of biometric system,Applications of biometrics, Biometrics versus traditionalauthentication methods.Face Biometrics:Introduction,Background of Face Recognition, Design of Face RecognitionSystem, Neural Network for Face Recognition, Face Detectionin Video Sequences, Challenges in Face Biometrics, FaceRecognition Methods, Advantages and Disadvantages |  |  |   |        |        |           |  |  |  |  |  |
| I           | Retina and Iris Bio<br>Biometrics, Design<br>Recognition Syste<br>Determination of Iris<br>Applications of Iris Bio<br>Vein and Finger pri<br>Using Vein Pattern of<br>print Recognition Sy<br>Indexing, Experim<br>Disadvantages.   | metrics: Introduction<br>of Retina Biometrics<br>m, Iris Segme<br>s Region, Determina<br>cometrics, Advantages<br><b>nt Biometrics</b> : Intro-<br>of Palm, Finger prin<br>stem, Minutiae Extra-<br>ental Results,  | on, Pei<br>ics, De<br>entation o<br>ation o<br>s and D<br>oductio<br>t Biom<br>raction,<br>Advan   | rformand<br>esign of<br>f Iris Re<br>isadvant<br>n, Biome<br>etrics, Fi<br>, Finger<br>itages                      | e of<br>Iris<br>thod,<br>gion,<br>ages.<br>etrics<br>inger<br>print<br>and          | к      | 2      | 5         |  |  |  |  |  |
| 111         | Privacy Enhancemen<br>Concerns Associated<br>and Privacy, Privac<br>Enhancement, Comp<br>Privacy, Soft Biometri<br>to Multimodal Biometri<br>Biometrics, Multimo<br>Characteristics and<br>Characteristics and A<br>Watermarking Tec | t Using Biometrics: I<br>with Biometric De<br>y Concerns, Biome<br>arison of Various Bio<br>ics. Multimodal Biometrics, Basic Archited<br>odal Biometrics Us<br>Advantages of Multimetrics<br>hniques: Introduct  | ntrodu<br>ploymo<br>etrics<br>ometric<br>netrics<br>cture o<br>ing Fa<br>timoda<br>odal Bi<br>ion, | ction, Pr<br>ents, Ide<br>with Pr<br>s in Terr<br>: Introdu<br>f Multim<br>ce and<br>I Biome<br>ometrics<br>Data H | ivacy<br>ivacy<br>ivacy<br>ns of<br>ction<br>nodal<br>Ear,<br>trics,<br>5.<br>iding | К      | 3      | 5         |  |  |  |  |  |
| IV          | Watermarking Tec<br>Methods, Basic Fram<br>Water marking, App  | ework of Water mark<br>lications of Water r   | ion,<br>king, Cla<br>marking   | Data H<br>assificati<br>g, Attack  | on of<br>on of  | К      | 4      | 5         |  |  |  |  |  |

|                    | Watermarks,<br>Watermarks,<br>marking Techr<br>Results, Effec<br>Attacks on Spa   | Performance<br>General Water<br>niques, Water m<br>t of Attacks<br>atial Domain Wa  | Evaluation, Ch<br>marking Proces<br>narking Algorith<br>on Watermarki<br>ater marking. | aracteristics of<br>s, Image Water<br>m, Experimental<br>ng Techniques, |                 |            |  |  |  |  |
|--------------------|---|---|--|---|-----------------|------------|--|--|--|--|
| V                  | Scope and Fu<br>Biometric Tech<br>and Information<br>in Enterprise S<br>Smart Card T<br>Identification of<br>Study of Varion<br>Introduction,<br>Application Pro-<br>and Biometric<br>Current Trend | t of Biometrics,<br>trics, Biometrics<br>ole of Biometrics<br>Border Security,<br>adio Frequency<br>cs, Comparative<br><b>etric Standards:</b><br>Organizations,<br>rmation Security<br>Interoperability. | К5   | 5   |                 |            |  |  |  |  |
|                    | ** Self Stu   | dy.   |  |   |                 |            |  |  |  |  |
|                    | <b>CO1:</b> Recall the Biometrics, Applications.  | tionality of The chitecture and   | K1   |   |                 |            |  |  |  |  |
| Course             | CO2: Illustrate   | Biometrics and  | К2   |   |                 |            |  |  |  |  |
| Outcome            | CO3: Build Biometrics.  | the Privacy E   | Enhancement a  | nd Multimodal   | КЗ              |            |  |  |  |  |
|                    | CO4: Inspect a  | nalytical idea o  | n Water marking  | g Techniques.   | K4              |            |  |  |  |  |
|                    | <b>CO5</b> : Assess Study of vario  | knowledge on F<br>us Biometric Ter  | <sup>-</sup> uture scope of<br>chniques.   | Biometrics, and   | К5              |            |  |  |  |  |
|                    |   | Learn   | ing Resources  |   |                 |            |  |  |  |  |
| Text<br>Books      | 1. Biometrio<br>2013.   | cs: Concepts and  | d Applications b   | y G.R Sinha and S   | andeep B.Pati   | il, Wiley, |  |  |  |  |
|                    | 1. Guide to   | Biometrics by R   | uud M. Bolle , Sl  | narath Pankanti, N  | Nalini k.Ratha, | Andrew     |  |  |  |  |
| Reference<br>Books | W.Senior<br>2. Introduct  | , Jonathan H.Co<br>ion to Biometri  | onnell, Springer 2<br>cs by Anil k Jain  | 2009 .<br>Arun A Ross Kar   | thik Nandakur   | mar        |  |  |  |  |
|                    | 3. Hand boo   | ok of Biometrics  | by Anil K. Jain, I   | Patrick Flynn, Aru  | n A.Ross.       |            |  |  |  |  |
|                    | 1. https://w  | ww.tutorialspo  | int.com/biomet   | rics/index.htm  |                 |            |  |  |  |  |
| Website            | 2. https://w<br>3. https://w  | ww.javatpoint.  | com/biometrics-<br>p.com/en/mark/  | -tutorial<br>sts/digital-identit  | v-and-          |            |  |  |  |  |
| Link               | 3. https://www.thalesgroup.com/en/markets/digital-identity-and-<br>security/government/inspired/biometrics  |   |  |   |                 |            |  |  |  |  |
| Self-Study         | 1. https:   | //mobidev.biz/  | blog/ai-biometri   | cs-technology-au  | thentication-   |            |  |  |  |  |
| Material           | verific   | ation-security  | -  | <u> </u>  |                 |            |  |  |  |  |
|                    | L-Lecture T-Tutorial P-Practical C-Credit   |   |  |   |                 |            |  |  |  |  |

|  | B    | CA Syll | abus l                  | OCF -                 | CBCS wi                           | th effeo             | t fro           | m 20           | 23-202         | 24 On  | war   | ds      |          |        |
|--|------|---------|-------------------------|-----------------------|-----------------------------------|----------------------|-----------------|----------------|----------------|--------|-------|---------|----------|--------|
| Course Code                                    |      | Cours   | e Title                 |                       | Cour                              | se Type              | ļ               | Sen            | n Ho           | ours   | L     | т       | Р        | С      |
| 23M_UCAS12                                     |      | BIOM    | ETRICS                  |                       | SEC THEORY                        |                      |                 |                |                | 2      | 2     | -       | -        | 2      |
|  |      |         |                         |                       | CO-P                              | O Map                | oing            |                |                |        |       |         |          |        |
| CO Number                                      |      | PO1     | PO1 PO2 PO3 PO4 PO5 PSO |                       |                                   |                      |                 |                | PSO2           | PSC    | )3    | PSO4    | PSO5     |        |
| CO1  |      | S M S   |                         | S                     | М                                 | L                    |                 | L              | S              | N      | 1     | М       | L        |        |
| CO2  |      | S       | S                       | S                     | М                                 | М                    |                 | S              | L              | S      |       | М       | S        |        |
| CO3  |      | Μ       | Μ                       | S                     | М                                 | S                    |                 | S              | Μ              | L      |       | L       | Μ        |        |
| CO4  |      | S       | S                       | S                     | S M L S                           |                      | S               | L              | S              |        | S     | S       |          |        |
| CO5  |      | Μ       | S                       | S S S S               |                                   | S                    | S               | S              |                | S      | L     |         |          |        |
| Level of<br>Correlation<br>between CO au<br>PO | nd   |         |                         | L-LOW                 | ,                                 |                      |                 | M-M            | EDIUN          | 1      |       | S       | STRON    | 3      |
| Tutorial Schedu                                | le   |         | G                       | roup [                | Discussio                         | n, Quiz              | prog            | gram,          | Mode           | el pre | para  | ation   |          |        |
| Teaching and Le<br>Methods                     | arni | ng      | A<br>P                  | udio V<br>resent      | ideo lec <sup>:</sup><br>ation ar | ture, Cl<br>nd Video | nalk a<br>p Pre | and B<br>senta | oard o<br>tion | lass,  | Assi  | gnment  | ;, PPT   |        |
| Assessment Me                                  | thod | ls      | С                       | ass Te                | st, Unit                          | Test, As             | signr           | nent,          | CIA-I,         | CIA-I  | l and | d ESE   |          |        |
| Designed By Verified By Approved By            |      |         |                         |                       |                                   |                      |                 |                |                |        |       |         |          |        |
| Mrs.N.Padmapriya                               |      |         |                         | HoD - Mr.G.Selvakumar |                                   |                      |                 |                |                | nber S | Secr  | etary – | Dr.S.Sha | ahitha |





| BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |  |  |  |  |   |    |   |   |  |  |  |  |
|---|--|--|--|--|---|----|---|---|--|--|--|--|
| Course Code   | Course Title   | Course Type  | Sem  | Hours  | L   | т  | Р | С |  |  |  |  |
| 23M_UCAS13  | CYBER FORENSICS  | SEC THEORY   |  | 2  | 2   | -  | - | 2 |  |  |  |  |
| Objective   | Students Learn the forens<br>Preservation of Digital Evi   | oncep  | ts of I  | Duplic   | ation and   |    |   |   |  |  |  |  |
| Unit  | Со   | Kr   | nowle<br>Leve  | edge<br>Is   | Sessions  |    |   |   |  |  |  |  |
| Ι   | Overview of Computer For<br>Computer Forensics Fu<br>Forensics Use of Computer<br>Computer Forensics<br>Resources/Employment<br>Services, Benefits of pro<br>Steps taken by Computer<br>Computer. Forensics T<br>Computer Forensic, Techr<br>Forensic Technology–Typ<br>Forensic. Technology–Typ<br>Technology.  | ndamentals: W<br>er Forensics in<br>Assistance<br>Proceedings, Co<br>fessional Foren<br>er Forensics Spe<br>Technology: Ty<br>nology–Types of<br>es of Law Enforc<br>pes of Business ( | logy:<br>/hat is<br>Law En<br>to<br>omputer<br>sics Me<br>cialists<br>pes of<br>Military<br>ement-<br>Comput | Compute<br>forcemen<br>Huma<br>Forensie<br>thodolog<br>- Types o<br>Busines<br>Compute<br>- Compute<br>er Forens | er<br>t,<br>n<br>cs<br>y,<br>of<br>ss<br>er<br>er<br>er<br>ic | К1 |   | 6 |  |  |  |  |
| II  | Technology.Computer Forensics Evidence and capture: Data Recovery:<br>Data Recovery Defined, Data Back-up and Recovery, The<br>Role of Back-up in Data Recovery, The Data -Recovery<br>Solution.Evidence Collection and Data Seizure: Collection Options,<br>Obstacles, Types of Evidence, The Rules of Evidence, Volatile<br>Evidence, General Procedure, Collection and Archiving,<br>Methods of Collections, Artefacts, Collection Steps,<br>Controlling Contamination: The chain of custody.K2 |  |  |  |   |    |   |   |  |  |  |  |

| 111     | <ul> <li>Duplication and Preservation of Digital Evidence:</li> <li>Processing steps, Legal Aspects of collecting and Preserving</li> <li>Computer forensic Evidence.</li> <li>Computer image Verification and Authentication: Special</li> <li>needs of Evidential Authentication, Practical Consideration,</li> <li>Practical Implementation.</li> </ul>  | КЗ | 6 |
|---------|---|----|---|
| IV      | <ul> <li>Computer Forensics Analysis: Discovery of Electronic Evidence: Electronic Document Discovery: A Powerful New Litigation Tool.</li> <li>Identification of Data: Time Travel, Forensic Identification and Analysis of Technical Surveillance Devices.</li> </ul>   | КЗ | 6 |
| V       | <ul> <li>Reconstructing Past Events: How to Become a Digital Detective, Useable File Formats, Unusable File Formats, Converting Files.</li> <li>Networks: Network Forensics Scenario, a technical approach, Destruction Of E–Mail, Damaging Computer Evidence, Documenting The Intrusion on Destruction of Data, System Testing.</li> <li>*Current Trends- Rise of Quantum Computing Threats in Forensics*</li> </ul> | К4 | 6 |
|         | ** Self Study.  |    |   |
|         | <b>CO1:</b> Learn the basic computer forensics fundamentals.  | K1 |   |
|         | <b>CO2</b> : Identify the different types of computer forensics technology.   | К2 |   |
| Course  | <b>CO3</b> : Apply the various computer forensics systems.  | КЗ |   |
| Outcome | <b>CO4</b> : Categorize the methods for data recovery, evidence collection and data seizure.  | К3 |   |
|         | <b>CO5</b> : Assess the knowledge of duplication and preservation of digital evidence.  | К4 |   |

|                        |  | Learn   | ing Resources   |                                      |  |  |  |  |  |  |  |  |
|------------------------|--|---|-----------------|--------------------------------------|--|--|--|--|--|--|--|--|
| Text<br>Books          | John R.Vacca –<br>Media, New Del   | John R.Vacca — Computer Forensics: Computer Crime Investigation,3/E, Firewall<br>Media, New Delhi, 2002.  |                 |                                      |  |  |  |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Nelson, Phillip<br/>Steuart, CENGAG</li> <li>Anthony Sam<br/>Guide, Second E</li> <li>Robert M.Slag<br/>Crime, TMH 200</li> </ol> | <ol> <li>Nelson, Phillips Enfinger, Steuart, — Computer Forensics and Investigations Enfinger,<br/>Steuart, CENGAGE Learning,2004.</li> <li>Anthony Sammes and Brian Jenkinson, Forensic Computing: A Practitioner'<br/>Guide, Second Edition, Springer–Verlag London Limited,2007.</li> <li>Robert M.Slade, Software Forensics Collecting Evidence from the Scene of a Digital<br/>Crime, TMH 2005.</li> </ol> |                 |                                      |  |  |  |  |  |  |  |  |
| Website<br>Link        | https://www.ha   | ckingarticles.in/   | /best-of-compu  | ter-forensics-tutorials/             |  |  |  |  |  |  |  |  |
| Self-Study<br>Material | https://www.lin<br>raquel-biseeck  | kedin.com/puls<br>ze  | e/opportunities | s-obstacles-quantum-cybersecurity-p- |  |  |  |  |  |  |  |  |
|                        | L-Lecture  | T-Tutorial  | P-Practical     | C-Credit                             |  |  |  |  |  |  |  |  |

|   | BCA Syl  | labus L               | OCF - C              | BCS           | with ef           | fect         | from            | 2023           | 3-202       | 4 0   | nwar     | rds      |        |   |
|---|----------|-----------------------|----------------------|---------------|-------------------|--------------|-----------------|----------------|-------------|-------|----------|----------|--------|---|
| Course Code                                     | Со       | urse Ti               | tle                  |               | Course            | Тур          | e S             | Sem            | Hou         | ırs   | L        | Т        | Р      | С |
| 23M_UCAS13                                      | CYBEF    | R FORE                | ORENSICS SEC THEORY  |               |                   |              | 2               |                | 2           | -     | -        | 2        |        |   |
|   |          |                       |                      | CC            | D-PO M            | appi         | ng              |                |             |       |          |          |        |   |
| CO Number                                       | PO1      | PO2                   | PO3                  | PO            | 4 PC              | )5           | PSO             | 1 P:           | SO2         | PS    | 503      | PSO4     | PSO5   |   |
| CO1   | L        | М                     | S                    | S             | S                 |              | S               |                | Μ           |       | S        | S        | S      |   |
| CO2   | М        | М                     | М                    | S             | S                 |              | L               |                | Μ           |       | S        | М        | S      |   |
| CO3   | S        | S                     | М                    | S             | S                 | 5            | S               |                | М           |       | S        | S        | S      |   |
| CO4   | S        | S                     | S                    | Μ             | M S M             |              |                 | Μ              |             | S     | М        | S        |        |   |
| CO5   | М        | S                     | S                    | S             | S S M             |              |                 |                | М           |       | S        | S        | S      |   |
| Level of<br>Correlation<br>between CO and<br>PO | 1        | L                     | -LOW                 |               |                   |              | N               | 1-ME           | DIUM        | 1     |          | S-STRONG |        |   |
| Tutorial Schedule                               | <b>:</b> | G                     | roup Dis             | scus          | sion, Q           | uiz p        | orogra          | am, I          | Mode        | el pr | epara    | ation    |        |   |
| Teaching and Lea<br>Methods                     | rning    | A<br>Pi               | udio Vid<br>resentat | leo l<br>tion | ecture,<br>and Vi | Cha<br>deo l | ilk an<br>Prese | d Boa<br>ntati | ard c<br>on | lass  | i, Assi  | gnment   | :, PPT |   |
| Assessment Met                                  | nods     | C                     | ass Test             | t, Un         | nit Test,         | Assi         | gnme            | ent, C         | IA-I,       | CIA   | -II and  | d ESE    |        |   |
| Designed  | d By     |                       |                      | Veri          | fied By           |              |                 |                |             |       | Арр      | roved B  | у      |   |
| Mr.K.Vijaya                                     |          | HoD - Mr.G.Selvakumar |                      |               |                   |              | N               | lemb           | er S        | ecret | tary – D | r.S.Shah | itha   |   |





# (Autonomous)

|             | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards  |   |   |                         |                 |              |                  |                  |                   |  |  |  |
|-------------|--|---|---|-------------------------|-----------------|--------------|------------------|------------------|-------------------|--|--|--|
| Course Code | Course Title   | Course Type   | Sem   | Но                      | ours            | L            | т                | Р                | С                 |  |  |  |
| 23M_UCAS14  | PATTERN<br>RECOGNITION   | SEC THEORY  |   |                         | 2 2 -           |              | -                | 2                |                   |  |  |  |
| Objective   | Students learn the F<br>techniques, linear disc  | Pattern Recognition, N<br>criminant functions an  | various :<br>Id unsup                       | Stati<br>pervi:         | stica<br>sed le | l Pa<br>earn | attern<br>ing an | recog<br>d clust | gnition<br>ering. |  |  |  |
| Unit        |  | Course Content  |   |                         | Kn              | owle<br>Leve | edge<br>els      | Se               | ssions            |  |  |  |
| I           | PATTERN RECOGN<br>Recognition, Classifica<br>and feature Extraction<br>Learning in PR sy<br>Approaches.  | ITION OVERVIEW<br>ation and Description<br>on with Examples - Tr<br>ystems - Pattern  | Patter:<br>Patte -<br>raining a<br>recognit | n<br>erns<br>and<br>ion | s K1 6<br>n     |              |                  |                  | 6                 |  |  |  |
| II          | STATISTICAL PATTER<br>statistical Pattern Rec<br>Parametric and Non P  | N RECOGNITION: Introgenition supervised Le arametric Approaches.  | oduction<br>arning u                        | n to<br>sing            |                 | К2           |                  | 6                |                   |  |  |  |
| 111         | LINEAR DISCRIM<br>UNSUPERVISED LEAR<br>Introduction-Discrete<br>Problems Techniques<br>- Formulation of Ur<br>-Clustering From supe                          | LINEAR DISCRIMINANT FUNCTIONS AND<br>UNSUPERVISED LEARNING AND CLUSTERING:<br>Introduction-Discrete and binary Classification<br>Problems Techniques to directly Obtain linear Classifiers<br>- Formulation of Unsupervised Learning Problems<br>-Clustering From supervised learning and classification  |   |                         |                 |              |                  |                  |                   |  |  |  |
| IV          | SYNTACTIC PATTERN<br>Syntactic pattern Rec<br>parsing and other gra<br>syntactic pattern reco<br>inference.  | VTACTIC PATTERN RECOGNITION : Overview of<br>itactic pattern Recognition-Syntactic recognition Via<br>rsing and other grammars – Graphical Approaches to<br>itactic pattern recognition - Learning via grammatical<br>erence.K3   |   |                         |                 |              |                  | 6                |                   |  |  |  |
| V           | NEURAL PATTERN REC<br>to Neural Networks<br>training by Back Pro<br>Memory Approaches<br>Neural PR.*Current<br>recognition - Syntact<br>pattern recognition* | NEURAL PATTERN RECOGNITION : Introduction         to Neural Networks - Feed - forward Networks and         training by Back Propagation - Content Addressable         Memory Approaches and Unsupervised Learning in         K4         Neural PR.*Current Trends - Statistical pattern         recognition - Syntactic pattern recognition - Neural         pattern recognition* |   |                         |                 |              |                  |                  | 6                 |  |  |  |
|             | <b>CO1:</b> Recall the concepts of Pattern recognition K1  |   |   |                         |                 |              |                  |                  |                   |  |  |  |
|             | Techniques.<br>CO2: Illustrate the bas<br>non-parametric relate  | sic knowledge and Para  | ametrica                                    | and                     |                 | К1           |                  |                  |                   |  |  |  |

|                        | CO3: Build the For                        | mulation of                     | Unsupervis               | ed L   | earning.  |                  |              |
|------------------------|---|---------------------------------|--------------------------|--------|-----------|------------------|--------------|
|                        | Problems.                                 |                                 |                          |        |           | K3               |              |
|                        | <b>CO4:</b> Assume the                    | Syntactic Patt                  | ern Recognit             | ion.   |           |                  |              |
| Course                 |   |                                 |                          |        |           | K3               |              |
| Outcome                | CO5: Evaluate                             | the conce                       | pt of                    | Ne     | eural     |                  |              |
|                        | Network models.                           |                                 |                          |        |           | K4               |              |
|                        |   | Learning                        | Resources                |        |           |                  |              |
| Text<br>Book           | Robert Schalkoff,-<br>John Wiley & sons   | Pattern Reco                    | gnition: Stat            | istica | l Structu | aral and Neural  | Approaches,  |
| Reference<br>Book      | EarlGose,Richard J<br>Prentice Hall of In | ohnson baugh<br>dia Pvt Ltd, Ne | ,SteveJost, –<br>wDelhi. | - Patt | tern Rec  | ognition and Im  | ageAnalysis, |
| Website<br>Link        | https://www.simp                          | blilearn.com                    |                          |        |           |                  |              |
| Self-Study<br>Material | https://www.spice<br>recognition/         | eworks.com/to                   | ech/artificial           | -inte  | lligence  | /articles/what-i | s-pattern-   |
|                        | L-Lecture                                 | T-Tutorial                      | P-Practi                 | cal    |           | C-Credit         |              |

|  | BCA Sy     | llabus                | LOCF -              | CBCS w              | ith eff            | ect from             | 2023-2          | 024 Onw                             | ards  |       |        |       |
|--|------------|-----------------------|---------------------|---------------------|--------------------|----------------------|-----------------|-------------------------------------|-------|-------|--------|-------|
| Course Title                                   | Cou        | rse Ti                | tle                 | Co                  | ourse T            | уре                  | Sem             | Hours                               | L     | Т     | Р      | C     |
| 23M_UCAS14                                     | PA<br>RECC | TTERI<br>OGNITI       | N<br>ION            | SEC THEORY          |                    |                      |                 | 2                                   | 2     | -     | -      | 2     |
|  |            |                       |                     | CO-                 | PO Ma              | pping                |                 |                                     |       |       |        |       |
| CO Numbe                                       | r PO1      | PO2                   | PO3                 | PO4                 | PO5                | PSO1                 | PSO2            | PSO3                                | PSO   | 4     | PSO5   |       |
| CO1  | М          | S                     | М                   | S                   | S                  | L                    | М               | S                                   | М     |       | S      |       |
| CO2  | L          | М                     | L                   | S                   | М                  | S                    | S               | М                                   | S     |       | S      |       |
| CO3  | М          | S                     | S                   | М                   | S                  | S                    | S               | S                                   | Μ     |       | S      |       |
| CO4  | S          | М                     | М                   | S                   | S                  | S                    | М               | М                                   | S     |       | М      |       |
| CO5  | S          | S                     | М                   | М                   | М                  | S                    | S               | S                                   | S     | S S   |        |       |
| Level of<br>Correlation<br>between CO an<br>PO | d          |                       | L-LO <sup>V</sup>   | L-LOW M-MEDIUM      |                    |                      | М               |                                     |       | S-STF | RONG   |       |
| <b>Tutorial Schedule</b>                       | 9          | G                     | iroup Di            | scussio             | n, Qui             | z prograi            | n, Mod          | lel prepa                           | ratio | า     |        |       |
| Teaching and Lea<br>Methods                    | arning     | A                     | udio Vio<br>resenta | leo lect<br>tion ar | ture, C<br>nd Vide | halk and<br>o Presen | Board<br>tation | class, As                           | signm | nent  | , PPT  |       |
| Assessment Met                                 | hods       | C                     | lass Tes            | t, Unit             | Test, A            | ssignmer             | nt, CIA-I       | , CIA-II ai                         | nd ES | E     |        |       |
| Designe  | d By       |                       |                     |                     | Ve                 | rified By            |                 |                                     |       |       | Approv | ed By |
| Mrs.S.Sha                                      |            | HoD – Mr.G.Selvakumar |                     |                     |                    |                      |                 | Member Secretary –<br>Dr.S.Shahitha |       |       |        |       |





|             | BCA Syllabus LOCF-  | CBCS with effect fror  | n 2023-2   | 2024 Onv   | wards   |        |   |   |
|-------------|---|--|--|--|---------|--------|---|---|
| Course Code | Course Title  | Course Type  | Sem  | Hours  | L       | т      | Ρ | с |
| 23M_UCAS15  | ENTERPRISE<br>RESOURCE<br>PLANNING  | SEC THEORY   |  | 2  | 2       | -      | - | 2 |
| Objective   | Students enhance bu growth, and enabling  | grating k  | key fund   | ctions,  | facilit | tating |   |   |
| Unit        | c   |  | Knowle<br>Leve   | edge<br>els  | Ses     | sions  |   |   |
| I           | <b>ERP Introduction,</b> I<br><b>Structure:</b> Conceptua<br>ERP, the Structure o<br>ERP,ERP Vendors; Ben   | Benefits, Origin, Ex<br>al Model of ERP, the<br>f ERP, Components<br>befits & Limitations of   | and<br>on of<br>eds of<br>kages.   | K1   |         |        | 6 |   |
| II          | <b>Need to focus</b><br><b>Information mapping</b><br>data base; System Integration, Benefits &<br>ERP's Role in Logical<br>Process Reengineering<br>Online Analytic Proc<br>Management(PLM), L | on Enterprise Int<br>Role of common sha<br>egration, Logical vs. Pl<br>limitations of Syster<br>and Physical Integra<br>g, Data ware Housing<br>cessing(OLAP), Produ<br>AP, Supply chain Man | tegration<br>red Ente<br>nysical Sy<br>m Integr<br>tion. Bus<br>, Data M<br>ict Life<br>agemen | n/ERP<br>rprise<br>ystem<br>ation,<br>siness<br>lining,<br>Cycle<br>t. | K2      |        |   | 6 |
| 111         | <b>ERP Market place an</b><br>Overview, Marketpla<br>Market. ERP Functional Modules o<br>Supply chain and Cu<br>Cloud and Open Sour<br>Management, Financ<br>Extensible markup lan              | d Market place Dyna<br>ice Dynamics, the C<br>ctional Modules:<br>if ERP Software, Integ<br>istomer Relationship<br>ice, Quality Managem<br>ial Module, CRM and<br>inguage(XML)              | amics: M<br>Changing<br>Introdu<br>ration o<br>Applica<br>nent, Ma<br>d Case S                 | larket<br>g ERP<br>ction,<br>f ERP,<br>tions.<br>aterial<br>Study.     | КЗ      |        |   | 6 |

| IV   | <b>ERP Implementation Basics</b> : ERP implementation<br>Strategy, ERP Implementation Life Cycle, PreImple<br>mentation task, Role of SDLC/SSAD, Object Oriented<br>Architecture, Consultants, Vendors and Employees.  | К4   | 6                                   |
|--|--|--|-------------------------------------|
| v  | <b>ERP&amp;E-Commerce</b> : Future Directives- in ERP, ERP and<br>Internet, Critical success and failure factors,<br>Integrating ERP In to organizational culture. Using ERP<br>tool: either SAP or ORACLE for mattocase study.<br>Current Trends:*ERP tool *  | К4   | 6                                   |
|  | ** Self Study.   |  |                                     |
|  | <b>CO1:</b> Define the basic concepts of ERP   | K1   |                                     |
|  | <b>CO2:</b> Explain the different technologies used in ERP.  | K2   |                                     |
| Course<br>Outcome  | <b>CO3:</b> Apply ERP methodology in modules such as inventory management, production planning.  | КЗ   |                                     |
|  | <b>CO4:</b> Discover the applications of ERP.  | K4   |                                     |
|  | <b>CO5:</b> Apply different tools used in ERP.   | K4   |                                     |
|  |  |  |                                     |
|  | Learning Resources   |  |                                     |
| Text<br>Books  | Learning Resources<br>Enterprise Resource Planning–Alexis Leon, Tata McGra   | w Hill.  |                                     |
| Text<br>Books<br>Reference   | Learning Resources<br>Enterprise Resource Planning–Alexis Leon, Tata McGra<br>Enterprise Resource Planning–Diversified by Alexis Leo   | w Hill.<br>m, TMH.   |                                     |
| Text<br>Books<br>Reference<br>Books  | Learning Resources<br>Enterprise Resource Planning–Alexis Leon, Tata McGra<br>Enterprise Resource Planning–Diversified by Alexis Leo<br>2. Enterprise Resource Planning–Ravi Shankar & S. Jais   | w Hill.<br>n, TMH.<br>wal, Galgotia  |                                     |
| Text<br>Books<br>Reference<br>Books<br>Website<br>Link<br>Self-Study<br>Material | Learning ResourcesEnterprise Resource Planning–Alexis Leon, Tata McGraEnterprise Resource Planning–Diversified by Alexis Leo2. Enterprise Resource Planning–Ravi Shankar & S. Jais1.https://www.tutorialspoint.com/management_conce_planning.htm2.https://www.saponlinetutorials.com/what-is-erp-sysresourceplanning/3.https://www.guru99.com/erp-full-form.html4.https://www.oracle.com/in/erp/what-is-erp/1.https://www.techtarget.com/searcherp/feature/Eland-beyond. | w Hill.<br>on, TMH.<br>wal, Galgotia<br>epts/enterprise<br>stems-enterpris | e_resourc<br>e-<br><u>nis-year-</u> |

|  | B     | SCA Syl              | llabus                   | LOCF-            | CBCS w               | ith effe             | ct fror            | n 2023           | 8-20      | 024 On   | ward   | ls    |      |       |       |
|--|-------|----------------------|--------------------------|------------------|----------------------|----------------------|--------------------|------------------|-----------|----------|--------|-------|------|-------|-------|
| Course Title                                   |       | Cours                | e Title                  | •                | Cou                  | irse Typ             | e                  | Sem              | F         | lours    | L      | Т     |      | Ρ     | С     |
| 23M_UCAS15                                     |       | ENTE<br>RESC<br>PLAN | RPRISE<br>OURCE<br>INING |                  | SEC                  | THEOR                | Y                  |                  |           | 2        | 2      | -     |      | -     | 2     |
|  |       |                      |                          |                  | CO-                  | PO Map               | oping              |                  |           |          |        |       |      |       |       |
| CO Number                                      |       | PO1                  | PO2                      | PO3              | PO4                  | PO5                  | PSO:               | 1 PSC            | )2        | PSO3     | PS     | 504   | P:   | SO5   |       |
| CO1  |       | Μ                    | S                        | М                | S                    | S                    | L                  | N                | 1         | S        |        | Μ     |      | S     |       |
| CO2  |       | L                    | М                        | L                | S                    | М                    | S                  | S                |           | М        |        | S     |      | S     |       |
| CO3  |       | Μ                    | M S S M S S S M          |                  |                      |                      |                    |                  |           |          |        | S     |      |       |       |
| CO4  |       | S                    | М                        | М                | S                    | S                    | S                  | N                | 1         | М        |        | S     |      | Μ     |       |
| CO5  |       | S                    | S                        | М                | М                    | Μ                    | S                  | S                |           | S        |        | S     |      | S     |       |
| Level of<br>Correlation<br>between CO an<br>PO | nd    |                      |                          | L-LO\            | N                    |                      |                    | M-ME             | DIU       | IM       |        | S     | 5-ST | FRON  | 5     |
| <b>Tutorial Schedu</b>                         | le    |                      | G                        | roup [           | Discussi             | on, Qui              | iz prog            | ram, I           | Мо        | del pre  | para   | tion  |      |       |       |
| Teaching and Le<br>Methods                     | arni  | ng                   | A<br>P                   | udio V<br>resent | 'ideo leo<br>ation a | cture, C<br>ind Vide | Chalk a<br>eo Pres | nd Bo<br>sentati | ard<br>on | class,   | Assig  | gnme  | nt,  | PPT   |       |
| Assessment Me                                  | thod  | ls                   | С                        | lass Te          | est, Unit            | : Test, A            | ssignn             | nent, C          | CIA-      | I, CIA-I | I and  | ESE   |      |       |       |
| Designe  | ed By | /                    |                          |                  | Verifi               | ed By                |                    |                  |           |          | Appr   | oved  | By   |       |       |
| Mrs. R. S                                      | ugur  | าล                   |                          | HoD              | -Dr. V. \            | /ijayado             | eepa               | N                | 1en       | nber Se  | ecreta | ary - | Dr.  | S.Sha | hitha |





|             | BCA Syllabus LOCF - CB  | CS with effect fr  | om 202   | 23-2024  | Onwa  | ards     |       |         |  |  |  |  |
|-------------|---|--|--|--|---|----------|-------|---------|--|--|--|--|
| Course Code | Course Title  | Course Type  | Sem  | Hours  | L   | т        | Р     | С       |  |  |  |  |
| 23M_UCAS16  | ROBOTICS AND ITS<br>APPLICATIONS  | SEC THEORY   |  | 2  | 2   | -        | -     | 2       |  |  |  |  |
| Objective   | Students Learn the variou in robots and basic working the second | us drive systems<br>ng concepts and  | of robo<br>types o   | ots, sense<br>of robots  | ors a<br>S.   | nd their | appli | cations |  |  |  |  |
| Unit        | Co  | Course Content Know  |  |  |   |          |       |         |  |  |  |  |
| I           | Introduction: Introduction<br>robotics, classification, we<br>robotic arm, end-effector<br>application, Artificial Intel  | Course ContentIntroductinge<br>LevelsSessitroduction:Introduction, brief history, components of<br>obotics, classification, workspace, work-envelop, motion of<br>obotic arm, end-effectors and its types, service robot and its<br>pplication, Artificial Intelligence in Robotics.K18  |  |  |   |          |       |         |  |  |  |  |
| I           | Actuators and sensors:<br>servo and brushless moto<br>of transmissions-purpose<br>sensor-common sensors-<br>based force to rquesens o<br>sensors Kinematics of ro<br>frames, frames transforr<br>matrix, Forward and inver<br>and spherical robot (R<br>Differential wheel mobile   | Types of actuat<br>rs-model of a DC<br>of sensor-inte<br>encoders tachor<br>r proximity and o<br>bots: Represent<br>mation, homoge<br>rse kinematics: t<br>RP). Mobile ro<br>robot   | ors, ste<br>servo<br>ernal a<br>neters<br>distance<br>ation o<br>eneous<br>wo link<br>bot Ki | epper- D<br>motor ty<br>nd extenstraing a<br>e measure<br>f joints a<br>matrix,<br>c planar (<br>nematic | C –<br>rpes<br>rnal<br>uge<br>ring<br>and<br>DH<br>(RR)<br>s: | K2       |       | 8       |  |  |  |  |
| 111         | Localization: Self-localiza<br>localizations – IR base<br>Localizations–Ultrasonic b<br>systems.  | tions and mapp<br>ed localizations<br>based localizatior   | ing - C<br>– vi<br>ns -GPS   | hallenge<br>sion ba<br>localizat   | s in<br>sed<br>:ion   | К3       |       | 8       |  |  |  |  |
| IV          | Path Planning: Introduct<br>map path planning-cell d<br>potential field path pla<br>Studies. Vision systems<br>representation-object rec<br>measurement- image da<br>software considerations.   | systems.Path Planning: Introduction, path planning-overview-road<br>map path planning-cell decomposition path planning 6 214<br>potential field path planning-obstacle avoidance -case<br>Studies. Vision system: Robotic vision systems image<br>representation-object recognition-and categorization depth<br>measurement- image data compression-visual inspection<br>path planning-object recognition-and categorization |  |  |   |          |       |         |  |  |  |  |
| V           | Application:Ariel robotagriculture-mining-explormilitaryapplications-applications.*Current Trends- Soft Ro  | ts-collision avoi<br>ation-underwat<br>nuclear<br>botics and Cogn  | dance<br>er-civili<br>applica<br>itive Ro  | robots<br>an-<br>ations-sp<br>obotics *  | for<br>and<br>ace   | К5       |       | 8       |  |  |  |  |

|                        | ** Self Stu  | dy.   |   |   |  |                    |  |  |  |  |  |  |
|------------------------|--|---|---|---|--|--------------------|--|--|--|--|--|--|
|                        | <b>CO1:</b> Learn the architectures.   | e different phys  | ical forms of ro                                  | bot   | К1   |                    |  |  |  |  |  |  |
| Course                 | CO2: Relate th   | e Concept of A  | ctuators and se                                   | ensors.   | К2   |                    |  |  |  |  |  |  |
| Outcome                | CO3: Identify 1  | he models of r  | obot system.                                      |   | К3   |                    |  |  |  |  |  |  |
|                        | <b>CO4:</b> Evaluate in Robotics.  | <ul> <li><b>D4:</b>Evaluate he manipulation and navigation problems of AI Robotics.</li> <li><b>D5:</b> Measure the performance of the Nuclear and Space</li> </ul> |   |   |  |                    |  |  |  |  |  |  |
|                        | <b>CO5:</b> Measure<br>Applications o  | e the performa<br>f Robotics.   | nce of the Nu                                     | clear and Space   | К5   |                    |  |  |  |  |  |  |
|                        |  | Learn   | ing Resources                                     |   |  |                    |  |  |  |  |  |  |
| Text<br>Books          | <ol> <li>Richared I</li> <li>Engineering and</li> <li>Saeed B.N</li> <li>WileyIndia, 2nd</li> </ol>  | D.Klafter. Thor<br>nd Integrated A<br>ikku, Introduct<br>d edition 2011.  | nas Achmiele<br>pproach, Prent<br>ion to robotics | wski and Micka<br>ice Hall India-Nev<br>a, analysis, contro | ael Negin, F<br>wdelhi-2001.<br>ol and applica | Robotic<br>ations, |  |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Industrial</li> <li>et.al, McGraw</li> <li>Robotics tee</li> </ol>  | obotic techno<br>hill 2008.<br>chnology and fle   | logy-programm<br>exible automation                | ning and application on by S.R.Deb, TH                      | ntion by M.P<br>IH-2009                        | .Groover           |  |  |  |  |  |  |
| Website<br>Link        | 1. <u>https://www</u>  | .javatpoint.com   | /robotics-tutor                                   | ial   |  |                    |  |  |  |  |  |  |
| Self-Study<br>Material | 1. <u>https://www.elveflow.com/microfluidic-reviews/general-microfluidics/soft-</u><br><u>robot/ https://neura-robotics.com/cognitive-robots-the-new-era-of-true-</u><br>collaboration |   |   |   |  |                    |  |  |  |  |  |  |
|                        | L-Lecture  | L-Lecture T-Tutorial P-Practical C-Credit   |   |   |  |                    |  |  |  |  |  |  |

|   | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |     |                          |                         |                |             |                     |               |                 |             |       |           |         |        |     |  |
|---|---|-----|--------------------------|-------------------------|----------------|-------------|---------------------|---------------|-----------------|-------------|-------|-----------|---------|--------|-----|--|
| Course Code                                   |   |     | Cours                    | e Title                 |                | C           | ourse Ty            | ype           | Sen             | n Ho        | ours  | L         | Т       | Р      | С   |  |
| 23M_UCAS16                                    |   | ROB | OTICS /<br>ITS<br>PLICAT | AND<br>IONS             |                | SE          | C THEO              | RY            |                 |             | 2     | 2         | -       | -      | 2   |  |
|   |   |     |                          |                         | СО             | )-PC        | ) Mappi             | ng            |                 |             |       |           |         |        |     |  |
| CO Num  | ber   | PO1 | PO2                      | PO3                     | РО             | )4          | PO5                 | PS            | 01              | PSO2        | P     | SO3       | PSO4    | PSO5   |     |  |
| CO1   |   | L   | М                        | S                       | S              |             | S                   | S             |                 | М           |       | S         | М       | S      |     |  |
| CO2   |   | S   | М                        | М                       | S              |             | S                   | S             |                 | S           |       | S         | Μ       | S      |     |  |
| CO3   |   | S   | S M S S S M S M          |                         |                |             |                     |               |                 | S           |       |           |         |        |     |  |
| CO4   |   | М   | S                        | S S M S S M S M S       |                |             |                     |               |                 | S           |       |           |         |        |     |  |
| CO5   |   | S   | S                        | S                       | S              |             | S                   | S             | ;               | Μ           |       | S         | S S     |        |     |  |
| Level of<br>Correlatior<br>between CO a<br>PO | n<br>and  |     | l                        | -LOW                    |                |             |                     |               | N               | 1-ME[       | DIUN  | Λ         |         | S-STRC | DNG |  |
| Tutorial Schedul                              | е   |     | Gro                      | oup Dis                 | cussi          | ion,        | Quiz p              | rogra         | am,             | Mode        | l pre | eparat    | tion    |        |     |  |
| Teaching and Le<br>Methods                    | arnin   | g   | Au<br>Pre                | dio Vide<br>sentati     | eo le<br>ion a | ctur<br>and | re, Chal<br>Video P | lk an<br>rese | nd Bo<br>entati | ard c<br>on | lass, | Assig     | nment,  | PPT    |     |  |
| Assessment Met                                | thods   | 1   | Cla                      | ss Test                 | , Unit         | t Te        | st, Assig           | gnmo          | ent, (          | CIA-I,      | CIA-  | ll and    | ESE     |        |     |  |
| Design  | ed By   | /   |                          | Verified By Approved By |                |             |                     |               |                 |             |       |           |         |        |     |  |
| Mr.M.Purusothaman HoD - Mr.G.Selvakumar       |   |     |                          |                         |                |             | ar                  |               | Mem             | ber S       | Secre | tary - Dr | .S.Shah | itha   |     |  |





(Autonomous)

| BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |  |   |  |   |                |             |       |         |  |  |  |  |
|---|--|---|--|---|----------------|-------------|-------|---------|--|--|--|--|
| Course Code   | Course Title   | Course Type   | Sem  | Hours   | L              | т           | Р     | с       |  |  |  |  |
| 23M_UCAS17  | SIMULATION AND<br>MODELLING  | SEC THEORY  |  | 2   | 2              | -           | -     | 2       |  |  |  |  |
| Objective   | Students Learn simu software environmen  | lation requirements,<br>ts.   | utilize  | diverse   | tools, f       | focus       | on cr | reating |  |  |  |  |
| Unit  | C  | Course Content  |  |   | Knowle<br>Leve | edge<br>els | Se    | ssions  |  |  |  |  |
| I   | Introduction To Modeling & Simulation: What is         Modeling and Simulation – Complexity Types – Model         Types – Simulation Types – M&S Terms and Definitions         Input Data Analysis – Simulation Input Modeling – Input         Data Collection - Data Collection Problems - – Input         Modeling Strategy - Histograms – Probability Distributions         - Selecting a Probability Distribution. |   |  |   |                |             |       |         |  |  |  |  |
| I   | Random Variate Generators<br>Number Generators<br>Transform Method -<br>Composition Method<br>Specific distributions-<br>-Types of Simulation<br>Stochastic Process a<br>Systematic Errors -<br>Confidence Interval<br>Simulations - Single<br>Sequential Estimatic<br>Simulations - Remov<br>Interval) - Replication<br>Method .  | ration Random Numb<br>– General principle<br>-Acceptance Rejectio<br>–Relocate and Reso<br>Output Data Analysis -<br>With Respect to Out<br>nd Sample Path - S<br>Mean, Standard D<br>- Analysis of Fir<br>Run - Independent<br>on – Analysis of<br>al of Initialization Bi<br>-Deletion Approach - | ers – Ra<br>es – Ir<br>on Meth<br>ale Met<br>– Introdu<br>put Ana<br>Sampling<br>eviation<br>hite- Ho<br>Replicat<br>Steady<br>ias (Wan<br>Batch-N | ndom<br>iverse<br>hod –<br>hod -<br>uction<br>lysis -<br>g and<br>and<br>orizon<br>ions -<br>-State<br>rm-up<br>Means | K2             |             |       | 6       |  |  |  |  |
| III   | Comparing Systems<br>Comparison Problem<br>Screening Problems<br>with a Standard - Cor<br>Discrete Event Simula<br>Time Advance - Arith<br>Discrete-Event Model<br>Approach – Process In   | via Simulation: In<br>ns - Comparing Tw<br>- Selecting the Best<br>nparison with a Fixed<br>ations – Introduction<br>nmetic and Logical R<br>ing Approaches – Even<br>interaction Approach.   | ntroducti<br>o Syste<br>- Compa<br>Perforr<br>- Next-<br>elations<br>nt- Schee   | on –<br>ems -<br>arison<br>nance<br>Event<br>hips -<br>duling   |                | K3          |       | 6       |  |  |  |  |
| IV  | Entity Modeling: Ent<br>Visualization – Entity I<br>Modeling – Building<br>High Level Architectur<br>and Execution Process<br>Modeling – General A   | Tity Body Modeling -<br>Body Animation – Ent<br>Modeling Distributed<br>re (HLA) – Federation<br>s (FEDEP) – SISO RPR I<br>I Algorithms - Decisior  | - Entity<br>ity Intera<br>Simulat<br>Develop<br>FOM Bel<br>n Trees N   | Body<br>action<br>tion –<br>oment<br>navior<br>Jeural   |                | К4          |       | 6       |  |  |  |  |

|                        | Networks - Finite<br>Production Syster<br>Planning - Increm<br>Planning – Script<br>Execution.                      | State Machine<br>ns – Path Pl<br>ental Path Pla<br>Programming            | es - Logic Progra<br>anning - Off-Li<br>anning - Real-Tin<br>-Script Parsing   | mming -<br>ne Path<br>me Path<br>– Script |                                    |                             |
|------------------------|---|---|--|---|------------------------------------|-----------------------------|
| V                      | Algorithms: Opt<br>Algorithms – Sin<br>Systems Modeling<br>Sensor Modeling –<br>*Current Trend<br>Generative Design | imization A<br>nulated Anne<br>g – Human E<br>Radar Modeli<br>s- Additive | lgorithms –<br>aling Examples:<br>Eye Modeling –<br>ng.<br><b>Manufacturin</b> | Genetic<br>Sensor<br>Optical<br>g and     | К5                                 | 6                           |
|                        | ** Self Study.<br>CO1: Recall mode<br>input data, and mo  | ling and simu   | llation concepts   | , analyze                                 | К1                                 |                             |
| Course                 | <b>CO2:</b> Understageneration, analyz  | nd random<br>e simulations  | variants and and methods.  | number                                    | К2                                 |                             |
| Outcome                | <b>CO3:</b> Analyze s simulation.   | ystems by co  | omparing them  | through                                   | K4                                 |                             |
|                        | <b>CO4:</b> Compare the Animation.  | e Entity Body   | Modeling, Visua  | lization,                                 | К4                                 |                             |
|                        | CO5: Evaluate the   | Algorithms and  | d Sensor Modelir   | ng.                                       | K5                                 |                             |
|                        |   | Learning  | Resources  |   |                                    |                             |
| Text<br>Books          | <ol> <li>Jerry Banks, John<br/>Advances, Applicatio</li> <li>George S.Fishman</li> </ol>                            | Wiley& Sons,<br>ns and Practice<br>, Discrete-Eve<br>Vork, Inc. 200       | . Handbook of S<br>e  , Inc., 1998.<br>nt Simulation: N                        | Simulatior<br>10deling,                   | n: Principles, Ma<br>Programming a | ethodology,<br>nd Analysis, |
| Defenence              | Springer- Verlag New  | York, Inc.,200  | I.<br>Dandu Tadiki   | amalla "A                                 | naliad Cimulat                     | ion                         |
| Books                  | 1. Andrew F.Sella,<br>Modeling" Thomsonl  | earningInc.,20  | )03.   | amalia, A                                 | pplied Simulat                     | ION                         |
| Website<br>Link        | 1. https://www.tuto<br>2. https://www.java  | rialspoint.com<br>tpoint.com/ve   | n/modelling_and<br>rilog-simulation  | _simulati<br>-basics                      | on/index.htm                       |                             |
| Self-Study<br>Material | https://www.design<br>simulation-and-test-  | news.com/des<br>in-2023   | ign-software/five  | e-trends-t                                | hat-will-define-                   |                             |
|                        | L-Lecture   | T-Tutorial  | P-Practical  |   | C-Credit                           |                             |

|  | BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |             |         |                     |                   |                  |                      |                    |                 |       |       |        |     |  |  |
|--|---|-------------|---------|---------------------|-------------------|------------------|----------------------|--------------------|-----------------|-------|-------|--------|-----|--|--|
| Course Title   |   | Co          | ourse 1 | Title               | (                 | Course           | Туре                 | Sem                | Hours           | L     | Т     | Р      | С   |  |  |
| 23M_UCAS17   | SI  | MULA<br>MOD |         | AND<br>G            | SE                | С ТНЕС           | ORY                  |                    | 2               | 2     | -     | -      | 2   |  |  |
|  |   |             |         |                     | CO                | -PO M            | apping               |                    |                 |       |       |        |     |  |  |
| CO Numbe   | er  | PO1         | PO2     | PO3                 | PO4               | PO5              | PSO1                 | PSO2               | PSO3            | Р     | SO4   | PSO5   |     |  |  |
| CO1  |   | М           | S       | Μ                   | S                 | S                | Μ                    | Μ                  | S               |       | М     | S      |     |  |  |
| CO2  |   | Μ           | М       | М                   | S                 | М                | S                    | S                  | М               |       | S     | S      |     |  |  |
| CO3  |   | Μ           | S       | S                   | Μ                 | S                | S                    | S                  | S               |       | М     | S      |     |  |  |
| CO4  |   | S           | М       | М                   | S                 | S                | S                    | Μ                  | М               | M S M |       |        |     |  |  |
| CO5  |   | S           | S       | М                   | Μ                 | М                | S                    | S                  | S               |       | S S   |        |     |  |  |
| Level of<br>Correlation<br>between CO ar<br>PO                     | nd  |             |         | L-LOW               |                   |                  |                      | M-M                | EDIUM           |       |       | S-STR  | ONG |  |  |
| <b>Tutorial Schedul</b>  | le  |             | G       | roup Di             | scussio           | on, Qu           | uiz progr            | am, M              | odel prep       | arati | ion   |        |     |  |  |
| Teaching and Le<br>Methods   | arni  | ng          | A<br>Pi | udio Vio<br>resenta | deo leo<br>tion a | cture,<br>nd Vid | Chalk ar<br>eo Prese | nd Boar<br>entatio | d class, A<br>า | ssigr | nment | t, PPT |     |  |  |
| Assessment Me  | thod  | ls          | C       | lass Tes            | t <i>,</i> Unit   | Test,            | Assignm              | ent, ClA           | A-I, CIA-II a   | and   | ESE   |        |     |  |  |
| Designe  | ed By   | /           |         |                     | Veri              | fied By          | /                    |                    |                 | A     | pprov | ved By |     |  |  |
| Mr.E.Natarajan HoD - Mr.G.Selvakumar Member Secretary Dr.S.Shahith |   |             |         |                     |                   |                  |                      |                    | ihitha          |       |       |        |     |  |  |





|             | BCA Syllabus LO   | OCF - CBCS with effec  | t from   | 2023-202  | 4 On             | ward          | s          |          |  |  |  |  |
|-------------|---|--|--|---|------------------|---------------|------------|----------|--|--|--|--|
| Course Code | Course Title  | Course Type  | Sem  | Hours   | L                | т             | Р          | С        |  |  |  |  |
| 23M_UCAS18  | ORGANIZATION<br>BEHAVIOR  | SEC THEORY   |  | 2   | 2                |               |            | 2        |  |  |  |  |
| Objective   | Students extensive  | knowledge on OB and  | d the s  | cope of OE  | <b>.</b>         |               |            |          |  |  |  |  |
| Unit        |   | Course Content   |  |   | Kr               | nowle<br>Leve | edge<br>Is | Sessions |  |  |  |  |
| I           | INTRODUCTION : Co<br>Nature - Scope and<br>to OB; Opportuni<br>workforce diversity,<br>change,-networked<br>people skills - positiv   | Levels         NTRODUCTION : Concept of Organizational Behavior (OB):         lature - Scope and Role of OB: Disciplines that contribute         DOB; Opportunities for OB (Globalization, Indian         vorkforce diversity, customer service - innovation and         hange,-networked organizations - work-life balance -         eople skills - positive work environment, ethics)         NDIVIDUAL BEHAVIOUR:         earning, attitude and Job satisfaction: Concept of learning |  |   |                  |               |            |          |  |  |  |  |
| II          | INDIVIDUAL BEHAV<br>Learning, attitude ar<br>-conditioning - sha<br>attitude - compon<br>satisfaction: causati  | IOUR:<br>nd Job satisfaction: Co<br>ping and reinforcem<br>ents - behavior an<br>on; impact of satisfie  | ncept<br>ent. (<br>id att<br>ed em   | of learning<br>Concept o<br>itude. Job<br>ployees or  | -<br>-           | К2            |            | 6        |  |  |  |  |
|             | workplace.<br><b>Motivation</b> : Concep<br>Y - Two factor – Mcc<br>Equity theory) - Jo<br>jobs - Personality a<br>Myers- Briggs Type<br>Relevance of values;<br>workplace (perso<br>fit)Perception, Dec<br>Judgments – Factor<br>decision making | t - Theories (Hierarch<br>Clelland - Goal setting<br>b characteristics mo<br>nd Values : Concept<br>Indicator (MBTI) -<br>; Linking personality a<br>on-job fit, per<br>cision Making :<br>rs - Linking percepti   | y of ne<br>g - Self<br>del; R<br>of pe<br>Big F<br>and va<br>son-ou<br>Percep<br>on to | eds - X and<br>f- efficacy<br>edesigning<br>ersonality<br>ive model<br>lues to the<br>rganization<br>otion and<br>individua | -<br>-<br>-<br>- |               |            |          |  |  |  |  |
| 111         | GROUP BEHAVIOUR<br>1. Groups and Work<br>group development<br>think and shift - Te<br>players from indivio<br>Leadership : Concep<br>(Ohio and Michigan s<br>- Hersey and Blancha   | Teams : Concept - Fiv<br>- Group norms, cohe<br>ams - types of teams<br>duals and team base<br>ot -Trait theories - Be<br>studies) - Contingency<br>ard - Path-Goal);  | ve Stag<br>sivene<br>s - Cre<br>ed wo<br>havior<br>theor                               | e model o<br>ess - Group<br>ating team<br>rk(TBW) 2<br>ral theories<br>ies (Fiedle  | -                | К3            |            | 6        |  |  |  |  |
| IV          | ORGANISATIONAL<br>Concept of culture<br>Creating and sustai<br>Prevalent organizati   | CULTURE AND STRUC<br>e; Impact (functions<br>ning culture - Conceptional designs - New de  | TURE<br>and<br>ot of s<br>esign o  | :<br>liability) -<br>structure -<br>options   |                  | K4            |            | 6        |  |  |  |  |

| V                      | ORGANISAT<br>Forces of<br>Approaches<br>Concept of<br>Dysfunction<br>*Current Tr<br>** Self S  | rional changi<br>change - Pla<br>(Lewin's model<br>conflict, Conflic<br>al. Introduction<br>ends-Lack of en<br>tudy.   | <b>D POWER:</b><br>; Resistance -<br>l development) -<br>pes, Functional/<br>politics.<br><b>ement *</b>                                | К5  | 6  |  |
|------------------------|--|--|---|---|--|--|
|                        | CO1: Defin   | e Organization   | al behavior, l  | Jnderstand the  | K1   |  |
|                        | opportunity<br>CO2: Apply<br>learning The  | <u>r through OB.</u><br>self-awarenes<br>eories at workpl  | s, motivation,<br>ace.  | leadership and  | К2   |  |
| Course Outco           | CO3: Analy<br>ne behaviour.  | ze the comple  | itions of group   | К3  |  |  |
|                        | CO4: Impac<br>organization   | t and bring posit<br>n.  | ne culture of the   | К4  |  |  |
|                        | CO5: Create  | e a congenial clir   | nate in the orga  | nization  | K5   |  |
|                        |  | Lear   | rning Resources   |   |  |  |
| Text<br>Books          | <ol> <li>NeharikaVoh<br/>Pearson Educati</li> <li>red Luthans, of<br/>Ray French, Cha<br/>Wiley &amp; Sons, 20</li> <li>Louis Bevoc, A<br/>Nutri Niche Syst</li> <li>Dr. Christoph<br/>Behaviour: A Sk<br/>2018).</li> </ol> | ra Stephen P. I<br>on, 18th Editio<br>Organizational B<br>rlotte Rayner, G<br>O11<br>Allison Shearsett<br>em LLC (28 Apri<br>ier P. Neck, Jef<br>ill-Building Appr | Robbins, Timotl<br>n, 2022.<br>ehaviour, Tata<br>ary Rees & Sally<br>, Rachael Collins<br>I 2017).<br>fery D. Houghto<br>oach, SAGE Pub | hy A. Judge , O<br>McGraw Hill, 20:<br>Rumbles, Organ<br>son, Organization<br>on and Emma L.<br>plications, Inc; 2r | rganizational<br>17.<br>izational Beha<br>nal Behaviour<br>. Murray, Org<br>nd edition (29 | Behaviour,<br>viour, John<br>Reference,<br>anizational<br>November |
| Reference<br>Books     | <ol> <li>1.Uma Sekaran</li> <li>Publishing CO. L</li> <li>2. GangadharRa</li> <li>2000, Konark Pu</li> <li>3. S.S. Khanka, C</li> <li>J. Javasankar. O</li> </ol>  | , Organizational<br>td.<br>o, Narayana, V<br>Iblishers Pvt. Lto<br>Organizational B<br>rganizational Be  | Behaviour Text<br>.S.P Rao, Organ<br>I, 1st edition.<br>ehaviour, S. Cha<br>haviour. Margh  | & cases, 2nd e<br>nizational Behavi<br>and & Co, New D<br>nam Publications  | edition, Tata M<br>iour 1987, Re<br>velhi.<br>5. Chennai. 202                              | 1cGraw Hill<br>print<br>17.  |
| Website<br>Link        | ps://psychoped   | ehavior/   | . , .   |   |  |  |
| Self-Study<br>Material | ps://www.resea<br>al_Behavior  | rchgate.net/pul  | blication/35835   | 6661_New_Trer   | nds_in_Organi  | zation   |
|                        | L-Lecture  | T-Tutorial   | P-Practical   |   | C-Credit   |  |

|   | BCA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |             |                     |                    |                      |                         |                                   |           |      |        |       |     |  |
|---|---|-------------|---------------------|--------------------|----------------------|-------------------------|-----------------------------------|-----------|------|--------|-------|-----|--|
| Course Code                                     |   | Course      | Title               |                    | Cours                | е Туре                  | Sem                               | Hours     | L    | Т      | Р     | С   |  |
| 23M_UCAS18                                      | ORGAN   | NIZATIO     | ON BEH              | AVIOR              | SEC T                | HEORY                   |                                   | 2         | 2    | -      | -     | 2   |  |
|   |   |             | (                   | CO-PO I            | Mappin               | g                       |                                   |           |      |        |       |     |  |
| CO Number                                       | PO1   | PO2         | PO3                 | PO4                | PO5                  | PSO1                    | PSO2                              | PSO       | 3 F  | PSO4   | PSO   | 5   |  |
| CO1   | L   | М           | S                   | S                  | S                    | S                       | М                                 | S         | S M  |        | S     |     |  |
| CO2   | S   | М           | М                   | S                  | S                    | S                       | S                                 | S         |      | Μ      | S     |     |  |
| CO3   | S   | S           | М                   | S                  | S                    | S                       | М                                 | S         |      | Μ      | S     |     |  |
| CO4   | Μ   | S           | S                   | М                  | S                    | S                       | М                                 | S         |      | Μ      | S     |     |  |
| CO5   | S   | S           | S                   | S                  | S                    | S                       | М                                 | S         | S S  |        |       |     |  |
| Level of<br>Correlation<br>between CO and<br>PO |   | L-          | LOW                 |                    |                      | N                       | 1-MED                             | IUM       |      |        | S-STR | ONG |  |
| Tutorial Schedule                               |   | Gro         | up Discu            | ussion, (          | Quiz pr              | ogram, N                | /lodel p                          | orepara   | tion |        |       |     |  |
| Teaching and Learning<br>Methods                | ;   | Aud<br>Pres | io Video<br>entatio | lecture<br>n and V | e, Chall<br>'ideo Pr | k and Boa<br>resentatio | rd clas                           | ss, Assig | ŋm   | ent, l | ррт   |     |  |
| Assessment Methods                              |   | Clas        | s Test, l           | Jnit Test          | t, Assig             | nment, C                | IA-I, CI                          | A-II and  | ESE  |        |       |     |  |
| Designed By                                     |   |             |                     | V                  | erified              | Ву                      |                                   |           |      | Appr   | oved  | Ву  |  |
| Mr. V. Vengad                                   |   | Но          | D - Mr.             | G.Selva            | ıkumar               |                         | Member Secretary<br>Dr.S.Shahitha |           |      |        | ry    |     |  |




|                   | BCA Syllabus LOCF-C  | BCS with effect from   | n 2023-2  | 2024 Onw | vards          |     |          |   |  |
|-------------------|--|--|-----------|----------|----------------|-----|----------|---|--|
| Course Code       | Course Title     Course Type     Sem     Hours     L     T     P |  |           |          |                |     |          |   |  |
| 23M_UCAS19        | UNDERSTANDING<br>INTERNET  | SEC THEORY   |           | 2        | 2              | -   | -        | 2 |  |
| Objective         | Student Learn the bas cybercrime is crucial fo                   | Student Learn the basic concepts of internet, features cybercrime is crucial for navigating the digital landscape    |           |          |                |     |          |   |  |
| Unit              | Co   | ourse Content  |           |          | Knowle<br>Leve | Ses | Sessions |   |  |
| I                 | Emergence of the inter<br>world wide web.                        | orld of  | K1        |          |                | 6   |          |   |  |
| II                | Features of the interne  | t as a technology.   |           |          | K2             |     |          | 6 |  |
| 111               | Internet as a source of on content and style.                    | based  | К3        |          | 6              |     |          |   |  |
| IV                | Demographic and psyc<br>audiences – Effect of<br>styles.         | Demographic and psychographic descriptions of internet audiences – Effect of internet on the values and life-styles. |           |          |                |     |          |   |  |
| v                 | Present issues such as c<br>*Current Trends -Smar                | cybercrime and futur<br><b>'t Spaces.*</b>   | e possib  | ilities. | К4             |     | 6        |   |  |
|                   | ** Self Study.   |  |           |          |                |     |          |   |  |
|                   | <b>CO1:</b> Recall the found and concepts.                       | ational principles of  | the into  | ernet,   | K1             |     |          |   |  |
|                   | <b>CO2:</b> Employ the prine effectively utilize curre           | nciples of Internet t<br>nt techniques.  | echnolo   | gy to    | K2             |     |          |   |  |
| Course<br>Outcome | <b>CO3:</b> Apply infotainme by enhancing internet               | К3   |           |          |                |     |          |   |  |
|                   | КЗ   |  |           |          |                |     |          |   |  |
|                   | <b>CO5:</b> Assess complexiti future possibilities.              | es of cybercrime whi   | le consid | dering   | К4             |     |          |   |  |

|                 |   | Learning   | Resources                                     |   |  |  |  |  |  |  |
|-----------------|---|--|---|---|--|--|--|--|--|--|
| Text<br>Books   | <ol> <li>Harley Hahn, "The</li> <li>Alexis Leon, Math</li> <li>Srivastava, KM "N</li> </ol> | <ul> <li>Harley Hahn, "The Internet Complete Reference", 2nd Edition, Tata McGraw-Hill.</li> <li>Alexis Leon, Mathews Leon, "Internet for Everyone", Tata McGraw-Hill.</li> <li>Srivastava, KM "Media Issues", Sterling Publishers Pvt Ltd, 1992.</li> </ul> |   |   |  |  |  |  |  |  |
| Reference       | 1. P.J. Deitel, H.M.De  | P.J. Deitel, H.M.Deitel "Internet & World Wide Web How to Program", 4th Edition,   |   |   |  |  |  |  |  |  |
| Books           | Prentice Hall, 2008.  | rentice Hall, 2008.  |   |   |  |  |  |  |  |  |
| Website<br>Link | 1.https://www.jagra<br>1644302980-2. 2.htt<br>working-advantages                            | njosh.com/ge<br>ps://www.gee<br>-and-disadvan  | neral-knowledge<br>eksforgeeks.org/<br>tages/ | e/internet-and-its-features-<br>what-is-internet-definition-uses- |  |  |  |  |  |  |
| Self-Study      | 1. https://valoremr   | eply.com/post  | t/smart-spaces-i                              | ot-and-beyond/  |  |  |  |  |  |  |
| Material        | 2. https://www.cog  | nizant.com/us  | s/en/glossary/sn                              | nart-spaces   |  |  |  |  |  |  |
|                 | L-Lecture   | T-Tutorial   | P-Practical                                   | C-Credit  |  |  |  |  |  |  |

|  | BCA Sy       | llabus         | LOCF-C   | BCS wi             | th effe            | ct froi          | n 20          | )23·        | -202        | 4 On   | war  | ds      |       |   |
|--|--------------|----------------|--|--------------------|--------------------|------------------|---------------|-------------|-------------|--------|------|---------|-------|---|
| Course Title                                   | Cou          | rse Titl       | e  | Οοι                | urse Ty            | ре               | Ser           | n           | Но          | urs    | L    | Т       | Р     | С |
| 23M_UCAS19                                     | UNDER<br>INT | STAND<br>ERNET | ING  | SEC THEORY         |                    |                  |               |             | 2           |        | 2    | -       | -     | 2 |
|  |              |                |  |                    | CO-PO Mapping      |                  |               |             |             |        |      |         |       |   |
| CO Number                                      | PO1          | PO2            | PO3  | PO4                | PO5                | PSO              | 1             | PS          | 02          | PSC    | )3   | PSO4    | PSO5  |   |
| CO1  | L            | М              | М  | М                  | S                  | S                |               | L           | -           | L      |      | Μ       | S     |   |
| CO2  | М            | L              | L  | М                  | М                  | М                |               | Ν           | Λ           | Μ      | 1    | S       | М     |   |
| CO3  | S            | S              | L  | S                  | S                  | S                |               | Ν           | Λ           | L      |      | М       | S     |   |
| CO4  | S            | М              | М  | М                  | М                  | S                |               | S           | 5           | Ν      | 1    | S       | М     |   |
| CO5  | М            | S              | S  | L                  | S                  | М                |               | Ν           | Λ           | S      |      | S       | S     |   |
| Level of<br>Correlation<br>between CO an<br>PO | d            |                | L-LOW M-MEDIUM S-STRO                                  |                    |                    |                  |               |             | STRONG      | 5      |      |         |       |   |
| <b>Tutorial Schedul</b>                        | e            | G              | roup Di  | iscussic           | on, Qui            | z prog           | gram          | I, N        | Лоde        | el pre | para | ation   |       |   |
| Teaching and Lea<br>Methods                    | arning       | A<br>P         | udio Vio<br>resenta                                    | deo lec<br>tion ar | ture, C<br>nd Vide | Chalk a<br>o Pre | and E<br>sent | Boa<br>atic | ird c<br>on | lass,  | Assi | gnment  | , PPT |   |
| Assessment Met                                 | hods         | C              | ass Tes  | t, Unit            | Test, A            | ssignr           | nent          | t, Cl       | IA-I,       | CIA-I  | lan  | d ESE   |       |   |
| Designed By                                    |              |                |  | Verifie            | ed By              |                  |               |             |             |        | Арр  | roved B | у     |   |
| Mrs.V.Krishnaveni                              |              |                | HoD – Mr.G.Selvakumar Member Secretary – Dr.S.Shahitha |                    |                    |                  |               |             |             | nitha  |      |         |       |   |

#### List of Non Major Elective Course (NMEC) offered by the B.C.A., LOCF-CBCS Pattern EFFECTIVE FROM THE ACADEMIC YEAR 2023-2024 Onwards LIST OF NMEC COURSES

| S.No | SEM | COURSE_CODE | TITLE OF THE COURSE                    |
|------|-----|-------------|--|
| 1    |     | 23M_UCAN01  | FUNDAMENTALS OF INFORMATION TECHNOLOGY |
| 2    |     | 23M_UCAN02  | INTRODUCTION TO HTML                   |



MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (Autonomous) (Autonomous)



### **RASIPURAM - 637408.**

|             | BCA Syllabus LOCF-CBC   | 5 with effect from 20   | 023-2024   | Onwaru                      | 5        |   |   |   |  |
|-------------|---|---|--|-----------------------------|----------|---|---|---|--|
| Course Code | Course Title  | Course Type   | Sem  | Hours                       | L        | т | Р | С |  |
| 23M_UCAN01  | FUNDAMENTALS OF<br>INFORMATION<br>TECHNOLOGY  | NMEC – I  |  | 2                           | 2        | - | - | 2 |  |
| Objective   | Students Learn the basic cor  | ormation  | nation technology.                                       |                             |          |   |   |   |  |
| Unit        | Cours   | Kn  | owledg<br>Levels   | ge                          | Sessions |   |   |   |  |
| I           | Introduction to Computers<br>Data and Information –<br>Software – Hardware – Inp<br>Types of Operating System.  | -<br>   | К1   |                             | 6        |   |   |   |  |
| II          | MS Word: Introduction –<br>Folders and Directories –<br>Paste, Drag and Drop – Tex<br>Face and Colors (Both for<br>Alignment - Bullets and No<br>watermark – inserting obje<br>document) – Table creation | es,<br>Dy,<br>ze,<br>–<br>:er<br>on   | К2   |                             | 6        |   |   |   |  |
|             | Ms Excel: Introduction – Inse<br>rows and columns – Impler<br>series - Functions in excel<br>objects – Filter – Sorting – Ir  | erting rows and colur<br>menting formulas –<br>– Creation of Chart<br>nserting worksheet.                 | nns – Sizi<br>Generati<br>– Inserti                      | ng<br>ng<br>ng              | K3       |   | 6 |   |  |
| IV          | MS PowerPoint: Introduc<br>(Inserting new, Copy, paste<br>Slide show– Types of Vie<br>Inserting Objects – Implem<br>Audio) – Templates (Built-in  | on<br>) —<br>_<br>nd  | K3   |                             | 6        |   |   |   |  |
| v           | Internet: Introduction to Int<br>Internet -Domain Name -<br>Browsers – Search Engine -E<br>Mail –.How to send grou<br>Signature – Digital Curre<br>transaction.   | ernet and Intranet –<br>- URL – Browser –<br>-Mail – Basic Compo<br>p mail. E Commer<br>ency – Online sho | Services<br>- Types<br>onents of<br>rce: Digi<br>pping a | of<br>of<br>E-<br>tal<br>nd | К4       |   | 6 |   |  |

|                    | <b>CO1:</b> Lea   | of the K1   |   |   |  |  |  |  |  |
|--------------------|---|---|---|---|--|--|--|--|--|
| Course             | <b>CO2:</b> Illu devices  | strate organizational struc<br>present currently under in                                       | cture using for the<br>put or output unit.  | К2  |  |  |  |  |  |
| Outcome            | CO3: Ap   | <b>CO3:</b> Apply the concept of storing data in computer using two headers namely RAM and ROM. |   |   |  |  |  |  |  |
|                    | <b>CO4:</b> Demonstrate different software and its applications.  |   |   |   |  |  |  |  |  |
|                    | <b>CO5:</b> Design the system software which really acts as an interpreter between software and hardware.   |   |   |   |  |  |  |  |  |
|                    | Learning Resources  |   |   |   |  |  |  |  |  |
| Text<br>Books      | <ol> <li>Anoop Mathew, S. KavithaMurugeshan (2009), — Fundamental of Information<br/>Technology  , Majestic Books.</li> <li>Alexis Leon, Mathews Leon, Fundamental of Information Technology  , 2nd<br/>Edition.</li> <li>S. K Bansal - Fundamental of Information Technology  , 2nd</li> </ol>                               |   |   |   |  |  |  |  |  |
| Reference<br>Books | 1.Bhardw<br>2. GG WI<br>3. A Ravio<br>Publishing  | vajSushilPuneet Kumar, —I<br>LKINSON, —Fundamentals<br>chandran, —Fundamental<br>g.             | Fundamental of Informatio<br>of Information Technolog<br>s of Information Technolog | on Technology  <br>gy  , Wiley-Blackwell<br>gy  , Khanna Book |  |  |  |  |  |
| Website<br>Link    | https://testbook.com/learn/computer-fundamentals<br>https://www.tutorialsmate.com/2020/04/computer-fundamentals-tutorial.html<br>https://www.javatpoint.com/computer-fundamentals-tutorial<br>https://www.tutorialspoint.com/computer_fundamentals/index.htm<br>https://www.nios.ac.in/media/documents/sec229new/Lesson1.pdf. |   |   |   |  |  |  |  |  |
| L-Lecture          | 2   | T-Tutorial  | P-Practical   | C-Credit  |  |  |  |  |  |

|                                      |                   | BCA                    | Syllabu                 | us LOCF            | - CBCS             | with effe               | ct from 2            | 2023-202           | 4 Onv   | vards  | S     |                    |         |      |
|--------------------------------------|-------------------|------------------------|-------------------------|--------------------|--------------------|-------------------------|----------------------|--------------------|---------|--------|-------|--------------------|---------|------|
| Course Code                          |                   | Cours                  | e Title                 |                    | Со                 | urse Type               | Sem                  | Hours              | L       | ר      | г     |                    | Р       | С    |
| 23M_UCAN0                            | 1 F               | UNDAN<br>INFOI<br>TECH | MENTA<br>RMATI<br>INOLO | ILS OF<br>ON<br>GY | NMEC – I           |                         | 2                    | 2                  |         |        |       | -                  | 2       |      |
|                                      |                   |                        |                         |                    | СС                 | D-PO Map                | ping                 |                    |         |        |       |                    |         |      |
| CO Number                            | PO1               | PO2                    | PO3                     | PO4                | PO5                | PSO1                    | PSO2                 | PSO3               | PSC     | 04     | PS    | 05                 |         |      |
| CO1                                  | М                 | S                      | М                       | S                  | S                  | L                       | М                    | М                  | S       | 5      |       | S                  |         |      |
| CO2                                  | М                 | S                      | S                       | S                  | S                  | S                       | Μ                    | S                  | S       | 5      |       | S                  |         |      |
| CO3                                  | S                 | S                      | S                       | S                  | S                  | S                       | S                    | М                  | S       | 5      |       | S                  |         |      |
| CO4                                  | S                 | S                      | М                       | S                  | S                  | S                       | Μ                    | S                  | S       | 5      |       | S                  |         |      |
| CO5                                  | М                 | S                      | М                       | L                  | L                  | S                       | Μ                    | М                  | S       | 5      |       | S                  |         |      |
| Level o<br>betwee                    | f Corre<br>n CO a | elation<br>and PO      |                         |                    | L-LOW              | J                       | ſ                    | M-MEDIU            | JM      |        |       | S-S                | TRONG   |      |
| Tutorial Sched                       | ule               |                        |                         | Group [            | Discussi           | ion, Quiz               | program              | , Model            | prepa   | iratio | n     |                    |         |      |
| Teaching and L                       | .earnir           | ng Meth                | nods                    | Audio V<br>Present | ideo le<br>ation a | cture, Cha<br>and Video | alk and I<br>Present | Board cla<br>ation | ass, As | signr  | men   | t, PP <sup>.</sup> | Т       |      |
| Assessment M                         | ethod             | s                      |                         | Class Te           | st, Uni            | t Test, Ass             | ignment              | t, CIA-I, C        | IA-II a | nd ES  | SE    |                    |         |      |
| Des                                  | igned             | Ву                     |                         |                    | Vei                | rified By               |                      |                    | Ар      | prov   | ed E  | Зу                 |         |      |
| Mrs.N.Padmavathi<br>Mr.K.Vijayakumar |                   |                        |                         | HoD -              | Mr.G.S             | Selvakuma               | r                    | Mer                | nber S  | Secre  | etary | v – Dr.            | .S.Shah | itha |



MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (Autonomous) (Autonomous)



### **RASIPURAM - 637408.**

|             | BCA Syllabus LOCF - CBCS   | with effect fro                                       | m 2023                        | -2024 Or           | nwards       |             |     |          |  |  |
|-------------|--|---|-------------------------------|--------------------|--------------|-------------|-----|----------|--|--|
| Course Code | Course Title   | Course Type   | Sem                           | Hours              | L            | т           | Р   | С        |  |  |
| 23M_UCAN02  | INTRODUCTION TO HTML   | 2   | 2                             | 2                  |              |             |     |          |  |  |
| Objective   | Students Learn the Concepts<br>Create a web page.  | of ordered and  | unorde                        | red lists          | within       | a wek       | pag | e and    |  |  |
| Unit        | Course   | Content   |                               |                    | Knowl<br>Lev | edge<br>els |     | Sessions |  |  |
| I           | Introduction: Web Basics:<br>browsers – What is W<br>Understanding tags.   | What is Inter<br>ebpage – HT                          | net –<br>ML Ba                | Web<br>isics:      | K            | 1           |     | 6        |  |  |
| II          | Tags for Document structure<br>Block level text elements:<br>tag).Font style elements: (bo<br>strike, big tags). | e (HTML, Head<br>Headings para<br>Id, italic, font, s | , Body<br>agraph<br>mall, str | Tag).<br>(<br>ong, | K            | 2           |     | 6        |  |  |
|             | Lists: Types of lists: Ordered,<br>Other tags: Marquee, HR, E<br>Hyperlinks.                                     | Unordered – No<br>BR Using Image                      | esting Li<br>s – Crea         | sts –<br>ating     | K            | 6           |     |          |  |  |
| IV          | Tables: Creating basic Table<br>Table and cell alignment -<br>padding.   | , Table element<br>- Rowspan, Co                      | s, Capti<br>olspan            | on –<br>–Cell      | K            |             | 6   |          |  |  |
| v           | Frames: Frameset – Targ<br>Forms: Input, Text area, Sele   | eted Links –<br>ect, Option.                          | No fr                         | ame.               | K            | 4           |     | 6        |  |  |
|             | <b>CO1:</b> Recall the basic concep resources in HTML.   | t in HTML and C                                       | Concept                       | of                 | K            | 1           |     |          |  |  |
| Course      | <b>CO2:</b> Identify the Concept of the concept of save the files.   | b   | К                             | 2                  |              |             |     |          |  |  |
| Outcome     | <b>CO3:</b> Analyse the page forma   | k   |                               |                    |              |             |     |          |  |  |
|             | CO4: Apply Links and Know the concept of K3 reating link to email address.                                       |   |                               |                    |              |             |     |          |  |  |
|             | <b>CO5:</b> Design the Concept of a Understand the table creatic   | adding images a<br>on.                                | ind                           |                    | к            | 4           |     |          |  |  |

|                    | Learning Resources   |  |  |  |  |  |  |  |  |  |  |
|--------------------|----------------------|--|--|--|--|--|--|--|--|--|--|
| Text<br>Books      | "Master              | Vastering HTML5 and CSS3 Made Easy", TeachUComp Inc., 2014.  |  |  |  |  |  |  |  |  |  |
| Reference<br>Books | Thomas               | Thomas Michaud, "Foundations of Web Design: Introduction to HTML & CSS"  |  |  |  |  |  |  |  |  |  |
| Website<br>Link    | https://<br>https:// | https://www.teachucomp.com/samples/html/5/manuals/Mastering-HTML5-CSS3.pdf<br>https://www.w3schools.com/html/default.asp |  |  |  |  |  |  |  |  |  |
| L-Lecture          | •                    | T-Tutorial P-Practical C-Credit  |  |  |  |  |  |  |  |  |  |

|   |         | BCA S               | yllabus   | LOCF -  | CBCS                          | with effe          | ect from              | 2023-202           | 4 Onwa     | r <b>ds</b> |         |   |  |  |
|---|---------|---------------------|-----------|---|-------------------------------|--------------------|-----------------------|--------------------|------------|-------------|---------|---|--|--|
| Course Code                               | •       | Cou                 | rse Title | 2   | Co<br>Ty                      | urse<br>/pe        | Sem                   | Hours              | L          | т           | Р       | С |  |  |
| 23M_UCAN0                                 | 2 1     | NTRODUCTION<br>HTML |           | ΝΤΟ   | NM                            | EC- II             |                       | 2                  | 2          | -           | -       | 2 |  |  |
|   | I       |                     |           |   | CO                            | -PO Maj            | pping                 |                    |            |             |         |   |  |  |
| CO Number                                 | PO1     | PO2                 | PO3       | PO4   | PO5                           | PSO1               | PSO2                  | PSO3               | PSO4       | PSO         | 5       |   |  |  |
| CO1                                       | М       | S                   | М         | S   | S                             | L                  | М                     | М                  | S          | S           |         |   |  |  |
| CO2                                       | М       | S                   | S         | S   | S                             | S                  | М                     | S                  | S          | S           |         |   |  |  |
| CO3                                       | S       | S                   | S         | S   | S                             | S                  | S                     | М                  | S          | S           |         |   |  |  |
| CO4                                       | S       | S                   | Μ         | S   | S                             | S                  | М                     | S                  | S          | S           |         |   |  |  |
| CO5                                       | Μ       | S                   | Μ         | L   | L                             | S                  | М                     | М                  | S          | S           |         |   |  |  |
| Level of<br>Correlation<br>between CO and |         |                     |           |   | Ŀ                             | -LOW               |                       | r                  | S-ST       | rong        |         |   |  |  |
| Tutorial Sched                            | ule     |                     |           | Group Discussion, Quiz program, Model preparation |                               |                    |                       |                    |            |             |         |   |  |  |
| Teaching and<br>Methods                   | Learnir | ng                  |           | Audio ۱<br>Presen                                 | Video l<br>tation             | ecture,<br>and Vid | Chalk an<br>leo Prese | d Board<br>ntation | class, Ass | signmer     | it, PPT |   |  |  |
| Assessment N                              | lethod  | s                   |           | Class T   | est, Ur                       | nit Test, /        | Assignme              | ent, CIA-I,        | CIA-II ar  | nd ESE      |         |   |  |  |
| De  | signed  | Ву                  |           |   | Ver                           | ified By           |                       |                    | Approv     | ed By       |         |   |  |  |
| Mrs.N<br>Mr.K.                            | Ho      | ) - Mr.             | G.Selvak  | umar  | Member Secretary – Dr.S.Shahi |                    |                       |                    |            |             |         |   |  |  |

|       | Allied Course for any Degree offered by the B.C.A.,<br>LOCF-CBCS Pattern<br>EFFECTIVE FROM THE ACADEMIC YEAR 2023-2024 Onwards<br>LIST OF GEC - ALLIED COURSES |             |   |  |  |  |  |  |  |  |
|-------|--|-------------|---|--|--|--|--|--|--|--|
| S.No. | Sem  | COURSE_CODE | TITLE OF THE COURSE                             |  |  |  |  |  |  |  |
| 1     | ш  | 23M3UCMA02  | E-Commerce                                      |  |  |  |  |  |  |  |
| 2     | VI   | 23M6UCME02  | Computer Application in Business                |  |  |  |  |  |  |  |
| 3     | I  | 23M1UCCA01  | Programming in C                                |  |  |  |  |  |  |  |
| 4     | I  | 23M1UCCA02  | Python Programming                              |  |  |  |  |  |  |  |
| 5     | П  | 23M2UCCA01  | Programming in C++                              |  |  |  |  |  |  |  |
| 6     | П  | 23M2UCCA02  | Office Automation                               |  |  |  |  |  |  |  |
| 7     | 111  | 23M3UCCA03  | Web Technology(PHP) and Lab                     |  |  |  |  |  |  |  |
| 8     | 111  | 23M3UCCA04  | Programming in JAVA and Lab                     |  |  |  |  |  |  |  |
| 9     | IV   | 23M4UCCA04  | Relational Database Management System           |  |  |  |  |  |  |  |
| 10    | IV   | 23M4UCCA05  | Introduction to Data Science                    |  |  |  |  |  |  |  |
| 11    | V  | 23M5UCCA05  | Software Engineering and UML Lab                |  |  |  |  |  |  |  |
| 12    | V  | 23M5UCCA06  | Object Oriented Analysis and Design and UML Lab |  |  |  |  |  |  |  |
| 13    | VI   | 23M6UCCA06  | R Language                                      |  |  |  |  |  |  |  |
| 14    | IV   | 23M4UPAA02  | R Programming                                   |  |  |  |  |  |  |  |
| 15    | V  | 23M5UPAA03  | Python Programming                              |  |  |  |  |  |  |  |



MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (Autonomous)



### **RASIPURAM - 637408.**

|             | B.Com Syllabus LOCI  | F-CBCS with effect from  | 2023-2   | 024 Onw                                      | vards                             |   |    |   |  |  |  |  |
|-------------|--|--|--|--|-----------------------------------|---|----|---|--|--|--|--|
| Course Code | Course Title   | Course Type  | Sem  | Hours  | L                                 | т | Ρ  | С |  |  |  |  |
| 23M3UCMA02  | E-COMMERCE   | GEC THEORY   | III  | 4  | 2                                 | 2 | -  | 3 |  |  |  |  |
| Objective   | Students Learn the marketing technologie   | Electronic commerce, vesting to the second sec | various<br>entatior  | Busines                                      | iness models the internet<br>EDI. |   |    |   |  |  |  |  |
| Unit        | С  | К  | nowle<br>Leve  | Ses  | sions                             |   |    |   |  |  |  |  |
| I           | Introduction to E-Co<br>Main Activities of Ele<br>Commerce; Broad Go<br>Components of E-Co<br>Commerce - Proces<br>ECommerce; The Wor<br>Web: Features, Ro<br>Intelligence in EComm                        | rce;<br>f E-<br>lain<br>onic<br>of<br>the<br>icial   | K1   |  | 10                                |   |    |   |  |  |  |  |
| II          | E-Commerce Busines<br>Commerce E-commer<br>to Consumer (B2C) Business (B2B) Busin<br>Emerging E-Commer<br>Retailing and E- retail<br>of E-retailing, Feature   | s Models & Consumer<br>ce Business Models, Maj<br>usiness Models, Major I<br>ness Models, Business<br>ce Areas - E-tailing:<br>ling, Benefits of E-retaili<br>s of E-retailing.  | Oriente<br>or Busir<br>Busines<br>Models<br>Traditio<br>ng, Mo | ed E<br>ness<br>s to<br>s in<br>onal<br>dels | K2                                |   | 10 |   |  |  |  |  |
| 111         | <b>E-Commerce Marketin</b><br>and Consumer Beha<br>Internet Marketing Te<br>services: Categories o<br>Information-Selling or   | ng Concepts The Internet<br>viour, Basic Marketing<br>chnologies – Marketing<br>of E-services, WebEnable<br>on the Web.  | et Audie<br>Conce<br>Strateg<br>ed Servi                       | nce<br>pts,<br>y - E<br>ces,                 | К3                                | : | 10 |   |  |  |  |  |
| IV          | Electronic Data Intere<br>EDI Technology, EDI Si<br>Implementation, EDI A<br>Payment Systems, Ne<br>Digital Economy - Th<br>Cyber Crime Networ<br>Web Server with a F<br>Policy, Network Firewa<br>Server. | Information-Selling on the Web.Electronic Data Interchange & Security Benefits of EDI,<br>EDI Technology, EDI Standards, EDI Communications, EDI<br>Implementation, EDI Agreements, EDI Security. Electronic<br>Payment Systems, Need of Electronic Payment System -<br>Digital Economy - Threats in Computer Systems: Virus,<br>Cyber Crime Network Security: Encryption, Protecting<br>Web Server with a Firewall, Firewall and the Security<br>Policy, Network Firewalls and Application Firewalls, Proxy   |  |  |                                   |   |    |   |  |  |  |  |

| V                      | Ethics in E-Cor<br>Understanding Eth<br>Commerce: A Mo<br>Ethical Concepts, A<br>Ethical Principles<br>Information Collec<br>*Current Trends:<br>Commerce*   | nmerce Issu<br>nical, Social a<br>odel for Orga<br>Analysing Ethic<br>Privacy an<br>ted at E-Comn<br>Social and                              | es in E Co<br>nd Political Issu<br>nizing the Issue<br>cal Dilemmas, Ca<br>d Information<br>nerce Websites.<br><b>Political Issue</b> | mmerce<br>es in E-<br>es, Basic<br>andidate<br>Rights:<br><b>s in E-</b>         | К5  | 10   |  |  |  |
|------------------------|--|--|---|--|---|--|--|--|--|
|                        | ** Self Study.   |  |   |  |   |  |  |  |  |
|                        | CO1:Recall the role  | e and features   | of world wide w   | veb  | K1  |  |  |  |  |
|                        | CO2: Understand t  | he Benefits ar   | ling  | K2   |   |  |  |  |  |
| Course                 | <b>CO3:</b> Demonstrate platforms to delive  | e Web-enable<br>er various serv  | e online  | КЗ   |   |  |  |  |  |
| Outcome                | CO4: Implement<br>measures .   | ing compreh  | security  | К4   |   |  |  |  |  |
|                        | <b>CO5:</b> Evaluate t<br>Information Rights   | he ethical <sub> </sub>  | orinciples Priva  | cy and   | К5  |  |  |  |  |
|                        |  | Learning   | Resources   |  |   |  |  |  |  |
| Text<br>Books          | <ol> <li>Kenneth C. Laudon, E-Commerce Business Technology Society, 4 the Edition,<br/>Pearson Education Limited, New Delhi.</li> <li>S. J. Joseph, E-Commerce: an Indian perspective, PHI Learning Pvt. Ltd., New Delhi<br/>3 .David Whitley, E-Commerce-Strategy, Technologies &amp; Applications, TMI, McGraw-<br/>Hill, London.</li> <li>Kamlesh K. Bajaj, E-Commerce- The cutting edge of business, TMH, McGraw Hill,<br/>Noida.</li> </ol> |  |   |  |   |  |  |  |  |
| Reference<br>Books     | <ol> <li>Agarwala, K.N. a<br/>Commerce, McMil</li> <li>Ravi Kalkota, Fro</li> <li>Elias M Awad, E</li> <li>Ltd., New Delhi.</li> <li>Mathew Reynolo</li> <li>MTS, Wrox Publish</li> <li>J. Christopher W</li> <li>and Case Studies, <sup>-</sup></li> </ol>  | Ind D. Agarwa<br>lan Publisher I<br>ntiers of E-Cor<br>lectronic Com<br>ls, Beginning E<br>ers, Mumbai.<br>fest I and Theo<br>The MIT Press, | ala, Business on<br>ndia Pvt. Ltd., Ch<br>nmerce, TM, Pea<br>merce From Visi<br>-Commerce with<br>odore H. K Clark<br>Cambridge, Lon  | the Net<br>nennai.<br>arson Edu<br>ion to Ful<br>n Visual B<br>Global El<br>don. | : What's and H<br>cation Limited, I<br>fillment. PHI Lea<br>asic, ASP, SQL Se<br>ectronic Comme | ow's of E-<br>New Delhi.<br>arning Pvt.<br>erver 7.0 &<br>erceTheory |  |  |  |
| Website<br>Link        | <ol> <li>https://www.inv</li> <li>https://www.we</li> <li>ecommerce-marke</li> <li>https://techbull</li> </ol>   | vestopedia.com<br>ebfx.com/indu<br>eting-concepts<br>ion.com/the-in  | n/terms/e/ecom<br>stries/retail-ecom<br>/<br>mportance-of-et  | nmerce.as<br>mmerce/e<br>hics-in-ec  | sp<br>ecommerce/basi<br>ommerce/  | ic   |  |  |  |
| Self-Study<br>Material | https://indiafreend<br>commerce-a-mode   | otes.com/unde<br>el-for-organizin  | erstanding-ethica<br>ng-the-issues-ba   | al-social-a<br>sic/  | nd-political-issu   | es-in-e-   |  |  |  |
|                        | L-Lecture  | T-Tutorial   | P-Practical   |  | C-Credit  |  |  |  |  |

|   | B.Com Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |                       |                    |                        |                  |                   |                  |            |         |          |           |        |   |
|---|---|-----------------------|--------------------|------------------------|------------------|-------------------|------------------|------------|---------|----------|-----------|--------|---|
| Course Title                                    | Cour  | se Titl               | е                  | Cour                   | se Typ           | е                 | Sem              | Н          | ours    | L        | т         | Р      | С |
| 23M3UCMA02                                      | E-CON   | <b>MMER</b>           | CE                 | GEC THEORY             |                  |                   | Ш                |            | 4       | 2        | 2         | -      | 3 |
|   |   |                       |                    | CO-P                   | O Map            | ping              |                  |            |         |          |           |        |   |
| CO Number                                       | PO1   | PO2                   | PO                 | 3 PO4                  | PO5              | PSC               | 01 PS            | 602        | PSO     | 3        | PSO4      | PSO5   |   |
| CO1   | М   | S                     | Μ                  | S                      | S                | L                 |                  | М          | S       |          | Μ         | S      |   |
| CO2   | L   | Μ                     | L                  | S                      | Μ                | S                 |                  | S          | Μ       |          | S         | S      |   |
| CO3   | М   | S                     | S                  | М                      | S                | S                 |                  | S          | S       |          | Μ         | S      |   |
| CO4   | S   | Μ                     | М                  | S                      | S                | S                 |                  | М          | Μ       |          | S         | Μ      |   |
| CO5   | S   | S                     | Μ                  | М                      | Μ                | S                 |                  | S          | S       |          | S         | S      |   |
| Level of<br>Correlation<br>between CO<br>and PO |   | L-LOW                 |                    |                        |                  | M-MEDIUM S-STRONG |                  |            |         | i        |           |        |   |
| <b>Tutorial Schedul</b>                         | e   | 0                     | Group I            | Discussio              | n, Qui           | z prog            | gram,            | Moc        | lel pre | para     | ation     |        |   |
| Teaching and Lea<br>Methods                     | arning  | A<br>F                | Audio V<br>Present | /ideo lect<br>ation an | ure, C<br>d Vide | Chalk a<br>o Pres | and Bo<br>sentat | ard<br>ion | class,  | Assi     | ignmen    | t, PPT |   |
| Assessment Met                                  | hods:   | C                     | Class Te           | est, Unit <sup>-</sup> | Test, A          | ssignr            | nent, (          | CIA-I      | , CIA-I | lan      | d ESE     |        |   |
| Designe   | d By  |                       |                    | Verifie                | d By             |                   |                  |            |         | Арр      | oroved E  | Зу     |   |
| Mrs.R.Su  |   | HOD – Mr.G.Selvakumar |                    |                        |                  | r                 | Verr             | ıber So    | ecre    | tary - D | or.S.Shał | nitha  |   |



# MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (Autonomous)



#### (Autonomous) RASIPURAM - 637408.

|             | B. Com Syllabus LOCF - CBCS with effect from 2023-2024 Onwards  |   |   |  |                           |               |            |            |  |  |  |  |  |
|-------------|---|---|---|--|---------------------------|---------------|------------|------------|--|--|--|--|--|
| Course Code | Course Title  | Course<br>Type  | Sem   | Hours  | L                         | т             | Р          | С          |  |  |  |  |  |
| 23M6UCME02  | COMPUTER<br>APPLICATION IN<br>BUSINESS  | GEC THEORY  | VI  | 5  | 2                         | 3             | -          | 3          |  |  |  |  |  |
| Objective   | Students Apply various te businessenvironment.  | erminologies use  | ed in the   | e operati  | on of                     | f compu       | ter sy     | stems in a |  |  |  |  |  |
| Unit        | Со  | urse Content  |   |  |                           | Knowle<br>Lev | dge<br>els | Sessions   |  |  |  |  |  |
| I           | Word Processing: Introduction to Word-Processing, Word-<br>Processing Concepts, Use of Templates, and Working with<br>Word Document: Editing Text, Find and Replace Text,<br>Formatting, Spell Check, Autocorrect, Auto Text - Bullets and<br>Numbering, Tabs, Paragraph Formatting, Indent, and Page<br>Formatting, Header and Footer. |   |   |  |                           |               |            |            |  |  |  |  |  |
| II          | Mail Merge: Tables - Inse<br>Inserting Pictures and Vie<br>with Database - Printin<br>Documents.  | ble-<br>king<br>ness  | К2  |  | 12                        |               |            |            |  |  |  |  |  |
| III         | <b>Preparing Presentations</b><br>Fonts, Drawing, Editing,<br>Symbols. Media – Des<br>Slideshow. Creating Busin   | : Basics of Pre<br>Inserting, Tab<br>ign – Transitic<br>ess Presentatior  | esentatio<br>les, Ima<br>on – A<br>ns.            | ons: Slid<br>ages, tex<br>nimatior                             | les,<br>kts,<br>1 -       | К3            |            | 12         |  |  |  |  |  |
| IV          | Spreadsheet and its Bu<br>Concepts, Managing Worl<br>Editing, and Printing a V<br>Formula, Project Involving<br>Charts and Graphs. Ma<br>Logical, Date and Time,<br>Database, and Text Function   | and its Business Applications Spreadsheet:Inaging Worksheets - Formatting, Entering Data,Printing a Worksheet - Handling Operators inect Involving Multiple Spreadsheets, OrganizingK4Graphs. Mathematical, Statistical, Financial,and Time, Lookup and Reference,d Text Functions. |   |  |                           |               | 12         |            |  |  |  |  |  |
| V           | Creating Business Spread<br>Area of: Loan and Lease<br>Statements, Capital Buc<br>Graphical Representation<br>and its Statistical Paramet<br>*Current Trends- Excel for   | Isheet: Creating<br>Statement, Rat<br>Igeting, Deprec<br>of Data, Freq<br>ters, Correlation<br>or Windows*  | Spreads<br>io Analy<br>iation<br>uency<br>and Reg | sheet in t<br>ysis, Payı<br>Accounti<br>Distribut<br>gression. | the<br>roll<br>ng,<br>ion | К5            |            | 12         |  |  |  |  |  |
|             | ** Self Study.  |   |   |  |                           |               |            |            |  |  |  |  |  |

|                    | CO1: Recall the  | e various worki  | ng techniques ir | MS-WORD.                | K1                  |            |  |  |  |  |  |  |
|--------------------|--|--|------------------|-------------------------|---------------------|------------|--|--|--|--|--|--|
|                    | CO2: Summari   | ze appropriate   | business docum   | ent send to             | K2                  |            |  |  |  |  |  |  |
|                    | more persons   | at a time.   |                  |                         |                     |            |  |  |  |  |  |  |
| Course Outcome     | CO3: Build the   | Presentation for   | or Seminars and  | Lecture.                | КЗ                  |            |  |  |  |  |  |  |
|                    | CO4: List vario  | us tools used in   | MS-EXCEL.        |                         | К4                  |            |  |  |  |  |  |  |
|                    | CO5: Select Ex   | cel tools in var   | ious business ar | eas of Finance,         |                     |            |  |  |  |  |  |  |
|                    | HR, and Statist  | ics.   |                  |                         | K5                  |            |  |  |  |  |  |  |
| Learning Resources |  |  |                  |                         |                     |            |  |  |  |  |  |  |
|                    | 1. R Parameswaran, Computer Application in Business – S, Chand Publishing, UP. |  |                  |                         |                     |            |  |  |  |  |  |  |
|                    | 2. Dr. Sandeep   | Srivastava, Er.  | Meera Goyal, C   | omputer Applica         | tions In Busin      | ess, SBPD  |  |  |  |  |  |  |
|                    | Publications, L  | IP.  |                  |                         |                     |            |  |  |  |  |  |  |
| Taut               | 3. Mansi Bans  | Aansi Bansal, Sushil Kumar Sharma, Computer Application In Business, Mumbai, |                  |                         |                     |            |  |  |  |  |  |  |
| l ext<br>Books     | Maharashtra.   | narashtra.   |                  |                         |                     |            |  |  |  |  |  |  |
| DOOKS              | 4. Peter Norto   | Peter Norton, Introduction to Computers, Tata McGraw-Hill, Noida.            |                  |                         |                     |            |  |  |  |  |  |  |
|                    | 5. Renu Gupt   | a, Computer Ap   | plications in Bu | siness, Shree Ma        | ahavir Book D       | epot       |  |  |  |  |  |  |
|                    | (Publishers) New Delhi.  |  |                  |                         |                     |            |  |  |  |  |  |  |
|                    |  |  |                  |                         |                     |            |  |  |  |  |  |  |
|                    | 1.Gupta, Swat  | i, Office Autom  | ation System, La | p Lambert Acad          | emic Publicati      | on.USA.    |  |  |  |  |  |  |
|                    | 2.Jennifer Ack   | erman Kettel,  | Guy Hat-Davis,   | Curt Simmons,           | Microsoft 2         | 003, Tata  |  |  |  |  |  |  |
|                    | McGraw Hill,   | Noida.   |                  |                         |                     |            |  |  |  |  |  |  |
| Deference          | 3. Dr.R.Deepa  | lakshmi,Compu  | iter Fundament   | als and Office          | Automation, C       | harulatha  |  |  |  |  |  |  |
| Books              | Publications,  | Tamilnadu.   |                  |                         |                     |            |  |  |  |  |  |  |
| DOOKS              | 4. John Walke  | nbach, MS Exce   | l 2007 Bible, Wi | ey Publication, N       | lew Jersey, US      | SA.        |  |  |  |  |  |  |
|                    | 5.Glyn Davis   | & BrankoPecar  | , Business Stat  | istics using Exc        | el, Oxford Pu       | blication, |  |  |  |  |  |  |
|                    | Chennai.   |  |                  |                         |                     |            |  |  |  |  |  |  |
| WebsiteLink        | 1. https://www   | v.udemy.com/c  | ourse/office-au  | comation-certific       | ate-course/         |            |  |  |  |  |  |  |
|                    |  |  |                  |                         |                     |            |  |  |  |  |  |  |
| Self-Study         | https://techco   | mmunity.micro  | soft.com/t5/exc  | <u>el-blog/what-s-n</u> | <u>ew-in-excel-</u> |            |  |  |  |  |  |  |
| iviaterial         | <u>octoper-</u> 2023,  | <u>vba-p/3945988</u>   |                  |                         |                     |            |  |  |  |  |  |  |
|                    | L-Lecture  | T-Tutorial   | P-Practical      |                         | C-Credit            |            |  |  |  |  |  |  |

|  | В.   | Com Sy                            | llabus     | LOCF - C              | BCS v          | vith effec             | t fro        | om 20             | 23-20         | 24 0       | nwai           | r <b>ds</b>        |       |   |
|--|------|-----------------------------------|------------|-----------------------|----------------|------------------------|--------------|-------------------|---------------|------------|----------------|--------------------|-------|---|
| Course Code                                    |      |                                   | Cours      | e Title               | C              | ourse Ty               | pe           | Sen               | n Ho          | ours       | L              | Т                  | Р     | С |
| 23M6UCME02                                     | со   | MPUTER APPLICATION<br>IN BUSINESS |            |                       | N GE           | C THEOR                | Y            | VI                | 5             | 5          |                | 3                  | -     | 3 |
|  |      |                                   |            |                       | CO-P           | O Mappi                | ng           |                   |               |            |                |                    |       |   |
| CO Numbe                                       | r    | PO1                               | PO2        | PO3                   | PO4            | PO5                    | PS           | 601               | PSO2          | PS         | 603            | PSO4               | PSO5  |   |
| CO1  |      | S                                 | М          | S                     | Μ              | S                      | σ,           | 5                 | М             | Ν          | Л              | S                  | S     |   |
| CO2  |      | S                                 | М          | S                     | Μ              | М                      | 0,           | 5                 | М             | 0,         | 5              | Μ                  | S     |   |
| CO3  |      | S                                 | S          | S                     | М              | S                      | 9            | 5                 | М             | Ν          | Л              | S                  | S     |   |
| CO4  |      | S                                 | М          | S                     | Μ              | М                      | ς,           | 5                 | М             | Ν          | Л              | М                  | S     |   |
| CO5  |      | S                                 | S          | S                     | Μ              | S                      | 0,           | 5                 | М             | 0,         | 5              | S                  | S     |   |
| Level of<br>Correlation<br>between CO an<br>PO | d    |                                   | L          | L-LOW M-MEDIUM        |                |                        |              |                   |               | S-STRONG   |                |                    |       |   |
| Tutorial Schedule                              |      |                                   | Gro        | oup Discu             | ssior          | i, Quiz pi             | rogra        | am, N             | Nodel         | prep       | arati          | ion                |       |   |
| Teaching and Learr<br>Methods                  | ning |                                   | Auc<br>Pre | dio Video<br>sentatio | lectu<br>n and | ure, Chal<br>d Video P | k an<br>rese | id Boa<br>entatio | ard cla<br>on | iss, A     | ssigr          | nment,             | РРТ   |   |
| Assessment Metho                               | ods  |                                   | Cla        | ss Test, L            | Jnit T         | est, Assig             | gnme         | ent, C            | IA-I, C       | IA-II      | and I          | ESE                |       |   |
| Designed                                       | Ву   |                                   |            |                       | Veri           | fied By                |              |                   |               |            |                | Approve            | ed By |   |
| Mr.M.Purusothaman                              |      |                                   |            | HoD - Mr.G.Selvakumar |                |                        |              |                   | IV            | 1eml<br>Dr | ber S<br>.S.Sh | ecretary<br>ahitha | /-    |   |





|             | B.Com CA Syllabus LOCF   | -CBCS with effect fror  | n 2023-2                                  | 2024 Onv              | varo       | ds           |                |        |  |  |
|-------------|--|---|---|-----------------------|------------|--------------|----------------|--------|--|--|
| Course Code | Course Title   | Course Type   | Sem                                       | Hours                 | L          | т            | Ρ              | С      |  |  |
| 23M1UCCA01  | PROGRAMMING IN C   | GEC THEORY  | I   | 4                     | 2          | -            | 3              |        |  |  |
| Objective   | To Understand the basic concepts and Evaluate t  | concepts of C language<br>he performance of Arr   | ge, Decis<br>ays, Fun                     | ion state<br>ctions & | me<br>Poir | nts,<br>nter | Loop<br>s in C |        |  |  |
| S.No.       | Cours  | se Content  |   | Knowl<br>Leve         | edg<br>els | e            | Se             | ssions |  |  |
| I           | Introduction to C Langu<br>-Features of C Language<br>languages - Compilation<br>in C Pre-processor direct   |   |   | 9                     |            |              |                |        |  |  |
| II          | Variables, Data Types<br>Keywords in C-Scope I<br>Operators & Its Types-Ty   | /ariables, Data Types & Operators: Variables and         (eywords in C-Scope rules in C-Data Types in C-         Keywords & Its Types-Typecasting in C. |   |                       |            |              |                |        |  |  |
| 111         | <b>Control Flow State</b><br>Statements-Switch State<br>Structure Practice pro<br>Break Statement. Array<br>in C-Multidimensional A<br>functions in C. |   |   |                       | 11         |              |                |        |  |  |
| IV          | <b>Functions in C</b> : Function<br>Techniques in C-Stora<br>Concept -Functions in C   | Prototype-Parameter<br>age Classes in C-Re<br>Practice problems.  | Passing<br>ecursion                       | К4                    |            |              |                | 7      |  |  |
| V           | <b>Pointers, Structures, a</b><br>Structures- Union - En<br>Pointer vs Array in C – C a<br>Matrix manipulations<br>preparation).                       | and Unions: Pointers<br>numeration (or enum<br>application programs (<br>s, student's mar   | s in C-<br>1) in C-<br>Sorting,<br>k list | К4                    |            |              |                | 9      |  |  |
|             | CO1: To Discuss abou Structures.   | it the concepts of  | Control                                   | <b>K</b> 1            | l          |              |                |        |  |  |
|             | CO2: To Illustrate the dimensional arrays.   | concept of single and   | l multi-                                  | K                     | 2          |              |                |        |  |  |
| Course      | CO3: To Apply the con<br>programs related to cha   | ncept of Strings for<br>practer array.  | writing                                   | K3                    | 3          |              |                |        |  |  |
| Outcome     | CO4: To Differentiate pr<br>defined and recursive fu   | ograms using concept<br>unctions.   | ofuser                                    | K4                    | 1          |              |                |        |  |  |
|             | CO5: To Design the cont<br>the programs using C.   | cept of structures to o   | develop                                   | K4                    | 1          |              |                |        |  |  |

|                    | List of Programs:<br>1. Write a C program to find roots of a Quadratic<br>equation.<br>2. Write a C program to find the total no. of digits<br>and the sum of individual digits of a positive integer.<br>3. Write a C program to generate the Fibonacci<br>sequence of first N numbers.<br>4. Write a C program to sum the series $S=1 - x + (x^2/2!) - (x^3/3!) + \dots - (x^n/n!)$<br>5. Write a C program to arrange the elements of an<br>integer array using Bubble Sort algorithm.<br>6. Write a C program to input two matrices and<br>perform matrix multiplication on them<br>7. Write a C program to check whether the given<br>string is palindrome or not without using Library<br>functions.<br>8. Write a C program to count the number of lines,<br>words and characters in a given text.<br>9. Write a C program to generate Prime numbers in a<br>given range using user defined function.<br>10. Write a C program to maintain a record of n<br>student details using an array of structures with four<br>fields - Roll number, Name, Marks and Grade.<br>Calculate the Grade according to the following<br>conditions.<br>Marks Grade >=80 A >=60 B >=50 C >=40 D <40 E<br>Print the details of the student, given the student Roll<br>number as input. |  |   |   |                                   |  |  |  |  |  |  |  |
|--------------------|---|--|---|---|-----------------------------------|--|--|--|--|--|--|--|
|                    | Marks Grade >=8<br>Print the details c  | 0 A >=60 B >=50 C >=4<br>of the student, given th  | 0 D <40 E<br>le student Ro                                | 1   |                                   |  |  |  |  |  |  |  |
|                    | number as input.  |  |   |   |                                   |  |  |  |  |  |  |  |
|                    |   | Learning Resour  | rces  |   |                                   |  |  |  |  |  |  |  |
| Text<br>Books      | <ol> <li>E. Balaguruswa</li> <li>Education, ISBN:9</li> <li>Pradip Dey, Ma</li> <li>University Press, I</li> <li>Kernighan B.W</li> </ol>   | imy, "Programming in<br>978-93-5316-513-0.<br>anas Ghosh, "Programr<br>ISBN: 978-01-9949-147<br>and Dennis M. Ritchie  | ANSI C", 8th I<br>ming in C", 2n<br>7-6.<br>, "The C Prog | d Edition, 2019, Mo<br>d Edition, 2018,<br>ramming Langua | cGraw Hill<br>Oxford<br>nge", 2nd |  |  |  |  |  |  |  |
| Reference<br>Books | 1. Yashavant P. Ka<br>978- 93-8728-449<br>2. Jacqueline A Jo<br>Education. ISBN: 9  | 1. Yashavant P. Kanetkar, "Let Us C", 16th Edition, 2019, BPB Publications, ISBN:<br>978- 93-8728-449-4.<br>2. Jacqueline A Jones and Keith Harrow, "Problem Solving with C", Pearson<br>Education. ISBN: 978-93-325-3800-9. |   |   |                                   |  |  |  |  |  |  |  |
| Website<br>Link    | 1.http://www.lea<br>2.http://crasseux   | L.http://www.learn-c.org/<br>2.http://crasseux.com/books/ctutorial/  |   |   |                                   |  |  |  |  |  |  |  |
|                    | L-Lecture   | T-Tutorial   | P-Practical   | C-Cr  | edit                              |  |  |  |  |  |  |  |

| I   | B.Com  | CA Sy              | llabus  | LOCF  | CBCS v   | vith e              | ffect                | t froi               | m 2023-:            | 2024 Onv            | vards             |              |         |  |  |  |
|---|--------|--------------------|---------|-------|----------|---------------------|----------------------|----------------------|---------------------|---------------------|-------------------|--------------|---------|--|--|--|
| Course Code                                     | Co     | ourse <sup>-</sup> | Title   | Co    | ourse Ty | уре                 | Ser                  | n                    | Hours               | L                   | т                 | Р            | С       |  |  |  |
| 23M1UCCA01                                      | PRO    | GRAMA<br>C         | AING IN | I GE  | EC THEC  | ORY                 | I                    |                      | 4                   | 2                   | -                 | 2            | 3       |  |  |  |
|   |        |                    |         |       | CO-PC    | ) Map               | opin                 | g                    |                     |                     |                   |              |         |  |  |  |
| CO Number                                       | PO1    | PO2                | PO3     | PO4   | PO5      | PSC                 | 01                   | PSO<br>2             | PSO3                | PSO4                | PSO5              |              |         |  |  |  |
| CO1   | Μ      | S                  | Μ       | S     | S        | L                   |                      | L                    | S                   | S                   | S                 |              |         |  |  |  |
| CO2   | Μ      | S                  | S       | S     | S        | S                   |                      | Μ                    | S                   | S                   | S                 |              |         |  |  |  |
| CO3   | S      | S                  | S       | S     | S        | S                   |                      | S                    | S                   | S                   | S                 | S            |         |  |  |  |
| CO4   | S      | S                  | Μ       | S     | S        | S                   |                      | Μ                    | S                   | S                   | S                 |              |         |  |  |  |
| CO5   | Μ      | S                  | Μ       | L     | L        | S                   |                      | S                    | S                   | S                   | S                 |              |         |  |  |  |
| Level of<br>Correlation<br>between CO and<br>PO | d      | L-LOW              |         |       |          |                     | M-MEDIUM S-STRONG    |                      |                     |                     |                   |              |         |  |  |  |
| Tutorial Schedul                                | e      |                    |         |       |          | Grou<br>prep        | up D<br>barat        | iscus<br>ion         | ssion, Q            | uiz progra          | ım, Mo            | del          |         |  |  |  |
| Teaching and Le                                 | arning | , Metl             | nods    |       |          | Aud<br>Assi<br>Pres | io Vi<br>gnm<br>enta | deo<br>ent,<br>ation | lecture,<br>PPT Pre | Chalk and sentation | d Board<br>and Vi | class<br>deo | ,       |  |  |  |
| Assessment Met                                  | thods  |                    |         |       |          | Clas<br>ESE         | s Tes                | st, Ui               | nit Test,           | Assignme            | ent, CIA-         | I, CIA       | -II and |  |  |  |
| Designed By Verifie                             |        |                    |         |       | /erified | l By                |                      |                      |                     | App                 | proved E          | Зу           |         |  |  |  |
| Mrs.N.Padmapriya HOD - Dr.V.Vij                 |        |                    |         | jayad | eepa     | 9                   | Mem                  | ber Secre            | tary –Di            | r.S.Sh              | ahitha            |              |         |  |  |  |





|             | B.Com CA Syllabus LOCF-C  | CBCS with effect from 2   | 2023-20  | 24 Onwa        | rds         |    |          |   |  |  |  |
|-------------|---|---|--|----------------|-------------|----|----------|---|--|--|--|
| Course Code | Course Title  | Course Type   | Sem  | Hours          | L           | т  | Ρ        | С |  |  |  |
| 23M1UCCA02  | PYTHON<br>PROGRAMMING   | GEC THEORY  | Ι  | 4              | 2           | -  | 2        | 3 |  |  |  |
| Objective   | Students Learn the basic concepts of strings, functions and process of structuring the data using lists, dictionaries, tuples and sets.   |   |  |                |             |    |          |   |  |  |  |
| S.No        | Course  | e Content   |  | Knowle<br>Leve | edge<br>els | S  | Sessions |   |  |  |  |
| I           | Introduction: Computer<br>Hardware Computer Softw<br>language - Literals - Variabl<br>- Expressions and Data type   | mputer<br>mming<br>erators  | К1   |                |             | 10 |          |   |  |  |  |
| II          | <b>Control Structures:</b> Book<br>Control - If Statement- Inde<br>Selection Iterative Contr<br>loops- Definite vs. Indefinit<br>List and Dictionary, Mani<br>python programs - Underst | lection<br>lti-Way<br>Infinite<br>String,<br>ocks of<br>es.   | К2   |                |             | 10 |          |   |  |  |  |
| 111         | <b>Functions:</b> Program Routin<br>on Functions: Calling Value<br>Non Value-Returning Fun<br>Keyword Arguments in Py<br>Python-Variable Scope. Rec                                     | es- Defining Functions<br>e-Returning Functions-<br>ctions- Parameter Par<br>thon - Default Argume<br>cursion: Recursive Func | - More<br>Calling<br>ssing -<br>ents in<br>ctions. | КЗ             | К3          |    |          |   |  |  |  |
| IV          | <b>Objects and their use:</b> Soft<br>– Turtle attributes-Modular<br>Design - Python Modules.   | ware Objects - Turtle G<br>r Design: Modules - Top  | raphics<br>-Down                                   | К4             |             | 10 |          |   |  |  |  |
| V           | Dictionaries and Sets: Dic<br>Data type. Text Files: Oper<br>files – Exception Handling T<br>*Current Trends - Mat<br>Python*.  | tionary type in Python<br>ning, reading and writin<br>Fotal.<br>tplotlib: Visualization                                       | n - Set<br>ng text<br>with                         | К4             |             |    | 10       |   |  |  |  |

| <b>CO1:</b> Discuss about the Basic concepts of Python Programming   | К1  |  |
|--|---|--|
| <b>CO2:</b> Illustrate the concept of Conditional and Looping Statements.  | К2  |  |
| <b>CO3:</b> Apply the concept of Functions.  | К3  |  |
| <b>CO4:</b> Demonstrate the Concept of Python Modules.   | К4  |  |
| <b>CO5:</b> Evaluate the Concept of Dictionaries and Sets.   | К4  |  |
| List of Programs:  1. Program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.  2. Write a Python program to construct the following pattern, using a nested loop  * *** *** *** *** *** *** *** *** * |   |  |
|  | CO1: Discuss about the basic concepts of Python<br>Programming.<br>CO2: Illustrate the concept of Conditional and Looping<br>Statements.<br>CO3: Apply the concept of Functions.<br>CO4: Demonstrate the Concept of Python Modules.<br>CO5: Evaluate the Concept of Dictionaries and Sets.<br>List of Programs:<br>1. Program to convert the given temperature from<br>Fahrenheit to Celsius and vice versa depending upon<br>user's choice.<br>2. Write a Python program to construct the following<br>pattern, using a nested loop<br>*<br>***<br>***<br>***<br>***<br>***<br>***<br>** | K1       K1         Programming.       K2         CO2: Illustrate the concept of Conditional and Looping<br>Statements.       K3         CO3: Apply the concept of Functions.       K3         CO4: Demonstrate the Concept of Python Modules.       K4         CO5: Evaluate the Concept of Dictionaries and Sets.       K4         CO5: Evaluate the Concept of Dictionaries and Sets.       K4         List of Programs:<br>1. Program to convert the given temperature from<br>Fahrenheit to Celsius and vice versa depending upon<br>user's choice.       K4         2. Write a Python program to construct the following<br>pattern, using a nested loop       *         **       ***         ***       ***         ***       ***         ***       ***         ***       ***         ***       ***         ***       ***         ***       ***         ***       ***         **       ***         ***       ***         ***       ***         ***       ***         ***       ***         ***       ***         ***       ***         ***       ***         ***       ***         ***       *** |

|                    |  | Learning Reso  | urces  |  |  |  |  |  |  |  |  |  |
|--------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| Text<br>Books      | <ol> <li>Charles Diert<br/>computation</li> <li>Wesley J. Chr<br/>Pearson Educe</li> </ol>                                 | <ol> <li>Charles Dierbach, "Introduction to Computer Science using Python - A computational Problem-solving Focus", Wiley India Edition, 2015.</li> <li>Wesley J. Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education, 2016.</li> </ol> |  |  |  |  |  |  |  |  |  |  |
| Reference<br>Books | <ol> <li>John Zelle, "F<br/>Second edition<br/>ISBN 978-15</li> <li>Michel Daws<br/>Course Techn<br/>1435455009</li> </ol> | Python Programming<br>on, Course Technolog<br>90282410.<br>son, "Python Program<br>hology Cengage Learr  | An Introduction t<br>y Cengage Learnin<br>nming for Absolute<br>ning Publications, 2 | to Computer Science",<br>ng Publications, 2013,<br>e Beginers" , Third Edition,<br>2013, ISBN 978- |  |  |  |  |  |  |  |  |
| Self Study link    | https://matplotlib.c   | org/   |  |  |  |  |  |  |  |  |  |  |
| Website<br>Link    | https://www.w3sch  | nools.com/python/  |  |  |  |  |  |  |  |  |  |  |
|                    | L-Lecture  | T-Tutorial   | P-Practical  | C-Credit   |  |  |  |  |  |  |  |  |

|                                  | B.Com CA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |                   |      |         |         |   |                   |           |         |          |          |        |        |
|----------------------------------|--|-------------------|------|---------|---------|---|-------------------|-----------|---------|----------|----------|--------|--------|
| Course Code                      | Со   | ourse Ti          | tle  | Co      | ourse T | уре   | Sem               | Hours     | L       |          | т        | Р      | С      |
| 23M1UCCA02                       | F<br>PRO(  | GRAMMING GEC THEC |      |         | ORY     | I   | 4                 | 2         |         | -        | 2        | 3      |        |
|                                  |  |                   |      |         | CO-PC   | ) Mappi   | ng                |           |         |          |          |        |        |
| CO Number                        | PO1  | PO2               | PO3  | PO4     | PO5     | PSO1  | PSO2              | PSO3      | PSO4    | 1        | PSO5     |        |        |
| CO1                              | М  | S                 | М    | S       | S       | L   | L                 | S         | S       |          | S        |        |        |
| CO2                              | М  | S                 | S    | S       | S       | S   | М                 | S         | S       |          | S        |        |        |
| CO3                              | S  | S                 | S    | S       | S       | S   | S                 | S         | S       |          | S        |        |        |
| CO4                              | S  | S                 | М    | S       | S       | S   | М                 | S         | S       |          | S        |        |        |
| CO5                              | М  | S                 | М    | L       | L       | S   | S                 | S         | S       |          | S        |        |        |
| Level of Correl<br>between CO ar | ation<br>nd PO   |                   | L-L( | WC      |         |   | M-MEDIUM S-STRONG |           |         |          |          |        |        |
| Tutorial Schedu                  | ule  |                   |      |         |         | Group   | Discuss           | ion, Quiz | z Progr | am,      | Model    | Prepa  | ration |
| Teaching and L                   | earninį  | g Meth            | nods |         |         | Audio Video lecture, Chalk and Board class,<br>Assignment, PPT Presentation and Video |                   |           |         |          |          |        |        |
| Assessment Mo                    | ethods   |                   |      |         |         | Class T<br>ESE  | est, Uni          | t Test, A | ssignm  | nent     | , CIA-I, | CIA-II | and    |
| Designe                          | ed By  |                   |      | V       | erified | Ву  |                   |           | A       | ppro     | oved By  | /      |        |
| Mrs.N.Padmapriya HoD - Dr.V.Vi   |  |                   |      | r.V.Vij | ayadeer | Da  | Memb              | oer Sec   | reta    | ary – Dr | .S.Sha   | hitha  |        |





|             | B.Com CA Syllabus LOCF-  | CBCS with effect from  | 2023-2  | 024 Onw        | ards        |    |          |   |  |
|-------------|--|--|---|----------------|-------------|----|----------|---|--|
| Course Code | Course Title   | Course Type  | Sem   | Hours          | L           | т  | Р        | С |  |
| 23M2UCCA01  | PROGRAMMING IN C++   | GEC THEORY   | П   | 4              | 2           | -  | 2        | 3 |  |
| Objective   | Students impart knowledg<br>implement programming s<br>thinking.   | gramm<br>blems k   | mar in order to design and<br>s by applying Object Oriented |                |             |    |          |   |  |
| S.No.       | Course   | Content  |   | Knowle<br>Leve | edge<br>els | S  | Sessions |   |  |
| I           | Object Oriented Programmer<br>in software - The need for<br>Abstraction – Encapsulatio<br>Basic Elements of C++: Cla<br>members and member fur<br>access specifiers - Static m<br>Singleton class – Destructor | K1   |   | 11             |             |    |          |   |  |
| II          | Friend Functions and Frient<br>– Pointer to objects - the<br>Dynamic memory allocating<br>Overloading: Overloading<br>arguments – Overloading<br>function – Overloading and                                    | objects<br>nces –<br>nction<br>Default<br>erator<br>ember<br>nction.   | K2  |                | 11          |    |          |   |  |
| 111         | Overloading : Overloading<br>comma operators – Conve<br>Types of inheritance – p<br>Virtual Base Class – Bas<br>constructors. <b>Run-time</b><br>Functions.  | g the operators [], (),<br>rsion Functions. <b>Inheri</b><br>rotected access spec<br>se class and derived<br><b>Polymorphism</b> : | -> and<br>tance:<br>ifier –<br>I class<br>Virtual           | КЗ             |             | 10 |          |   |  |
| IV          | Function overriding - Pure<br>base class. <b>Templates</b><br>Overloading a function ten   | e virtual function – Ak<br>: Function templat<br>nplate – Class template   | ostract<br>tes –<br>es.                                     | К4             |             |    | 8        |   |  |

| <ul> <li>1. Write a class to represent a complex number which has member functions to do the following <ul> <li>a. Set and show the value of the complex number</li> <li>b. Add, subtract and multiply two complex numbers</li> <li>c. Multiplying the complex number with a scalar value</li> </ul> </li> <li>2. Write a Point class that represents a 2-d point in a plane. Write member functions to <ul> <li>a. Set and show the value of a point</li> <li>b. Find the distance between two points</li> <li>c. Check whether two points are equal or not</li> </ul> </li> <li>3. Design and implement a class to represent a Solid object. <ul> <li>a. Apart from data members to represent dimensions, use a data member to specify the type of solid.</li> <li>b. Use functions to calculate volume and surface area for different solids.</li> </ul> </li> <li>4. Design a class representing time in hh:mm:ss. Write functions to <ul> <li>a. Set and show the time</li> <li>b. Find the difference between two time objects</li> <li>c. Adding a given duration to a time</li> <li>d. Conversion of the time object to seconds</li> </ul> </li> <li>5. Design a 3x3 matrix class and demonstrate the following: <ul> <li>a. Addition and multiplication of two matrices using operator overloading</li> <li>b. Maintaining a count of the number of matrix object created</li> </ul> </li> </ul>   | -<br>-<br>),<br>s:<br>- К5<br>>   | 10 |
|---|---|----|
| <ol> <li>Write a class to represent a complex number which<br/>has member functions to do the following         <ul> <li>a. Set and show the value of the complex<br/>number</li> <li>b. Add, subtract and multiply two complex<br/>numbers</li> <li>c. Multiplying the complex number with a<br/>scalar value</li> </ul> </li> <li>Write a Point class that represents a 2-d point in a<br/>plane. Write member functions to         <ul> <li>a. Set and show the value of a point</li> <li>b. Find the distance between two points</li> <li>c. Check whether two points are equal or not</li> </ul> </li> <li>Design and implement a class to represent a Solid<br/>object.         <ul> <li>a. Apart from data members to represent<br/>dimensions, use a data member to specify the<br/>type of solid.</li> <li>b. Use functions to calculate volume and surface<br/>area for different solids.</li> </ul> </li> <li>Design a class representing time in hh:mm:ss. Write<br/>functions to         <ul> <li>a. Set and show the time</li> <li>b. Find the difference between two time objects</li> <li>c. Adding a given duration to a time</li> <li>d. Conversion of the time object to seconds</li> </ul> </li> <li>Design a 3x3 matrix class and demonstrate the<br/>following:         <ul> <li>a. Addition and multiplication of two matrices<br/>using operator overloading</li> <li>b. Maintaining a count of the number of matrix<br/>object created</li> <li>c. Design a class called cString to represent a string data<br/>type. Create a data member in the class to represent a<br/>ctring using on a row of cire 100. Write the following</li> </ul></li></ol> |   |    |
| <ul> <li>using operator overloading</li> <li>b. Maintaining a count of the number of matrix object created</li> <li>6. Design a class called cString to represent a string data type. Create a data member in the class to represent a string using an array of size 100. Write the following</li> </ul>  | Image: mail of the set of t |    |
| functionality as member functions:<br>a. Copy Constructor   | ix<br>a<br>a<br>g   |    |

|                    | c. Find the l<br>d. Reversing<br>7. Design a class ca<br>type. Create a data<br>string whose size<br>following as memb<br>a. Copy Con<br>c. Concaten<br>d. Find the l | g two strings<br>ent a string data<br>s to represent a<br>ited. Write the<br>uctor            |  |   |   |
|--------------------|---|---|--|---|---|
|                    | <b>CO1:</b> Recall the ba   | sic concepts of Object  | t-orientation.   | K1  |   |
|                    | binding.  |   |  | K2  |   |
| Course             | <b>CO3:</b> Analyze the c binding.  | concepts of inheritanc  | e and dynamic  | К3  |   |
| Outcome            | <b>CO4:</b> Implement t handling and learn  | he templates and exc<br>how to use STL class  | eption<br>library.   | K4  |   |
|                    | CO5: Evaluate the   | Stream I/O.   | К5   |   |   |
|                    |   | Learning Resou  | irces  |   |   |
| Text<br>Books      | <ol> <li>Herbert Schildt,</li> <li>Grady Booch, Ol</li> </ol>   | C++ - The Complete F<br>oject Oriented Analys   | eference, Third Ec<br>is and Design, Pear  | lition, TMH, 1<br>rson Educatio                           | .999.<br>n, 2008.                         |
| Reference<br>Books | <ol> <li>Bjarne Strousstr</li> <li>J. P. Cohoon a<br/>Programming ar</li> <li>C. J. Lippman, C-</li> </ol>  | up, The C++ Program<br>nd J. W. Davidson,<br>nd Object-Oriented De<br>++ Primer, Third Editio | ming Language, Ad<br>C++ Program De<br>esign, Second Editi<br>on, Addison Wesley | ldison Wesley<br>esign – An I<br>on, McGraw I<br>y, 2000. | r, 2000.<br>ntroduction to<br>Hill, 1999. |
| Website            | 1. <u>https://www.tut</u>   | torialspoint.com/cplu   | splus/index.htm  |   |   |
| LIIIK              | 2. <u>https://www.ge</u>  | onte com/artificial ir  | telligence with  |   |   |
| Self Study<br>Link | c/#:~:text=AI%2   | once.com/artificial-if<br>0in%20C%2B%2B%20<br>tworks.   | involves%20the,to  | %20complex  | %20artificial%                            |
|                    | L-Lecture   | T-Tutorial  | P-Practical  | C-  | Credit                                    |

|                                  | B.C             | om CA  | Syllabu   | is LOC  | F-CBCS   | with effe  | ect from  | 2023-20    | )24 Oı | nwar  | rds       |       |        |  |
|----------------------------------|-----------------|--------|-----------|---------|----------|--|-----------|------------|--------|-------|-----------|-------|--------|--|
| Course Code                      | (               | Course | Title     |         | Course   | Туре   | Sem       | Hours      | 5      | L     | т         | Р     | С      |  |
| 23M2UCCA01                       | PROG            | RAMMIN | NG IN C   | ++      | GEC TH   | IEORY  | Ш         | 4          |        | 2     | -         | 2     | 3      |  |
|                                  |                 |        |           |         | CO-P     | O Mappi  | ing       |            |        |       |           |       |        |  |
| CO Number                        | PO1             | PO2    | PO3       | PO4     | PO5      | PSO1   | PSO2      | PSO3       | PSC    | )4    | PSO5      |       |        |  |
| C01                              | Μ               | S      | Μ         | S       | S        | L  | L         | S          | S      |       | S         |       |        |  |
| CO2                              | Μ               | S      | S         | S       | S        | S  | Μ         | S          | S      |       | S         |       |        |  |
| CO3                              | S               | S      | S         | S       | S        | S  | S         | S          | S      |       | S         |       |        |  |
| CO4                              | S               | S      | Μ         | S       | S        | S  | Μ         | S          | S      |       | S         |       |        |  |
| CO5                              | Μ               | S      | Μ         | L       | L        | S  | S         | S          | S      |       | S         |       |        |  |
| Level of Correl<br>between CO ar | lation<br>nd PO |        | L-L       | ow      |          | M-MEDIUM S-ST  |           |            |        | RONG  |           |       |        |  |
| Tutorial Schedu                  | ıle             |        |           |         |          | Group Discussion, Quiz Program, Model Preparation  |           |            |        |       |           |       |        |  |
| Teaching and Lo                  | earning         | Meth   | ods       |         |          | Audio Video Lecture, Chalk and Board Class,<br>Assignment, PPT Presentation and Video Presentation |           |            |        |       |           |       |        |  |
| Assessment Me                    | ethods          |        |           |         |          | Class To<br>ESC  | est, Unit | : Test, As | signm  | nent, | CIA – I , | CIA – | ll and |  |
| Designe                          | ed By           |        |           |         | Verified | Ву   |           |            |        | Арр   | roved By  |       |        |  |
| Mrs.N.Padmapriya HoD - Dr.       |                 |        | Dr.V.Vija | ayadeep | а        | Member Secretary – Dr.S.Shahitha   |           |            |        |       |           |       |        |  |





|             | B.Com CA Syllabus LOCF-  | CBCS with effect from 2  | 2023-202                                     | 24 Onwa                 | rds              |                  |      |   |
|-------------|--|--|--|-------------------------|------------------|------------------|------|---|
| Course Code | Course Title   | Course Type  | Sem  | Hours                   | L                | т                | Р    | С |
| 23M2UCCA02  | OFFICE AUTOMATION  | GEC THEORY - II  | Ш  | 4                       | 2                | -                | 2    | 3 |
| Objective   | To Impart training for student<br>Word, MS Excel and Power po<br>presentation software.  | s in Microsoft Office which which which which we have a set of the | ch has dif<br>ge on edi                      | ferent co<br>tor, sprea | mpone<br>Id shee | nts lik<br>t and | e MS |   |
| S.No.       | Cours  | e Content  |  | Knowl<br>Leve           | edge<br>els      | Sessions         |      |   |
| I           | Introductory concepts: Hardw<br>– CPU-Input Devices: Key boo<br>devices: Monitor, Printer. Int<br>Introduction to Programming                    | nory unit<br>. Output<br>ystems -  | K1   | 9                       |                  |                  |      |   |
| II          | Word Processing: File menu<br>formatting, bullets and numb<br>formatting – Paragraph align<br>footers, printing – Preview, op                    | – tools,<br>ocument<br>lers and  | K2   | 9                       |                  |                  |      |   |
|             | <b>Spreadsheets:</b> Excel – ope<br>formatting, navigating; Forn<br>copying.   | d data,<br>ing and   | K3   | 11                      |                  |                  |      |   |
| IV          | <b>Charts</b> – creating, formattin<br>preparation of financial sta<br>analytics.  | g and printing, analysis<br>atements, introduction   | tables,<br>to data                           | К4                      | 7                |                  |      |   |
| V           | <b>Power point</b> : Introduction<br>Understanding slide typecase<br>slide shows. Applying special<br>pictures – Slide transition – A<br>timers. | to Power point - Fea<br>ting & viewing slides –<br>al object – including ob<br>nimation effects, audio ir  | tures –<br>creating<br>ojects &<br>nclusion, | K4                      | ļ                |                  | 9    |   |
|             | <b>CO1:</b> To Discuss about the bas<br>and its components.  | sic concepts of computer   | systems                                      | K                       | L                |                  |      |   |
|             | <b>CO2:</b> To Identify the concepts   | of a word processing pac   | ckage.                                       | K                       | 2                |                  |      |   |
| Course      | <b>CO3:</b> To Apply the basic conce<br>and its calculations.  | heet   | КЗ   |                         |                  |                  |      |   |
| Outcome     | <b>CO4:</b> To Analyze the concepts system and its queries.  | of database managemer  | nt   | K                       |                  |                  |      |   |
|             | <b>CO5:</b> To Design a presentation animation effects.  | vith   | K4   |                         |                  |                  |      |   |

### List of Programs:-

#### Word:

Task 1 : Using word to create project certificate. Features to be covered:-Formatting Fonts, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in Word.

Task 2 : Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check , Track Changes.

Task 3 : Creating a Newsletter : Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs

#### Excel:

Task1: Creating a Scheduler - Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text.

Task 2 : Calculations - Features to be covered:- Cell Referencing, Formulae in excel – average, standard deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP Task 3 : Performance Analysis - Features to be covered:- Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting.

#### **MS Power Point:**

Task1 :Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered includes :- PPT Orientation, Slide Layouts, Inserting Text, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows.

Task 2 : This session helps students in making their presentations interactive. Topics covered includes: Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts.

Task 3 : Concentrating on the in and out of Microsoft power point. Helps them learn best practices in designing and preparing power point presentation. Topics covered includes :- Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides.Auto content wizard, Slide Transition, Custom Animation, Auto Rehearsing.

| LEARNING RESOURCES |                                      |  |                    |                        |  |  |  |  |  |  |  |
|--------------------|--------------------------------------|--|--------------------|------------------------|--|--|--|--|--|--|--|
| Text<br>Book       | 1. Peter Norton, "In                 | Peter Norton, "Introduction to Computers" –Tata McGraw-Hill. |                    |                        |  |  |  |  |  |  |  |
| Reference<br>Book  | 1. Jennifer Ackerma<br>McGraw- Hill. | ın Kettel, Guy Hat-Da  | vis, Curt Simmons, | "Microsoft 2003", Tata |  |  |  |  |  |  |  |
| Website<br>Link    | Web content from I                   | NDL / SWAYAM or op   | en source web res  | ources.                |  |  |  |  |  |  |  |
|                    | L-Lecture                            | T-Tutorial   | P-Practical        | C-Credit               |  |  |  |  |  |  |  |

| B.Com CA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |                 |                 |               |                                     |                    |                            |           |          |          |      |   |   |
|--|-----------------|-----------------|---------------|-------------------------------------|--------------------|----------------------------|-----------|----------|----------|------|---|---|
| Course Code  | Co              | ourse T         | itle          | C                                   | ourse <sup>-</sup> | Туре                       | Sem       | Hours    | L        | т    | Р | С |
| 23M2UCCA02   | AU              | OFFICE<br>TOMAT | FICE GEC THEO |                                     |                    | DRY - II                   | Ш         | 4        | 2        | -    | 2 | 3 |
| CO-PO Mapping  |                 |                 |               |                                     |                    |                            |           |          |          |      |   |   |
| CO Number  | PO1             | PO2             | PO3           | PO4                                 | PO5                | PSO1                       | PSO2      | PSO3     | PSO4     | PSO5 |   |   |
| C01  | Μ               | S               | S             | S                                   | S                  | L                          | Μ         | S        | S        | S    |   |   |
| CO2  | Μ               | S               | S             | S                                   | S                  | L                          | м         | S        | S        | S    | S |   |
| CO3  | S               | S               | S             | S                                   | S                  | S                          | S         | S S      |          | S    |   |   |
| CO4  | S               | Μ               | S             | S                                   | S                  | S                          | S         | S        | S        | S    |   |   |
| CO5  | Μ               | S               | S             | L                                   | L                  | S                          | S         | S        | S S      |      |   |   |
| Level of Corre<br>between CO a                                 | lation<br>nd PO |                 | L-L           | ow                                  |                    | M-MEDIUM S-STRONG          |           |          |          |      |   |   |
| Tutorial Sched   | ule             |                 |               |                                     |                    | Home T                     | est, E-As | signment |          |      |   |   |
| Teaching and I   | earnin          | g Met           | hods          |                                     |                    | Presentation, Chalk & Talk |           |          |          |      |   |   |
| Assessment M   | ethods          | ;               |               |                                     |                    | Assignm                    | nent, Tes | t, Quiz  |          |      |   |   |
| Designed By Verified   |                 |                 |               |                                     | Ву                 |                            |           | Арр      | roved By | ,    |   |   |
| Mrs.N.Padmapriya HoD - Dr.V.Vij                                |                 |                 |               | ayadeepa Member Secretary – Dr.S.Sh |                    |                            |           | ahitha   |          |      |   |   |





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|-------------|--|---|----------------------------|---------------------------------|---------------------|----------------|------------|----------|--|--|--|--|--|--|
| Course Code | Course Title   | Course Type   | Sem                        | Hours                           | L                   | т              | Р          | С        |  |  |  |  |  |  |
| 23M3UCCA03  | WEB TECHNOLOGY(PHP)  | GEC THEORY  | III                        | 4                               | 2                   | -              | 2          | 3        |  |  |  |  |  |  |
| Objective   | Students Learn the basics of PHP and MySQL and develop dynamic websites for user<br>on the Internet, develop websites ranging from simple online information forms to<br>complex e-commerce sites with MySQL database, building, connectivity, and<br>maintenance. |   |                            |                                 |                     |                |            |          |  |  |  |  |  |  |
| Unit        | <b>C</b> οι  | urse Content  |                            |                                 |                     | Knowle<br>Leve | edge<br>Is | Sessions |  |  |  |  |  |  |
| I           | Introduction of PHP: Intr<br>Concepts – Creating first<br>Operators – Storing Data<br>types – Setting and Chec<br>Constants – Manipulating   | ent<br>and<br>ata<br>sing   | K1                         | 10                              |                     |                |            |          |  |  |  |  |  |  |
| II          | <b>Controlling Program Fl</b><br>Statements - Writing Mor<br>– Repeating Action with<br>Numeric Functions.   | gram Flow: Writing Simple Conditional<br>ting More Complex Conditional Statements<br>ion with Loops – Working with String and<br>ns. K2 |                            |                                 |                     | 10             |            |          |  |  |  |  |  |  |
| 111         | Working with Arrays: St<br>Arrays with Loops and Ite<br>Working with Array Fund<br>Times.  | oring Data in Arr<br>rations –Using Ar<br>ctions – Working  | rays –<br>rays w<br>g with | Process<br>vith Forn<br>Dates a | sing<br>ns -<br>and | K3             |            | 9        |  |  |  |  |  |  |
| IV          | Using Functions and Class<br>Functions- Creating Classe  | ses: Creating User<br>es – Using Advanc   | r-Defir<br>ed OC           | ned<br>)P Conce                 | epts.               | КЗ             |            | 9        |  |  |  |  |  |  |
| V           | Working with Database a<br>SQL- Using MySQL-Addi<br>Errors –Using SQLite<br>Introduction XML - Simple<br>Current Trends-* Web De   | and<br>ling<br>on.  | K4                         |                                 | 10                  |                |            |          |  |  |  |  |  |  |
|             | **Self Study.  |   |                            |                                 |                     |                |            |          |  |  |  |  |  |  |
|             | <b>CO1:</b> Recall the concepts development of Internet  | of PHP scripting la<br>websites.  | angua                      | ge for th                       | e                   | K1             |            |          |  |  |  |  |  |  |
| Course      | <b>CO2:</b> Understand the basi program and XML concep   | c functions of My   | SQL d                      | atabase                         |                     | К2             |            |          |  |  |  |  |  |  |
| Outcome     | <b>CO3:</b> Build the relationshi Server side scripts.   | p between the cli   | ent si                     | de and t                        | he                  | К3             |            |          |  |  |  |  |  |  |

|                        | CO4: Analyze t  | the Concept of I   | Functions and C | lasses.    | КЗ       |  |  |  |  |  |  |
|------------------------|---|--|-----------------|------------|----------|--|--|--|--|--|--|
|                        | CO5: Examine  | the Database N   | lanipulation an | d Handling | К4       |  |  |  |  |  |  |
|                        | Exceptions.   |  |                 |            |          |  |  |  |  |  |  |
|                        |   | Learn  | ning Resources  |            |          |  |  |  |  |  |  |
| Text<br>Books          | Vikram Vaswani,   | /ikram Vaswani, "PHP A Beginner's Guide", Tata McGraw Hill, 2008.  |                 |            |          |  |  |  |  |  |  |
| Reference<br>Books     | 1. Steven Holzne<br>2. Steven Holzne  | Steven Holzner, "The PHP Complete Reference", Tata McGraw Hill, 2007.<br>Steven Holzner, "Spring into PHP", Tata McGraw Hill 2011, 5thEdition. |                 |            |          |  |  |  |  |  |  |
| Website<br>Link        | Website     https://www.w3schools.com/php/       Link     https://www.phptpoint.com/php-tutorial-pdf/ |  |                 |            |          |  |  |  |  |  |  |
| Self-Study<br>Material | https://blog.hub  | https://blog.hubspot.com/website/web-development-trends  |                 |            |          |  |  |  |  |  |  |
|                        | L-Lecture   | T-Tutorial   | P-Practical     |            | C-Credit |  |  |  |  |  |  |

#### List of Programs:

1. Write a PHP program which adds up columns and rows of given table

2. Write a PHP program to compute the sum of first n given prime numbers

3. Write a PHP program to find valid an email address

4. Write a PHP program to convert a number written in words to digit.

5. Write a PHP script to delay the program execution for the given number of seconds.

6. Write a PHP script, which changes the colour of the first character of a word

7. Write a PHP program to find multiplication table of a number.

8. Write a PHP program to calculate Factorial of a number.

9. Write a PHP code to create a student mark sheet table. Insert, delete and modify records.

10. From a XML document (email.xml), write a program to retrieve and print all the email addresses from the document using XML.

11. From a XML document (tree.xml), suggest three different ways to retrieve the text

Value 'John' using the DOM.

12. Write a program that connects to a MySQL database and retrieves the contents of any

One of its tables as an XML file. Use the DOM.

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|--|---|-------|-----------|--|--|-----------|------|-------------|-----------------|-----|--------|------------------------|--------|---|--|--|--|--|
| Course Code                                |   | Cou   | ırse Tit  | le   | Co   | ourse Typ | be   | Sem         | Hou             | ırs | L      | Т                      | Р      | С |  |  |  |  |
| 23M3UCCA03                                 | WEB                                       | TECHI | NOLOG     | OGY(PHP) GEC THEORY                                |  |           | III  | 4           |                 | 2   | -      | 2                      | 3      |   |  |  |  |  |
|  |   |       |           |  | CO –   | PO Map    | ping |             |                 |     |        |                        |        |   |  |  |  |  |
| CO Number                                  | r   | PO1   | PO2       | PO3  | PO4  | O4 PO5    |      | 01 F        | <b>PSO2</b>     | PS  | 503    | PSO4                   | PSO5   |   |  |  |  |  |
| CO1  |   | L     | М         | S  | S  | S         | 5    | 5           | М               |     | S      | М                      | S      |   |  |  |  |  |
| CO2  |   | S N   |           | М  | S  | S         | S    | 5           | S               |     | S      | Μ                      | S      |   |  |  |  |  |
| CO3  | <b>CO3</b> S                              |       | S         | М  | S  | S         | 9    | 5           | М               |     | S      | Μ                      | S      |   |  |  |  |  |
| CO4  | <b>CO4</b> M                              |       | S         | S  | Μ  | S         | 9    | 5           | М               |     | S      | Μ                      | S      |   |  |  |  |  |
| CO5  |   | S     | S         | S  | S  | S         | S    | 5           | М               |     | S      | S                      | S      |   |  |  |  |  |
| Level of<br>Correlatio<br>between CO<br>PO | n<br>and                                  |       | I         | L-LOW N  |  |           |      |             | M-MEDIUM S-STRC |     |        |                        | STRONG | 5 |  |  |  |  |
| Tutorial Schedu                            | le  |       | Gro       | oup Dise   | cussior  | n, Quiz p | rogr | am, I       | Model           | pre | epara  | tion                   |        |   |  |  |  |  |
| Teaching and Le<br>Methods                 | earnin                                    | g     | Au<br>Pre | dio Vide<br>esentati                               | tio Video lecture, Chalk and Board class, Assignment, PPT sentation and Video Presentation |           |      |             |                 |     |        |                        |        |   |  |  |  |  |
| Assessment Me                              | thods                                     |       | Cla       | ss Test,   | Unit T   | est, Assi | gnm  | ent, C      | CIA-I, C        | IA- | ll and | ESE                    |        |   |  |  |  |  |
| Designed By                                |   |       |           |  | /erifie  | d By      |      | Approved By |                 |     |        |                        |        |   |  |  |  |  |
| Mr.P.Mohankumar                            |   |       |           | HoD - Mr.G.Selvakumar Member Secretary - Dr.S.Shah |  |           |      |             |                 |     |        | tha                    |        |   |  |  |  |  |




|             | B.Com CA Syllabu  | us LOCF-CBCS with   | effect fi   | rom 2023  | -202        | 4 On | wards |   |  |  |
|-------------|---|---|---|---|-------------|------|-------|---|--|--|
| Course Code | Course Title  | Course Type   | Sem   | Hours   | L           | т    | Р     | С |  |  |
| 23M3UCCA04  | PROGRAMMING IN<br>JAVA  | GEC THEORY  | ш   | 3   | 1           | -    | 2     | 3 |  |  |
| Objective   | Students Learn the fun<br>with programming in JA  | ed p:   | rogra   | ammin   | g and equip |      |       |   |  |  |
| Unit        | С   | К   | nowl<br>Leve  | edge<br>els   | Sessions    |      |       |   |  |  |
| I           | Introduction: Review or<br>buzzwords (Platform in<br>JVM architecture –Jav<br>method - Java Consol<br>program - Data types<br>casting- Java Console<br>control statements - Sta<br>String Buffer Classes. | f Object-Oriented c<br>ndependence, Port<br>va Program structu<br>e output(System.o<br>- Variables - type<br>input: Buffered inp<br>atic Data - Static Me                                   | oncepts<br>ability,<br>ire - –J<br>ut) - sir<br>conver<br>out - op<br>ethod - S | - Java<br>Threads)-<br>ava main<br>nple java<br>rsion and<br>perators -<br>String and |             | K1   | L     | 6 |  |  |
| II          | Java user defined C<br>constructors - Inherit<br>inheritance - Member a<br>key word - Method C<br>Abstract classes - Dyna<br>keyword .  | Classes and Object<br>cance: Basic conce<br>access rules - Usage<br>Overloading - Met<br>mic method dispate   | cts –<br>epts -<br>of this a<br>hod ove<br>ch - Usa                             | Arrays –<br>Types of<br>and Super<br>erriding -<br>ge of final                        |             | KZ   | 6     |   |  |  |
| 111         | Packages: Definition<br>Packages -Interfaces: D<br>Extending Interfaces.<br>throw - throws finally<br>Exception classes - gark  | - Access Protect<br>efinition – Impleme<br>Exception Handlin<br>y – Built-in exceptio<br>page collection, fina  | ion - I<br>entation<br>g: try -<br>ns - Crea<br>Ilize.                          | Importing<br>–<br>– catch -<br>ating own  |             | Ka   | 3     | 6 |  |  |
| IV          | Multithreaded Progra<br>interface – Synchroniza<br>– Using synchroni<br>Communication – Deac  | Multithreaded Programming: Thread Class - Runnable<br>interface – Synchronization – Using synchronized methods<br>– Using synchronized statement - Interthread<br>Communication – Deadlock. |   |   |             |      |       |   |  |  |
| v           | Adapter classes - In<br>Collections. Framewor<br>Enumeration-List and<br>*Current Trends: DevO<br>Serverless Architecture   |   | K5  | 6   |             |      |       |   |  |  |
|             | ** Self Study.  |   |   |   |             |      |       |   |  |  |

|                        | <b>CO1:</b> Remem oriented prog   | bering the func<br>ramming                                 | amental knowl  | edge of object-                      | K1             |            |  |  |  |  |  |  |
|------------------------|---|--|--|--------------------------------------|----------------|------------|--|--|--|--|--|--|
|                        | CO2: Underst  | anding the basi  | c constructs of  | Core Java.                           | К2             |            |  |  |  |  |  |  |
| Course<br>Outcome      | <b>CO3:</b> Apply thand exception   | ne concepts inh<br>handling of Co                          | eritance, packa<br>pre Java.                             | ges, interfaces                      | К3             |            |  |  |  |  |  |  |
|                        | CO4: Analyze  | the concepts o   | f Multithreadin  | 5.                                   | К4             |            |  |  |  |  |  |  |
|                        | CO5: Evaluate   | e adapter classe   | 25.  |                                      | К5             |            |  |  |  |  |  |  |
|                        |   | Lear   | ning Resources   |                                      |                |            |  |  |  |  |  |  |
| Text<br>Books          | 1Herbert Schildt, The Complete Reference, Tata McGraw Hill, New Delhi, 7th<br>Edition, 2010.<br>2Gary Corne, Core Java 2 Volume I – Fundamentals, Addison Wesley, 1999. |  |  |                                      |                |            |  |  |  |  |  |  |
| Reference<br>Books     | Head First Jav<br>Programming   | a, O"Rielly Pub<br>, 7th Edition, Pe                       | lications, Y. Dan<br>earson Educatio                     | iel Liang, Introdu<br>n India, 2010. | iction to Java |            |  |  |  |  |  |  |
| Website<br>Link        | <ol> <li><u>https://ocv</u><br/>iap-2010/page</li> <li><u>https://ww</u></li> </ol>   | v.mit.edu/cour<br>es/lecture-note<br>vw.tutorialspoin      | <u>ses/6-092-intro</u><br>e <u>s/</u><br>nt.com/java/jav | duction-to-progr<br>a_tutorial.pdf   | amming-in-java | a-january- |  |  |  |  |  |  |
| Self-Study<br>Material | https://www.  | ittps://www.knowledgehut.com/blog/programming/java-future. |  |                                      |                |            |  |  |  |  |  |  |
|                        | L-Lecture   | T-Tutorial   | P-Practical  |                                      | C-Credit       |            |  |  |  |  |  |  |

### List of Programs:

1. Write a Java program that prompts the user for an integer and then prints out all the prime numbers up to that Integer.

2. Write a Java program to multiply two given matrices.

3. Write a Java program that displays the number of characters, lines and words in a text.

4. Generate random numbers between two given limits using Random class and print messages

according to the range of the value generated.

5. Write a program to do String Manipulation using Character Array and perform the following string operations:

a) String length

b) Finding a character at a particular position

c) Concatenating two strings.

6. Write a program to perform the following string operations using String class:

a) String Concatenation

b) Search a substring

c) To extract substring from given string.

7. Write a program to perform string operations using String Buffer class:

a) Length of a string

b) Reverse a string

c) Delete a substring from the given string.

8. Write a java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.
 9. Write a threading program which uses the same method asynchronously to print the numbers 1 to 10 using Thread1 and to print 90 to 100 using Thread2.

10. Write a program to demonstrate the use of following exceptions. a) Arithmetic Exception b) Number Format Exception c) Array Index Out of Bound Exception d) Negative Array Size Exception

|   | B.Com C | A Sylla     | bus LO              | CF-CBC             | CS with e            | ffect         | t fro          | m 20           | )23-20       | 24 On   | wards   |         |     |
|---|---------|-------------|---------------------|--------------------|----------------------|---------------|----------------|----------------|--------------|---------|---------|---------|-----|
| Course Code                                     | Cou     | rse Titl    | е                   | Οοι                | urse Typ             | e             | Se             | m              | Hours        | L       | т       | Р       | С   |
| 23M3UCCA04                                      | PROGR/  | AMMI<br>AVA | NG IN               | GEC                | THEORY               | ,             | II             | I              | 3            | 1       | -       | 2       | 3   |
|   |         |             |                     | CO ·               | - PO Maj             | opin          | g              |                |              |         |         |         |     |
| CO Number                                       | PO1     | PO2         | PO3                 | PO4                | PO5                  | PS            | 01             | PSC            | )2 P         | SO3     | PSO4    | PSO     | 5   |
| CO1   | L       | S           | S                   | S                  | S                    | S             | 5              | Μ              |              | S       | S       | S       |     |
| CO2   | S       | М           | М                   | S                  | S                    | S             | 5              | S              |              | S       | S       | S       |     |
| CO3   | S       | S           | М                   | S                  | S                    | S             | 5              | Μ              |              | S       | М       | S       |     |
| CO4   | S       | S           | S                   | М                  | S                    | N             | 1              | Μ              |              | S       | S       | S       |     |
| CO5   | М       | S           | S                   | S                  | S                    | 9             | 5              | Μ              |              | S       | S       | S       |     |
| Level of<br>Correlation<br>between CO and<br>PO | Ł       | I           | L-LOW M-ME          |                    |                      |               |                |                | IUM          |         |         | S-STRC  | ING |
| <b>Tutorial Schedule</b>                        |         | G           | roup Di             | scussio            | on, Quiz             | prog          | ram            | , Mo           | odel pr      | epara   | tion    |         |     |
| Teaching and Lea<br>Methods                     | rning   | A<br>Pi     | udio Vio<br>resenta | deo lec<br>tion ar | ture, Ch<br>nd Video | alk a<br>Pres | ind E<br>senta | Board<br>atior | d class<br>า | , Assig | gnment, | PPT     |     |
| Assessment Meth                                 | nods    | C           | ass Tes             | t, Unit            | Test, Ass            | ignn          | nent           | t, CIA         | -I, CIA      | II and  | ESE     |         |     |
| Designed  | l By    |             |                     | Verifi             | ed By                |               |                |                |              | Ар      | proved  | Ву      |     |
| Mrs. N.Hyru                                     |         | HoD -       | – Mr.G              | .Selvaku           | mar                  |               | N              | /lembe         | r Secr       | etary – | Dr.S.Sl | nahitha |     |



# MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE



## (Autonomous) RASIPURAM - 637408.

| B.Com CA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |   |   |   |  |                                |          |        |       |       |  |  |  |  |
|--|---|---|---|--|--------------------------------|----------|--------|-------|-------|--|--|--|--|
| Course Code  | Course Title  | Course Type   | Sem   | Hours  |                                | L        | т      | Р     | С     |  |  |  |  |
| 23M4UCCA04   | RELATIONAL<br>DATABASE<br>MANAGEMENT<br>SYSTEM  | GEC THEORY  |   | 3  | -                              | -        | 3      |       |       |  |  |  |  |
| Objective  | Students Learn the<br>Normalization techn   | Structured Query  | Langu<br>databa                                     | age (SQL<br>ase.   | .) ar                          | nd its s | syntax | and A | Apply |  |  |  |  |
| Unit   |   |   | Know<br>Lev   | ledge<br>els   | Sess                           | sions    |        |       |       |  |  |  |  |
| I  | Introduction to DBN<br>Database Managem<br>Components - Archit<br>Diagram   | Introduction to DBMS– Data and Information - Database –<br>Database Management System – Objectives- Advantages –<br>Components - Architecture. ER Model: Building blocks of ER<br>Diagram |   |  |                                |          |        |       |       |  |  |  |  |
| II   | Relationship Degree<br>– ISA relationship<br>Composition – A<br>Database. Introduct<br>Objectives – Tools –                                 | e – Classification – El<br>o – Constraints<br>dvantages Structu<br>tion to Relational<br>Redundancy and Da  | R diagra<br>–Aggreg<br>re of<br>Databas<br>ta Anon  | m to Tabl<br>gation a<br>Relatior<br>se Desigr<br>naly     | les<br>nd<br>nal<br>n -        | K        | 2      |       | 8     |  |  |  |  |
| ш  | <b>Normalization</b> : Fund<br>1NF – 2NF – 3NF – BO<br>Security   | ctional Dependency<br>CNF. Transaction Pro  | · - Norr<br>ocessing                                | nalization<br>; – Databa                                   | ı —<br>ise                     | K        | 3      |       | 8     |  |  |  |  |
| IV   | Introduction to SQ<br>Manipulation Comm<br>Data Definition Co<br>Keywords – Joinin<br>Relational SET Opera<br>- MINUS.                      | L: Data Definition<br>nands – SELECT Qu<br>mmands – Additio<br>g Database Table<br>ators: UNION – UNIC  | Comma<br>Jeries –<br>nal SEI<br>s. Adva<br>DN ALL – | nds – Da<br>- Additior<br>ECT Que<br>anced SC<br>- INTERSE | ata<br>nal<br>ery<br>QL:<br>CT | K4       | 4      |       | 8     |  |  |  |  |
| V  | SQL Join Operators:<br>Clause – JOIN ON C<br>Correlated Queries:<br>FROM. SQL Function<br>Function – String Function<br>*Current Trends – A | K!  | 5   |  | 8                              |          |        |       |       |  |  |  |  |
|  | ** Self Study.  |   |   |  |                                |          |        |       |       |  |  |  |  |

|            |   |  |                         |               | · · · · · · |  |  |  |  |  |  |  |
|------------|---|--|-------------------------|---------------|-------------|--|--|--|--|--|--|--|
|            | <b>CO1:</b> Recall the basic cor  | CO1: Recall the basic concepts of database system K1 |                         |               |             |  |  |  |  |  |  |  |
|            | CO2: Design a Data mode   | el and Schemas in RDBI                               | VIS                     | К2            |             |  |  |  |  |  |  |  |
| Course     | CO3: Competent in use c   | of SQL   |                         | КЗ            |             |  |  |  |  |  |  |  |
| Outcome    | CO4: Analyses functional  | dependencies for desi                                | gning robust            | KA.           |             |  |  |  |  |  |  |  |
|            | Database  |  |                         | Ν4            |             |  |  |  |  |  |  |  |
|            | CO5: Create the Database using queries K5   |  |                         |               |             |  |  |  |  |  |  |  |
|            | Learning Resources  |  |                         |               |             |  |  |  |  |  |  |  |
| Text       | 1. S. Sumathi, S. Esakkirajan, "Fundamentals of Relational Database Management    |  |                         |               |             |  |  |  |  |  |  |  |
| Books      | System", Springer International Edition 2007.                                     |  |                         |               |             |  |  |  |  |  |  |  |
|            | 1. Abraham Silberchatz, Henry F. Korth, S. Sudarshan, "Database System Concepts", |  |                         |               |             |  |  |  |  |  |  |  |
| Reference  | McGraw Hill 2019, 7th Edition.  |  |                         |               |             |  |  |  |  |  |  |  |
| Books      | 2. Alexis Leon & Mathew   | vs Leon, "Fundamental                                | s of DBMS", Vijay Nicol | e Publicatio  | ons         |  |  |  |  |  |  |  |
|            | 2014, 2ndEdition.   |  |                         |               |             |  |  |  |  |  |  |  |
| Wahsita    | 1. https://nptel.ac.in/cou  | urses/106106093/                                     |                         |               |             |  |  |  |  |  |  |  |
| Vebsite    | 2. https://nptel.ac.in/cou  | urses/106106095/                                     |                         |               |             |  |  |  |  |  |  |  |
| LIIIK      | 3. NPTEL & MOOC course  | es titled Relational Data                            | abase Management Sys    | stems         |             |  |  |  |  |  |  |  |
| Solf Study | 1. https://www.techtarg   | et.com/searchbusiness                                | analytics/definition/an | nalytic-datak | <u>oase</u> |  |  |  |  |  |  |  |
| Material   | 2. https://ebookcentral.proquest.com/lib/inflibnet-                               |  |                         |               |             |  |  |  |  |  |  |  |
| Wateria    | ebooks/detail.action?docID=4821272  |  |                         |               |             |  |  |  |  |  |  |  |
|            | L-Lecture T-Tutorial P-Practical C- Credit  |  |                         |               |             |  |  |  |  |  |  |  |

|                       | B.Co                | om CA S           | yllabus           | LOCF-CE   | BCS with              | n effect fr            | om 2         | 2023-2           | 024 On         | wa    | rds  |                  |                  |             |
|-----------------------|---------------------|-------------------|-------------------|---|-----------------------|------------------------|--------------|------------------|----------------|-------|------|------------------|------------------|-------------|
| Course Code           | 2                   | Coι               | urse Titl         | e   | Co                    | ourse Type             | 9            | Sem              | Hour           | rs    | L    | т                | Ρ                | С           |
| 23M4UCCA0             | 4 RI<br>M           | ELATION<br>IANAGE | NAL DAT<br>MENT S | TABASE<br>SYSTEM                                  | GE                    | C THEOR                | Y            | IV               | 3              |       | 3    | -                | -                | 3           |
|                       |                     |                   |                   | C   | ) - PO N              | /lapping               |              |                  |                |       |      |                  |                  |             |
| CO Number             | PO1                 | PO2               | PO3               | PO4   | PO5                   | PSO1                   | PS           | 502              | PSO3           | P     | SO4  | PS               | 05               |             |
| CO1                   | Μ                   | S                 | М                 | S   | S                     | L                      | ſ            | М                | S              |       | S    |                  | S                |             |
| CO2                   | Μ                   | S                 | S                 | S   | S                     | S                      | ſ            | М                | S              |       | S    |                  | S                |             |
| CO3                   | S                   | S                 | S                 | S   | S                     | S                      |              | S                | S              |       | S    |                  | S                |             |
| CO4                   | S                   | S                 | М                 | S   | S                     | S                      | ſ            | И                | S              |       | S    |                  | S                |             |
| CO5                   | Μ                   | S                 | М                 | L   | L                     | S                      |              | S                | S              |       | S    |                  | S                |             |
| Level o<br>betwe      | of Corre<br>en CO a | elation<br>and PO |                   | L-LOW M-MEDIUM                                    |                       |                        |              |                  |                |       |      | S.               | -STRC            | NG          |
| <b>Tutorial Schee</b> | lule                |                   |                   | Group Discussion, Quiz program, Model preparation |                       |                        |              |                  |                |       |      |                  |                  |             |
| Teaching and          | Learnir             | ng Meth           | nods              | Audio<br>Presen                                   | Video le<br>Itation a | cture, Ch<br>and Video | alk a<br>Pre | and Bo<br>sentat | ard cla<br>ion | ss, i | Assi | gnme             | nt, P            | PT          |
| Assessment M          | 1ethod              | s                 |                   | Class T   | est, Uni              | t Test, As             | signr        | nent,            | CIA-I, CI      | A-II  | and  | I ESE            |                  |             |
| De                    | signed              | Ву                |                   |   |                       | Verified               | Ву           |                  |                |       | А    | ppro             | ved B            | у           |
| Mrs                   | Mrs.K.Gayathri      |                   |                   |   |                       | HoD - Mr.G.Selvakumar  |              |                  |                |       |      | iber S<br>r.S.Sł | Secret<br>Nahith | ary -<br>Ia |





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|-------------|--|--|--|---|---|-----------------------|-------------------|----------|--|--|--|--|--|--|
| Course Code | Course Title   | Course Type  | Sem                                      | Hours                                   | L                                       | т                     | Р                 | С        |  |  |  |  |  |  |
| 23M4UCCA05  | INTRODUCTION TO<br>DATA SCIENCE  | GEC THEORY   | IV                                       | 3                                       | 3                                       | -                     | -                 | 3        |  |  |  |  |  |  |
| Objective   | Students Learn the va<br>predictive modelling,   | arious data collecti<br>descriptive model  | on and<br>ling an                        | integrat<br>d effectiv                  | ion, exp<br>ve comn                     | loratory              | / data ana<br>on. | lysis,   |  |  |  |  |  |  |
| Unit        |  | Course Conten  | t  |   |   | Kno                   | owledge<br>.evels | Sessions |  |  |  |  |  |  |
| I           | Introduction: Benefit<br>process – Big data ec   | ce   | К1                                       | 7                                       |   |                       |                   |          |  |  |  |  |  |  |
| II          | The Data science pro<br>data - transformatio<br>building - Data Visual   | <b>The Data science process:</b> Overview – research goals - retrieving<br>data - transformation – Exploratory Data Analysis – Model<br>building - Data Visualization. |  |   |   |                       |                   |          |  |  |  |  |  |  |
| 111         | <b>Algorithms:</b> Machine<br>Types – Supervised –   | e learning algorithn<br>Unsupervised - Se  | ns – Me<br>mi-sup                        | odelling<br>ervised.                    | process                                 | _                     | КЗ                | 7        |  |  |  |  |  |  |
| IV          | Introduction to Hado<br>Map Reduce– No SQI   | <b>oop:</b> Hadoop frame<br>L – ACID – CAP – BA  | ework –<br>ASE – ty                      | - Spark –<br>/pes.                      | replacir                                | ng                    | К3                | 7        |  |  |  |  |  |  |
| v           | Case Study: Prediction<br>retrieval – preparat<br>presentation and aut<br>Current Trends* : Ma<br>learning – Machine | on of Disease - Sett<br>tion - exploration<br>omation.<br>Ichine Leraning - N<br>Learning Methods  | ing res<br>n - Di<br><b>1achine</b><br>* | earch go<br>sease p<br>e <b>Learnin</b> | als - Da<br>rofiling<br><b>g vs dee</b> | ta<br>-<br>: <b>p</b> | К4                | 8        |  |  |  |  |  |  |
|             | *Self Study*   |  |  |   |   |                       |                   |          |  |  |  |  |  |  |

|                        | <b>CO1:</b> Recall the scope and   | d applications of data so  | ience.   | K1  |  |  |  |  |  |  |  |
|------------------------|--|--|--|---|--|--|--|--|--|--|--|
|                        | CO2: Summarize the Data  | a Science Process.   |  | К2  |  |  |  |  |  |  |  |
| Course<br>Outcome      | <b>CO3:</b> Utilize the basic learning.  | principles and techniq   | ues of machine   | КЗ  |  |  |  |  |  |  |  |
|                        | <b>CO4:</b> Develop the Hadoo  | p framework and it type  | S.   | КЗ  |  |  |  |  |  |  |  |
|                        | <b>CO5:</b> Examine the differe learning.  | nt fields of data science  | and machine  | К4  |  |  |  |  |  |  |  |
|                        | Learning Resources   |  |  |   |  |  |  |  |  |  |  |
| Text<br>Books          | <ol> <li>Davy Cielen, Arno D. B. Meysman, Mohamed Ali, "Introducing Data Science",<br/>manning publications 2016</li> <li>Roger Peng, "The Art of Data Science", lulu.com 2016.</li> <li>MurtazaHaider, "Getting Started with Data Science – Making Sense of Data with<br/>Analytics", IBM press, E-book.</li> </ol> |  |  |   |  |  |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Davy Cielen, Arno D.B.<br/>Machine Learning, and M</li> <li>Annalyn Ng, Kenneth S<br/>Added", 2015,1st Edition</li> <li>Cathy O'Neil, Rachel Sc<br/>O'Reilly Media 2013.</li> <li>Lillian Pierson, "Data Sc</li> </ol>  | Meysman, Mohamed A<br>lore, Using Python Tools<br>oo, "Numsense! Data Sc<br>hutt, "Doing Data Scien<br>cience for Dummies", 20 | li,"Introducing Data Sc<br>s", Dreamtech Press 20<br>cience for the Layman:<br>ce Straight Talk from t<br>D15 II Edition | ience: Big Data,<br>116.<br>No Math<br>he Frontline", |  |  |  |  |  |  |  |
| Website<br>Link        | 1. <u>https://www.w3schoo</u><br>2. <u>https://www.geeksforg</u>   | ls.com/datascience/ds_<br>geeks.org/introduction-  | introduction.asp<br>to-data-science/   |   |  |  |  |  |  |  |  |
| Self-Study<br>Material | <ol> <li><u>https://www.ibm.com/topics/machine-learning</u></li> <li><u>https://www.manning.com/books/introducing-data-science</u></li> </ol>  |  |  |   |  |  |  |  |  |  |  |
|                        | L-Lecture  | T-Tutorial   | P-Practical  | C- Credit   |  |  |  |  |  |  |  |

|                 | B.Cor             | n CA Sylla         | bus LOC          | F - CBCS  | with effe               | ect fror         | m 20         | 023-         | 2024 0             | nwa   | ards   |         |        |     |
|-----------------|-------------------|--------------------|------------------|---|-------------------------|------------------|--------------|--------------|--------------------|-------|--------|---------|--------|-----|
| Course Code     |                   | Course             | Title            | Co  | ourse Typ               | е                | Se           | em           | Hour               | s     | L      | т       | Ρ      | С   |
| 23M4UCCA05      | 5 IN              | ITRODUC<br>DATA SC | TION TO<br>IENCE | GE  | C THEOR                 | Y                | I            | V            | 3                  |       | 3      | -       | -      | 3   |
|                 |                   |                    |                  | CO-P  | O Mappiı                | ng               |              |              |                    |       |        |         |        |     |
| CO Number       | PO1               | PO2                | PO3              | PO4   | PO5                     | PSO              | 1            | P            | SO2                | PS    | 03     | PSO4    | PSC    | )5  |
| CO1             | S                 | S                  | М                | S S S S M M S                                     |                         |                  |              |              |                    |       |        |         |        |     |
| CO2             | S                 | S                  | S                | S S S M S M S                                     |                         |                  |              |              |                    |       |        |         | S      |     |
| CO3             | S                 | М                  | S                | S   | S                       | М                |              |              | S                  | Ν     | N      | Μ       | M      | 1   |
| CO4             | S                 | S                  | М                | S   | S                       | М                |              | S S M        |                    |       |        |         | Μ      | 1   |
| CO5             | S                 | S                  | М                | S   | S                       | S                |              |              | Μ                  |       | S      | S       | S      |     |
| Level<br>betwe  | of Corr<br>een CO | elation<br>and PO  |                  |   | L-LOW M-MEDIUM S-STRONG |                  |              |              |                    |       |        | ONG     |        |     |
| Tutorial Schedu | le                |                    |                  | Group Discussion, Quiz program, Model preparation |                         |                  |              |              |                    |       |        |         |        |     |
| Teaching and Le | earning           | Method             | S                | Audio V<br>Present                                | /ideo lect<br>ation an  | ure, C<br>d Vide | Chal<br>eo P | k an<br>rese | d Boarc<br>ntation | l cla | ass, A | Assignm | ent, F | PPT |
| Assessment Me   | thods             |                    |                  | Class Te  | est, Unit <sup>-</sup>  | Test, A          | ssig         | gnme         | ent, CIA           | -I, C | IA-II  | and ESE | Ξ      |     |
| D               |                   | Ŋ                  | /erified E       | Ву  |                         |                  |              | Арј          | prov               | ed By |        |         |        |     |
| Mr.T.Prabhu     |                   |                    |                  | HoD - I   | Mr.G.Selv               | /akum            | ar           | Me           | mber S             | ecre  | etary  | - Dr.S. | Shahit | :ha |





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|---|--|--|----------------------------------|---|-------------------|-------------|------|-------|--|--|--|--|--|
| Course Code   | Course Title   | Course Type  | Sem                              | Hours                                   | L                 | т           | Р    | С     |  |  |  |  |  |
| 23M5UCCA05  | SOFTWARE<br>ENGINEERING AND<br>UML LAB   | GEC THEORY   | V                                | 4                                       | 2                 | -           | 2    | 3     |  |  |  |  |  |
| Objective   | Students Learn the so<br>structured and objected   | ftware developmer<br>ed oriented analysi                         | nt life cy<br>s & desi           | vcles and<br>ign.                       | cor               | ncepts rela | ated | ed to |  |  |  |  |  |
| Unit  |  |  | Knowled<br>Levels                | lge<br>S                                | Sessions          |             |      |       |  |  |  |  |  |
| I   | ntroduction – Evolution – Software Development projects<br>- Emergence of Software Engineering. Software Life cycle<br>nodels – Waterfall model – Rapid Application Development<br>- Agile Model – Spiral Model. |  |                                  |   |                   |             |      |       |  |  |  |  |  |
| П   | Requirement Analysis<br>Analysis – SRS – Forma   | nd   | К2                               |   | 6                 |             |      |       |  |  |  |  |  |
| 111   | Software Design – Ove<br>Coupling – Layered de<br>Design – Structured A<br>Detailed design.  | erview – Characteri<br>sign – Approaches<br>nalysis – DFD – Stru | istics – (<br>Functio<br>uctured | Cohesion<br>n Orient<br>Design –        | &<br>ed           | K2          |      | 6     |  |  |  |  |  |
| IV  | Object Modelling usi<br>Diagrams – Use case, (<br>– Postscript.  | ng UML – OO co<br>Class, Interaction, A                          | oncepts<br>Activity,             | – UML<br>State Cha                      | art               | К3          |      | 6     |  |  |  |  |  |
| V   | Coding & Testing – (<br>Testing – Black-box,<br>Smoke testing.<br>*Current Trends:<br>technologies *   | coding – Review –<br>White-box, Integr<br><b>Software Eng</b>    | Docum<br>ation, C<br>gineerin    | nentation<br>DO Testir<br><b>g rece</b> | n —<br>ng,<br>ent | КЗ          |      | 6     |  |  |  |  |  |
|   | ** Self Study.   |  |                                  |   |                   |             |      |       |  |  |  |  |  |
|   | <b>CO1:</b> Understand so software using tools.  | oftware requirem   | ents, c                          | lesign t                                | he                | K1          |      |       |  |  |  |  |  |
| Course  | <b>CO2</b> : Discuss about te<br>techniques.   | st cases using diffe   | rent tes                         | ting                                    |                   | К2          |      |       |  |  |  |  |  |
| Outcome   | CO3: Analyse the soft  | ware design and ch   | aracteri                         | istics.                                 |                   |             |      |       |  |  |  |  |  |
|   | <b>C04:</b> Apply the OO cor   | ncepts of UML.   |                                  |   |                   |             |      |       |  |  |  |  |  |
|   | <b>CO5:</b> Evaluate the vari  | ous testing technic  | ques.                            |   |                   |             |      |       |  |  |  |  |  |

|                        |   | Learni   | ng Resources                                 |  |  |  |  |  |  |  |
|------------------------|---|--|--|--|--|--|--|--|--|--|
| Text<br>Books          | <ol> <li>Rajib Mall</li> <li>Roger S. P<br/>McGraw F</li> </ol> | , "Fundament<br>ressman, "Sot<br>Hill 2010, 7thE   | als of Software<br>ftware Enginee<br>dition. | Engineering", PHI 2018, 5th Edition.<br>ring - A Practitioner's Approach", |  |  |  |  |  |  |
| Reference<br>Books     | 1. PankajJalo<br>Publishing                                     | <ol> <li>PankajJalote, "An Integrated Approach to Software Engineering", Narosa<br/>Publishing House 2011,3rd Edition</li> </ol> |  |  |  |  |  |  |  |  |
| Website<br>Link        | 1. NPTEL online of https://nptel.ac.                            | course – Softw<br>in/courses/10  | vare Engineerin<br>6105182/.                 | g -  |  |  |  |  |  |  |
| Self-Study<br>Material | 1.https://www.h   | ackerrank.cor  | n/blog/top-sof                               | tware-engineering-trends/.   |  |  |  |  |  |  |
|                        | L-Lecture   | T-Tutorial   | P-Practical                                  | C-Credit   |  |  |  |  |  |  |

#### LIST OF PRACTICALS:

Using UML tools produce analysis and design models for

- a. Library Management System
- b. Automatic Teller Machine
- c. Student Information Management
- d. Matrimony Service
- e. Stock Management System

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|   | B.CC  |               | -Sylla                            | bus LOCF                 | -CBCS            | with eff           | ect fi         | rom 2023-            | 2024 On    | wards             |          |             |   |
|---|-------|---------------|-----------------------------------|--------------------------|------------------|--------------------|----------------|----------------------|------------|-------------------|----------|-------------|---|
| Course Code                                   |       | Cou           | i <mark>rse T</mark> i            | itle                     | Со               | urse Tyj           | be             | Sem                  | Hours      | L                 | т        | Ρ           | С |
| 23M5UCCA05                                    | ENG   | SOI<br>GINEER | FTWA<br>RING A<br>LAB             | RE<br>AND UML            | т                | GEC<br>HEORY       |                | V                    | 4          | 2                 | -        | 2           | 3 |
|   |       |               |                                   |                          | CO-P             | О Марр             | ing            |                      |            |                   |          |             |   |
| CO Number                                     | r     | PO1           | O1 PO2 PO3 PO4 PO5 PSO1 PSO2 PSO3 |                          |                  |                    |                |                      |            |                   | PS<br>O5 |             |   |
| CO1   |       | S             | S S S M M S M S                   |                          |                  |                    |                |                      |            | М                 | М        |             |   |
| CO2   |       | S             | S                                 | S                        | S                | М                  | S              | S                    | S          | S                 | S        |             |   |
| CO3   |       | S             | L                                 | S                        | S                | S                  | S              | М                    | S          | S                 | S        |             |   |
| CO4   |       | S             | S                                 | S                        | Μ                | S                  | S              | S                    | S          | М                 | S        |             |   |
| CO5   |       | S             | S                                 | L                        | Μ                | S                  | S              | Μ                    | S          | М                 | S        |             |   |
| Level of<br>Correlation<br>between CO a<br>PO | and   |               |                                   | L-LOW M-MEDIUM           |                  |                    |                |                      |            |                   | S-STRO   | ONG         |   |
| Tutorial Schedu                               | ule   |               | 0                                 | Group Dis                | cussio           | n, Quiz            | progr          | ram, Mod             | el prepar  | ation             |          |             |   |
| Teaching and L<br>Methods                     | earni | ng            | A<br>F                            | Audio Vide<br>Presentati | eo lect<br>on an | ure, Ch<br>d Video | alk ai<br>Pres | nd Board<br>entation | class, Ass | ignmei            | nt, PP   | Т           |   |
| Assessment M                                  | ethoc | ls            | 0                                 | Class Test,              | Unit 1           | est, Ass           | ignm           | ent, CIA-I,          | CIA-II an  | d ESE             |          |             |   |
| Design  | ed By | /             |                                   |                          |                  | Verifie            | ed By          |                      |            | A                 | pprov    | ed B        | у |
| Mr.M  |       |               | HoD - Mr.G.Selvakumar             |                          |                  |                    |                |                      |            | ber Se<br>r.S.Sha | cret     | ary –<br>Ia |   |





|             | B.Com CA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |                    |                  |      |                |           |          |  |  |  |  |
|-------------|--|---|--------------------|------------------|------|----------------|-----------|----------|--|--|--|--|
| Course Code | Course Title   | Course Type                                     | Sem.               | Hours            | L    | т              | Р         | С        |  |  |  |  |
| 23M5UCCA06  | OBJECT ORIENTED<br>ANALYSIS AND DESIGN<br>AND UML LAB            | GEC THEORY                                      | v                  | 4                | 2    | -              | 2         | 3        |  |  |  |  |
| Objective   | Students Learn software writing of test cases using              | requirements,<br>different testin               | design<br>g techni | the sof<br>ques. | twar | e using        | tools     | with the |  |  |  |  |
| Unit        | Cou  | rse Content                                     |                    |                  |      | Knowle<br>Leve | dge<br>Is | Sessions |  |  |  |  |
|             | Object Orientation - Syster                                      | n development                                   | : - Revie          | w of obje        | ects |                |           |          |  |  |  |  |
|             | - inheritance - Object relationship - Dynamic binding - OOSD     |   |                    |                  |      |                |           |          |  |  |  |  |
| I           | life cycle – Process – A   | nalysis – Desi                                  | gn - pr            | ototypin         | g -  | K1             |           | 10       |  |  |  |  |
|             | Implementation – Testing   | - Overview of N                                 | lethodo            | ologies          |      |                |           |          |  |  |  |  |
|             | Ram baugh methodolog   | Ram baugh methodology, OMT - Booch methodology, |                    |                  |      |                |           |          |  |  |  |  |
| Ш           | Jacobson methodology - p   | oatterns - Unifi                                | ed appr            | oach - U         | ML   | К2             |           | 10       |  |  |  |  |
|             | Class diagram – Dynamic n  | nodelling.                                      |                    |                  |      |                |           |          |  |  |  |  |
|             | Introduction - UML – Meta  |   |                    |                  |      |                |           |          |  |  |  |  |
|             | information. Outline Deve  | lopment Proce                                   | ss: Over           | view of          | the  | К3             |           |          |  |  |  |  |
| III         | process-Inception - Elab   | oration-constru                                 | uction-            | refactor         | ring |                |           | 10       |  |  |  |  |
|             | patterns transmission-iter                                       | ative developm                                  | ent - us           | e cases.         |      |                |           |          |  |  |  |  |
|             | OODesign axioms – Class  | s visibility – re                               | efining a          | attribute        | s –  |                |           |          |  |  |  |  |
| IV          | Methods – Access layer –   | OODBMS – Tal                                    | ble – cla          | iss mapp         | oing | К4             |           | 10       |  |  |  |  |
|             | view layer   |   |                    |                  |      |                |           |          |  |  |  |  |
|             | Interaction diagram - pa   | ckage diagram                                   | - state            | e diagrar        | n -  |                |           |          |  |  |  |  |
| V           | activity diagram - dep   | loyment diag                                    | ram -              | UML a            | and  |                |           |          |  |  |  |  |
| ·           | programming.   |   |                    |                  |      | K5             |           | 10       |  |  |  |  |
|             | *Current Trends- Agile and                                       | d Iterative Dev                                 | elopme             | nt *             |      |                |           |          |  |  |  |  |
|             | ** Self Study.   |   |                    |                  |      |                |           |          |  |  |  |  |
|             | <b>CO1:</b> Recall software requi                                | rements, desigr                                 | n the sof          | tware us         | sing |                |           |          |  |  |  |  |
| Course      | tools  |   |                    |                  |      | К1             |           |          |  |  |  |  |
| Outcome     | CO2: Assess different Mod  |   |                    | K2               |      |                |           |          |  |  |  |  |
|             | CO3: Analyse UML and De  | evelopment Pro                                  | cess.              |                  |      | K3             |           |          |  |  |  |  |

|                        | <b>CO4</b> : Apply the axioms and Class Mapping.   |   |  |                                      |                                    |           |  |  |  |  |  |  |
|------------------------|--|---|--|--------------------------------------|------------------------------------|-----------|--|--|--|--|--|--|
|                        | CO5: Evaluate t  | he interaction a  | and activity dia                               | gram.                                | К4                                 |           |  |  |  |  |  |  |
|                        |  | Learnii   | ng Resources                                   |                                      |                                    |           |  |  |  |  |  |  |
| Text<br>Books          | Ali Bahrami, "Ob<br>Edition 2017.<br>Martin Fowler, H<br>Eriksson, "UML  | oject Oriented S<br>Kendall Scott, "I<br>Tool Kit", Addis | System Develop<br>JML Distilled",<br>on Wesley | oment", McGraw                       | v-Hill Internati<br>Y              | ional     |  |  |  |  |  |  |
| Reference<br>Books     | <ol> <li>Booch G., "Object oriented analysis and design", Addison- Wesley Publishing<br/>Company 3 rd edition</li> <li>Rambaugh J, Blaha.M. Premeriani, W., Eddy F and Loresen W., "Object Oriented<br/>Modeling and Design", PHI</li> </ol> |   |  |                                      |                                    |           |  |  |  |  |  |  |
| Website<br>Link        | 1. <u>https://www.</u><br>2.https://www.t<br>sis_model.html  | geeksforgeeks.c<br>tutorialspoint.c                       | org/object-orie<br>om/object_orie              | nted-analysis-an<br>ented_analysis_o | i <u>d-design/</u><br>design/ooad_ | uml_analy |  |  |  |  |  |  |
| Self-Study<br>Material | 1.https://study.com/academy/lesson/agile-vs-iterative-<br>development.html#:~:text=The%20iterative%20model%20focuses%20on,continual%<br>20process%20in%20Agile%20development.  |   |  |                                      |                                    |           |  |  |  |  |  |  |
|                        | L-Lecture  | L-Lecture T-Tutorial P-Practical C-Credit                 |  |                                      |                                    |           |  |  |  |  |  |  |

### LIST OF PRACTICALS:

Using UML tools produce analysis and design models for

- a. Library Management System
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- d. Matrimony Service
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|  | B.CO         | M CA S                  | Syllabu                  | IS LOCF   | - CE         | BCS        | with e           | ffect fro           | om 2023            | 8-2024 O    | nwards    |                      |              |            |
|--|--------------|-------------------------|--------------------------|---|--------------|------------|------------------|---------------------|--------------------|-------------|-----------|----------------------|--------------|------------|
| Course Code                                  |              | Cou                     | ırse Tit                 | le  |              | C          | ourse            | Туре                | Sem.               | Hours       | L         | Т                    | Ρ            | С          |
| 23M5UCCA06                                   | AN           | OBJEC<br>IALYSIS<br>AND | T ORIE<br>S AND<br>UML I | NTED<br>DESIGN<br>.AB                             | J            | GEC THEORY |                  | v                   | 4                  | 2           | -         | 2                    | 3            |            |
|  |              |                         | I                        |   | CC           | D-PC       | О Мар            | ping                |                    |             |           | -                    |              |            |
| CO Number                                    |              | PO1                     | PO2                      | PO3   | PO           | )4         | PO5              | PSO1                | PSO2               | PSO3        | PSO4      | PSO5                 |              |            |
| CO1  |              | S                       | Μ                        | М   | Μ            | 1          | Μ                | L                   | S                  | М           | М         | S                    |              |            |
| CO2  | <b>CO2</b> S |                         |                          | М   | Μ            | 1          | Μ                | S                   | Μ                  | S           | Μ         | S                    |              |            |
| <b>CO3</b> M                                 |              |                         | Μ                        | М   | S            | ;<br>;     | S                | L                   | S                  | М           | Μ         | М                    |              |            |
| <b>CO4</b> M                                 |              | Μ                       | М                        | S   | 5            | S          | S                | S                   | S                  | L           | S         |                      |              |            |
| CO5  | CO5 M I      |                         |                          | S   | Μ            | 1          | S                | S                   | Μ                  | S           | S         | S                    |              |            |
| Level of Correlation<br>between CO and<br>PO |              |                         |                          | L-LOW   | /            |            |                  | N                   | I-MEDIU            | JM          | S-STRONG  |                      |              |            |
| Tutorial Schedu                              | le           |                         | G                        | Group Discussion, Quiz program, Model preparation |              |            |                  |                     |                    |             |           |                      |              |            |
| Teaching and Le<br>Methods                   | arnir        | ng                      | A<br>Pi                  | udio Vi<br>resenta                                | deo<br>Ition | lect<br>an | ure, C<br>d Vide | Chalk an<br>o Prese | d Board<br>ntation | class, A    | ssignme   | ent, PPT             |              |            |
| Assessment Me                                | thod         | 5                       | C                        | ass Tes   | st, Ui       | nit T      | ſest, A          | ssignme             | ent, CIA-          | I, CIA-II a | and ESE   |                      |              |            |
| Designo                                      | Designed By  |                         |                          |   |              |            | Verifi           | ed By               |                    |             | Aţ        | proved               | Ву           |            |
| Mr.A.Raja                                    |              |                         |                          |   | Но           | D -        | Mr.G.            | Selvaku             | mar                |             | Mem<br>Dr | ber Seci<br>.S.Shahi | retar<br>tha | <b>`У-</b> |



### MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE

(Autonomous)

Rasipuram - 637408.



|             | B.Com CA Syllab                          | ous LOCF-CBCS with effec                     | t from 202  | 23-2024 C       | Onwards      |        |        |    |  |
|-------------|--|--|-------------|-----------------|--------------|--------|--------|----|--|
| Course Code | Course Title                             | Course Type                                  | Sem         | Hours           | L            | т      | Р      | С  |  |
| 23M6UCCA06  | R LANGUAGE                               | GEC PRACTICAL - I                            | VI          | 4               | -            | -      | 4      | 3  |  |
| Objective   | Students Develop<br>interfaces (GUI) in  | Object-oriented program<br>R Programming.    | ming skills | and desig       | gning the gr | aphica | al-use | er |  |
| S.No.       | List of Experi                           | ments / Programmes                           | Knov<br>Le  | wledge<br>evels | S            | ession | S      |    |  |
| 1           | Data In R                                |  |             | K1              |              | 3      |        |    |  |
| 2           | Reading And Writi                        | ng Data                                      |             | K2              |              | 3      |        |    |  |
| 3           | R And Databases                          |  |             | К1              |              | 3      |        |    |  |
| 4           | Dates ,Factors                           |  |             | K2              |              | 3      |        |    |  |
| 5           | Subscribing, Chara                       | cter Manipulation                            |             | K2              |              | 3      |        |    |  |
| 6           | Data Aggregation ,                       | Reshaping Data Basics                        |             | К3              |              | 3      |        |    |  |
| 7           | The R Enviror<br>Distributions           | iment, Probability A                         | nd          | КЗ              |              | 3      |        |    |  |
| 8           | Descriptive Statist<br>Two-Sample Tests  | ics and Graphics, One- A                     | nd          | КЗ              | 3            |        |        |    |  |
| 9           | Regression And Variance And The          | Correlation, Analysis<br>Kruskal–Wallis Test | Of          | КЗ              | 3            |        |        |    |  |
| 10          | Tabular Data, Pow<br>Sample Size         | er And The Computation                       | Of          | КЗ              |              | 3      |        |    |  |
| 11          | Advanced Data Ha                         | ndling ,Multiple Regressi                    | on          | КЗ              |              | 3      |        |    |  |
| 12          | Linear Models                            |  |             | КЗ              |              | 3      |        |    |  |
| 13          | Logistic Regressior                      | 1  |             | K4              |              | 3      |        |    |  |
| 14          | Survival Analysis<br>Regression          | s ,Rates And Poiss                           | on          | K5              |              | 3      |        |    |  |
| 15          | Nonlinear Curve Fi                       | tting  |             | K5              |              | 3      |        |    |  |
|             | CO1: Remember tl                         | ne concept of Database.                      |             | К1              |              |        |        |    |  |
|             | <b>CO2:</b> Rephrase constructs in R Pro | the basic programmi<br>gramming.             | ng          |                 | K2           |        |        |    |  |

| Course             | CO3:Constructthevariouscomputingstrategies for R Programming -based solutionsK3to real world problems.CO4:AnalyzetheRProgrammingdata |  |            |          |  |  |  |  |  |  |  |  |
|--------------------|--|--|------------|----------|--|--|--|--|--|--|--|--|
| Outcome            | <b>CO4</b> : Analyze structures - list   | the R Programmin s, tuples, dictionaries.  | g data     | К4       |  |  |  |  |  |  |  |  |
|                    | <b>CO5:</b> Determin<br>in R Program   | e the input / output w<br>ming   | ith files  | К5       |  |  |  |  |  |  |  |  |
|                    |  | Learning Resources   |            |          |  |  |  |  |  |  |  |  |
| Text<br>Books      | <ol> <li>W. N. Venab</li> <li>John Verzan</li> <li>Group, 2005.</li> <li>Mark Garde</li> <li>Sons.</li> </ol>                        | <ol> <li>W. N. Venables, D. M. Smith, An Introduction to R, R Core Team, 2018.</li> <li>John Verzani, simple R – Using R for Introductory Statistics, CRC Press, Taylor &amp; Francis<br/>Group, 2005.</li> <li>Mark Gardener, —Beginning R - The Statistical Programming Language, John Wiley &amp;<br/>Sons</li> </ol> |            |          |  |  |  |  |  |  |  |  |
| Reference<br>Books | <ol> <li>Beginner's g</li> <li>P. Dalgaard.</li> <li>Dunlop, Dor</li> <li>to intermediate</li> </ol>                                 | <ol> <li>Beginner's guide for Data Analysis using R Programming by Dr.Jeeva Jose.</li> <li>P. Dalgaard. Introductory Statistics with R, 2nd Edition. Springer 2008.</li> <li>Dunlop, Dorothy D., and Ajit C. Tamhane. Statistics and data analysis: from elementary to intermediate. Prentice Hall, 2000.</li> </ol>     |            |          |  |  |  |  |  |  |  |  |
| Website<br>Link    | 1. <u>https://www</u>  | 1. <u>https://www.geeksforgeeks.org/r-programming-language-introduction/</u>   |            |          |  |  |  |  |  |  |  |  |
|                    | L-Lecture  | T-Tutorial   | P-Practica | C-Credit |  |  |  |  |  |  |  |  |

|  | B                  | 3.Com CA | Syllab | us LOCF | -CBCS   | with ef  | ffect fi                         | rom 2  | 2023  | -2024 Onward   | ls     |   |   |
|--|--------------------|----------|--------|---------|---------|----------|----------------------------------|--------|-------|----------------|--------|---|---|
| Course Coo                             | le                 | Course T | Title  | Cou     | rse Typ | e        | Sem                              | Hou    | urs   | L              | т      | Ρ | С |
| 23M6UCCA                               | 06                 | R LANGU  | AGE    | DSE PR  | ACTIC   | 4L - I   | VI                               | 4      |       | -              | -      | 4 | 3 |
|  | CO-PO Mapping      |          |        |         |         |          |                                  |        |       |                |        |   |   |
| CO<br>Number                           | PO1                | L PO2    | PO3    | PO4     | PO5     | PSO1     | PSC                              | )2 I   | PSO   | 3 PSO4         | PSO5   |   |   |
| CO1                                    | М                  | S        | Μ      | S       | S       | Μ        | Μ                                |        | S     | S              | S      |   |   |
| CO2                                    | М                  | S        | S      | S       | S       | S        | Μ                                |        | S     | S              | S      |   |   |
| CO3                                    | S                  | S        | S      | S       | S       | S        | S                                |        | S     | S              | S      |   |   |
| CO4                                    | S                  | S        | Μ      | S       | S       | S        | M                                |        | S     | S              | S      |   |   |
| CO5                                    | Μ                  | S        | Μ      | М       | Μ       | S        | S                                |        | S     | S              | S      |   |   |
| Level o<br>Correlat<br>between C<br>PO | of<br>ion<br>O and | b        | L-I    | LOW     |         | Ν        | M-ME                             | DIUM   | l     | S-             | STRONG | ì |   |
| Tutorial Sch                           | edule              | 2        |        |         | Samp    | le prog  | grams                            | to th  | e rel | ated topics    |        |   |   |
| Teaching an                            | d Lea              | rning M  | ethods | ;       | Hand    | ling pra | actical                          | sessi  | ion t | hrough project | tor    |   |   |
| Assessment                             | Met                | hods     |        |         | Obse    | rvation  | , Mod                            | el pra | actic | al's.          |        |   |   |
| Designed By Verified By                |                    |          |        |         | Approve | d By     |                                  |        |       |                |        |   |   |
| Mrs.N.Padmapriya HoD - Mr.             |                    |          |        | .G.Selv | akuma   | r        | Member Secretary – Dr.S.Shahitha |        |       |                | a      |   |   |





| B.Com PA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |   |                          |       |   |                |            |          |  |  |  |
|--|---|---|--------------------------|-------|---|----------------|------------|----------|--|--|--|
| Course Code  | Course Title  | Course Type   | Sem                      | Hours | L | т              | Ρ          | С        |  |  |  |
| 23M4UPAA02   | R PROGRAMMING   | GEC THEORY  | IV                       | 3     | 3 | -              | -          | 3        |  |  |  |
| Objective  | Students Learn the bas<br>control statements, re<br>commands with graphic   | ation -<br>Leve   | functions,<br>I Plotting |       |   |                |            |          |  |  |  |
| Unit   | C   | Course Content  |                          |       |   | Knowle<br>Leve | edge<br>Is | Sessions |  |  |  |
| I  | Introduction to R P<br>numbers and Vectors<br>Related Software and D<br>The Window System-U<br>Features – R Command<br>Commands- Executing<br>to a File – Data Perman<br>Simple Manipulations,<br>Assignment-Vector<br>Sequences-Logical Vect<br>– Index Vector-Selectin  | on,<br>ent-<br>and<br>ous<br>put<br>and<br>ular<br>cors | К1 10                    |       |   |                |            |          |  |  |  |
| 11   | <ul> <li>Index Vector-Selecting.</li> <li>Objects arrays and matrixes Objects, Modes and Attributes:</li> <li>Intrinsic Attributes- Mode and Length- Changing The Length of an Object-Getting and Setting Attributes – The Class of an Object.</li> <li>Ordered and Unordered Factors: The Functions Tapply () and Ragged Arrays – Ordered Factor.</li> <li>Arrays and Matrices: Array Indexing- Subsection of an Arrays Index Matrices- The Array() Function- Mixed Vector and Array Arithmetic – The Recycling Rule- The Outer Product of Two Arrays Generalize Transpose of an Array- Matrix Facilities- Matrix Multiplication.</li> </ul> |   |                          |       |   |                |            |          |  |  |  |

| III               | Lists and Data-frames Lists: Constructing and Modifying Lists<br>– Concatenation – Data Frames – Making Data Frames<br>Attach()and De attach() – Working With Data Frames.<br>Reading Data From Files: The Scan() Function Accessing<br>Built-In Datasets- Loading Data From Other R Packages.   | K3 | 8 |
|-------------------|--|----|---|
| IV                | <b>Grouping, Loops and Conditional Execution:</b> Grouped Expressions - Control Statements- Conditional Execution If Statements- Repetitive Execution For Loops, Repeat and While.   | К4 | 6 |
| V                 | Graphical Procedures: High-Level Plotting Commands-The<br>Plot() Function Displaying Multivariate Data- Display<br>Graphics- Arguments To High Level Plotting Functions-Low<br>Level Plotting Commands- Mathematical Annotation-Hersley<br>Vector Fonts- Interacting With Graphics-Using Graphics<br>Parameters-Graphics Parameters List.<br>Current Trends- *Big data with R* | К5 | 8 |
|                   | ** Self Study.   |    |   |
|                   | <b>CO1:</b> Learn the basic knowledge on R - Environment with basic commands using R - Functions.  | K1 |   |
|                   | <b>CO2</b> : Illustrate the concepts of objects, modes and arrays.   | K2 |   |
| Course<br>Outcome | <b>CO3</b> : Choose the list, data-frames and accessing the data in datasets.  | К3 |   |
|                   | <b>CO4</b> : Inspect Work with Impart knowledge of Grouping, Loops and Conditional Execution.  | K4 |   |
|                   | <b>CO5</b> : Justify the Graphical procedure with low level and high level plotting.   | К5 |   |
|                   | Learning Resources   |    |   |

| Text<br>Books          | <ol> <li>W. N. Venable</li> <li>John Verzani,</li> <li>Francis Group, 2</li> <li>Mark Gardene</li> <li>Sons.</li> <li>Wickham, H. 8</li> </ol> | <ol> <li>W. N. Venables, D. M. Smith, An Introduction to R, R Core Team, 2018.</li> <li>John Verzani, simple R – Using R for Introductory Statistics, CRC Press, Taylor &amp; Francis Group, 2005.</li> <li>Mark Gardener, —Beginning R - The Statistical Programming Language, John Wiley &amp; Sons.</li> <li>Wickham, H. &amp; Grolemund, G. (2018). for Data Science. O'Reilly: New York.</li> </ol>       |                                  |  |  |  |  |  |  |  |  |
|------------------------|--|--|----------------------------------|--|--|--|--|--|--|--|--|
| Reference<br>Books     | <ol> <li>Beginner's gui</li> <li>P. Dalgaard. Ir</li> <li>Dunlop, Dor</li> <li>elementary to in</li> <li>Norman Matle</li> </ol>               | <ol> <li>Beginner's guide for Data Analysis using R Programming by Dr.Jeeva Jose.</li> <li>P. Dalgaard. Introductory Statistics with R, 2nd Edition. Springer 2008.</li> <li>Dunlop, Dorothy D., and Ajit C. Tamhane. Statistics and data analysis: from elementary to intermediate. Prentice Hall, 2000.</li> <li>Norman Matloff. The Art of R Programming. A Tour of Statistical Software Design.</li> </ol> |                                  |  |  |  |  |  |  |  |  |
| Website<br>Link        | 1. https://cran.r<br>2. https://www.   | -project.org/do<br>geeksforgeeks.o   | c/manuals/r-re<br>org/r-programn | lease/R-intro.pdf<br>ning-language-introduction/ |  |  |  |  |  |  |  |
| Self-Study<br>Material | https://rviews.rs  | nttps://rviews.rstudio.com/2019/07/17/3-big-data-strategies-for-r/   |                                  |  |  |  |  |  |  |  |  |
|                        | L-Lecture  | L-Lecture T-Tutorial P-Practical C-Credit  |                                  |  |  |  |  |  |  |  |  |

|                                   | B.Com         | n PA Sy | llabus      | LOCF -  | CBCS v             | vith eff        | ect f         | rom            | 2023-2                           | 202  | 4 On   | wards    |        |   |
|-----------------------------------|---------------|---------|-------------|---|--------------------|-----------------|---------------|----------------|----------------------------------|------|--------|----------|--------|---|
| Course Code                       | C             | ourse   | Fitle       |   | Course             | Туре            |               | Sem            | Ηοι                              | ırs  | L      | Т        | Р      | С |
| 23M4UPAA02                        | R PR          | OGRAI   | MMING       | i   | GEC TH             | IEORY           |               | IV             | 3                                | -    | 3      | -        | -      | 3 |
|                                   |               |         |             | ·   | CO-PO              | Марр            | ing           |                |                                  |      |        | ·        |        |   |
| CO Number                         | r             | PO1     | PO2         | PO3   | PO4                | PO5             | PS            | 01             | PSO2                             | PS   | 503    | PSO4     | PSO5   |   |
| CO1                               |               | L       | М           | S   | S                  | S               | N             | 1              | Μ                                |      | S      | S        | S      |   |
| CO2                               |               | S       | Μ           | Μ   | S                  | S               | N             | 1              | S                                |      | S      | М        | S      |   |
| <b>CO3</b> S                      |               |         | S           | Μ   | S                  | S               | S             | 5              | S                                |      | S      | S        | S      |   |
| CO4                               |               | S       | S           | Μ   | М                  | S               | N             | М              |                                  |      | S      | S        | S      |   |
| <b>CO5</b> S                      |               | Μ       | S           | S   | S                  | S               | S             |                |                                  | S    | S      | S        |        |   |
| Level of Correla<br>between CO an | ition<br>d PO |         | L-          | L-LOW M-MEDIUM S-STRO                             |                    |                 |               |                | STRONG                           | 5    |        |          |        |   |
| Tutorial Schedu                   | le            |         | Gro         | Group Discussion, Quiz program, Model preparation |                    |                 |               |                |                                  |      |        |          |        |   |
| Teaching and Le<br>Methods        | earnin        | g       | Aud<br>Pres | io Vide<br>entatio                                | eo lectu<br>on and | re, Ch<br>Video | alk a<br>Pres | nd Bo<br>Senta | oard c<br>tion                   | lass | s, Ass | ignment  | ., PPT |   |
| Assessment Me                     | thods         |         | Clas        | s Test,   | Unit Te            | est, Ass        | ignn          | nent,          | CIA-I,                           | CIA  | -II an | d ESE    |        |   |
| Designed By                       |               |         |             | ١   | /erified           | Ву              |               |                |                                  |      | Арр    | proved E | By     |   |
| Mr.K.Vijayakumar                  |               |         | ŀ           | łoD - N   | /Ir.G.Se           | lvakun          | nar           |                | Member Secretary – Dr.S.Shahitha |      |        |          |        |   |





| B.Com PA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |   |  |   |                          |    |        |   |   |  |  |  |
|--|---|--|---|--------------------------|----|--------|---|---|--|--|--|
| Course Code  | Course Title  | Course Type  | Sem                                       | Hours                    | L  | т      | Ρ | С |  |  |  |
| 23M5UPAA03   | PYTHON<br>PROGRAMMING   | GEC THEORY   | v   | 4                        | 2  | 2      | - | 3 |  |  |  |
| Objective  | Students Learn the fu<br>packages for data ana  | on progr<br>n python   | gramming and its Librarie<br>on language. |                          |    |        |   |   |  |  |  |
| Unit   | с   |  | Knowle<br>Leve                            | edge<br>els              | Se | ssions |   |   |  |  |  |
| I  | Introduction: Comput<br>Language Computatio<br>Expressions, Operato<br>Strings – Lists – Obje<br>library.   | Introduction: Computer systems – Python Programming<br>Language Computational Thinking – Python Data Types<br>Expressions, Operator, Variables, and Assignments –<br>Strings – Lists – Objects & Classes – Python standard<br>library. |   |                          |    |        |   |   |  |  |  |
| II   | Imperative program<br>function: print () function & assignmen   | <b>uilt-in-</b><br>lefined   | К2  |                          |    | 9      |   |   |  |  |  |
| III  | Text Data, Files &<br>formatted output –<br>Execution. Control St<br>statement. For LOC<br>dimensional list whi<br>additional iteration c<br>Randomness: Diction<br>types – character enco<br>Namespaces – encap<br>local namespaces exc<br>namespaces. | ed –<br>ons –<br>the IF<br>two-<br>erns–<br><b>r and</b><br>tainer<br>ndom.<br>al vs.<br>les as  | K3  |                          | 12 |        |   |   |  |  |  |
| IV   | NumPy Basics: Array<br>Multidimensional Arr<br>Arrays, File Input an<br>Algebra – Random Nu   | and Vectorized Com<br>ay Object – Data Pro<br>nd Output with Arr<br>mber Generation.   | nputatio<br>ocessing<br>ays – I           | n – A<br>using<br>Linear | K4 | Ļ      |   | 8 |  |  |  |

| V          | Pandas – Data St<br>Handling Missing<br>loading, Storage an<br>and Visualization -<br>Data applications.<br>*Current Trends<br>development - Data | ructure – E<br>Data – Hiera<br>d File formats<br>Fime Series –<br>- Web<br>a visualization | nality –<br>– Data<br>Plotting<br>conomic<br><b>Game</b> | К5               | 9                |                 |  |  |  |  |
|------------|---|--|--|------------------|------------------|-----------------|--|--|--|--|
|            |   | ** Self St   | udy.   |                  |                  |                 |  |  |  |  |
|            | CO1: Recall the basi  | c programmin   | g terminologies  | and              |                  |                 |  |  |  |  |
|            | packages of python  |  | K1   |                  |                  |                 |  |  |  |  |
|            | CO2: Illustrate the O   | а  |  |                  |                  |                 |  |  |  |  |
|            | analysis, modeling,   | nguage.  | К2   |                  |                  |                 |  |  |  |  |
| Courses    | CO3: Organize the C   | Concept of Exc   | eptions and Loo  | ping.            | КЗ               |                 |  |  |  |  |
| Outcom     | CO4: Examine the N  | lumPy basics a   | and Arrays.  |                  | К4               |                 |  |  |  |  |
| e          | <b>CO5:</b> Determine the Visualization techni  | К5   |  |                  |                  |                 |  |  |  |  |
|            | Learning Resources  |  |  |                  |                  |                 |  |  |  |  |
|            | 1. Wes McKinney, Python for Data Analysis, O'Reilly Media, Inc., 1005   |  |  |                  |                  |                 |  |  |  |  |
|            | Gravenstein Highwa  | ay North, Seba   | istopol.   |                  |                  |                 |  |  |  |  |
| Text       | 2. Kenneth A. Lambe   | ert – Fundame  | ntals of Python  | First Prog       | rams - Cengage,  | New Delhi       |  |  |  |  |
| BOOKS      | 3.ChSatyanarayana,  | M Radhika N  | /lani, BN Jagade   | sh - Pytho       | on Programming   | 5-              |  |  |  |  |
|            | Cengage,New Delhi   |  |  |                  |                  |                 |  |  |  |  |
|            | 1. The Joy of PHP: A  | A Beginner's G   | iuide to Prograr   | nming Int        | eractive Web A   | pplications     |  |  |  |  |
| Deference  | with PHP and MyS  | QL- Alan Forb  | es Ljubomir Per  | iodic, — I       | ntroduction to ( | Computing       |  |  |  |  |
| Books      | Using Python: An A  | oplication Dev   | elopment Focus   | ∥, John W        | iley & Sons,2012 | 2               |  |  |  |  |
| DOOKS      | 2. Shymala Devi, Py   | thon Programi  | ming, Vijay Nicol  | e Imprints       | s, Chennai       |                 |  |  |  |  |
|            | 3. Wesley J. Chun, –  | Core Python I  | Programming∥, P  | earson Ed        | lucation.        |                 |  |  |  |  |
| Website    | 1. <u>https://onlineco</u>  | urses.nptel.ac.  | <u>in/noc20_cs46/p</u>                                   | <u>preview</u>   |                  |                 |  |  |  |  |
| Link       | 2. <u>https://bedford-</u>  | <u>computing.co.</u>   | uk/learning/wp-  | <u>content/u</u> | ploads/2015/10   | <u>/Python-</u> |  |  |  |  |
|            | IOF-Data-Analysis   | tor-Data-Analysis.pdt  |  |                  |                  |                 |  |  |  |  |
| Self-Studv | https://onlinecourses.nptel.ac.in/noc20_cs46/preview  |  |  |                  |                  |                 |  |  |  |  |
| Material   |   |  |  |                  |                  |                 |  |  |  |  |
|            | L-Lecture   | T-Tutorial   | P-Practical  |                  | C-Credit         |                 |  |  |  |  |

|  | B.Com PA Syllabus LOCF - CBCS with effect from 2023-2024 Onwards |             |             |                       |                   |                  |                     |                    |                  |       |                                     |         |       |  |
|--|--|-------------|-------------|-----------------------|-------------------|------------------|---------------------|--------------------|------------------|-------|-------------------------------------|---------|-------|--|
| Course Title                                   |  | Cour        | se Titl     | e                     | Со                | urse T           | уре                 | Sem                | Hours            | L     | Т                                   | Р       | С     |  |
| 23M5UPAA03                                     | PI   | PY1<br>ROGR | rhon<br>Amm | ING                   | GEC THEORY        |                  |                     | v                  | 4                | 2     | 2                                   | -       | 3     |  |
|  |  |             |             |                       | СО                | -PO M            | apping              |                    |                  |       |                                     |         |       |  |
| CO Numb  | PO1  | PO2         | PO3         | PO4                   | PO5               | PSO1             | PSO                 | 2 PSO3             | Р                | SO4   | PSO5                                |         |       |  |
| CO1  | <b>CO1</b> M S   |             | S           | М                     | S                 | S                | L                   | Μ                  | S                |       | М                                   | S       |       |  |
| CO2  |  | L           | Μ           | L                     | S                 | Μ                | S                   | S                  | М                |       | S                                   | S       |       |  |
| CO3  |  | Μ           | S           | S                     | М                 | S                | S                   | S                  | S                |       | Μ                                   | S       |       |  |
| CO4  |  | S           | Μ           | М                     | S                 | S                | S                   | Μ                  | М                |       | S                                   | М       |       |  |
| CO5  |  | S           | S           | М                     | М                 | Μ                | S                   | S                  | S S              |       | S                                   | S       |       |  |
| Level of<br>Correlation<br>between CO ar<br>PO | nd   |             |             | L-LOW M-MEDIUM        |                   |                  |                     |                    |                  |       |                                     | S-STR   | ONG   |  |
| Tutorial Schedu                                | le   |             | G           | roup Di               | iscussio          | on, Qu           | uiz progr           | am, N              | lodel prep       | arat  | ion                                 |         |       |  |
| Teaching and Le<br>Methods                     | arnir  | ng          | A<br>P      | udio Vi<br>resenta    | deo leo<br>tion a | cture,<br>nd Vid | Chalk aı<br>eo Pres | nd Boai<br>entatio | rd class, A<br>n | ssigi | nmen                                | t, PPT  |       |  |
| Assessment Me                                  | thod   | S           | С           | lass Tes              | t, Unit           | Test, /          | Assignm             | ent, Cl            | A-I, CIA-II a    | and   | ESE                                 |         |       |  |
| Designe  | ed By  | 1           |             |                       |                   | Ver              | ified By            |                    |                  |       |                                     | Approve | ed By |  |
| Mrs.S.Shahana                                  |  |             |             | HoD – Mr.G.Selvakumar |                   |                  |                     |                    |                  |       | Member Secretary –<br>Dr.S.Shahitha |         |       |  |





| B.C.A Syllabus LOCF-CBCS with effect from 2024-2025 Onwards |  |  |  |   |          |               |    |          |  |  |  |  |  |  |
|---|--|--|--|---|----------|---------------|----|----------|--|--|--|--|--|--|
| Course Code   | Course Title   | Course Type  | Sem  | Hours                                     | L        | т             | Р  | С        |  |  |  |  |  |  |
| 23M5UCAIS1  | INTERNSHIP   | INTERNSHIP   | V  | -   | -        | -             | -  | 2        |  |  |  |  |  |  |
| Objective   | Students learn the op  | timum exposure on th   | e practio                                    | cal aspec                                 | ts of    | IT ind        | ,  |          |  |  |  |  |  |  |
| S. No.  | Guidelines for   | Internship Training Pr   | ogramm                                       | е   | Kno<br>L | wled<br>evels | ge | Sessions |  |  |  |  |  |  |
| 1   | The student should u<br>IT industry / Private s<br>at the end of the 4 <sup>th</sup>   | ining in<br>h starts   |  |   |          |               |    |          |  |  |  |  |  |  |
| 2   | The training bridges the gap between the theoretical<br>knowledge gained in the college and the practical<br>application of the same in the institute / industry /<br>company. The student will have a better exposure about the<br>workplace and its nuances. |  |  |   |          |               |    |          |  |  |  |  |  |  |
| 3   | Schedule of visit to b<br>by the HOD / Staff-in-   | Schedule of visit to be made by the staff is to be prepared<br>by the HOD / Staff-in-charge.         |  |   |          |               |    |          |  |  |  |  |  |  |
| 4   | The trainees should regulations and work they are attached.  | es and<br>o which  |  |   |          |               |    |          |  |  |  |  |  |  |
| 5   | A Staff member of a L<br>the performance of t  | Department (Guide) wi<br>he Candidate.   | ll be mo                                     | nitoring                                  |          |               |    |          |  |  |  |  |  |  |
| 6   | The students should student should record  | maintain a daily logb<br>d his details of the train  | oook wh<br>ning.                             | ere the                                   | k        |               |    |          |  |  |  |  |  |  |
| 7   | The trainees have t<br>completion of the int<br>organization.  | o obtain a certificate ernship from the chief  | e on su<br>executiv                          | ccessful<br>ve of an                      |          |               |    |          |  |  |  |  |  |  |
| 8   | The student should suit institution for 15 organization.   | ubmit an attendance c<br>days internship trai  | ertificato<br>ining fr                       | e to the<br>om an                         |          |               |    |          |  |  |  |  |  |  |
| 9   | Internship Training<br>prepared by the stud<br>and at the end of the<br>report with a power p  | Report (30 – 50 pages<br>lent and submitted in<br>a semester student sho<br>point presentation.      | ges) sho<br>a month<br>ould pres             | ould be<br>n's time<br>sent the           |          |               |    |          |  |  |  |  |  |  |
| 10  | Industrial training rep<br>under the supervisior   | oorts shall be prepared<br>n of the faculty of the c   | by the s<br>departmo                         | tudents<br>ent.                           |          |               |    |          |  |  |  |  |  |  |
| 11  | Industrial training rep<br>page, Copy of traini<br>report about the we<br>tenure of training obs   | port must contain the f<br>ng certificate, Profile<br>ork undertaken by th<br>servation about the co | following<br>of an i<br>nem dur<br>ncern fir | g: Cover<br>ndustry<br>ing the<br>ndings. |          |               |    |          |  |  |  |  |  |  |

|         | Viva – voce examination will be conducted with internal &             |    |  |
|---------|---|----|--|
| 12      | external examiners at the end of the 5 <sup>th</sup> semester and the |    |  |
|         | credits will be awarded.  |    |  |
| 12      | Report Evaluation: External Viva-Voce examination will be             |    |  |
| 15      | conducted and the maximum mark is 100.                                |    |  |
|         | <b>CO1:</b> Apply new techniques and ideas in IT industry             | КЗ |  |
| Course  | <b>CO2:</b> Analyze the results of new initiatives                    | К4 |  |
|         | <b>CO3:</b> Create a new work plan with greater output                | К6 |  |
| Outcome | <b>CO4:</b> Create a framework of work execution ideas                | К6 |  |
|         | CO5: Create a detailed technical work plan and                        | KC |  |
|         | terminologies to be followed in industry.                             | KO |  |
|         | Learning Resources  |    |  |
| Website | 1.https://www.tutorialspoint.com/r/index.htm                          |    |  |
| Link    | 2.https://www.javatpoint.com/net-framework                            |    |  |
|         | 3.https://www.w3schools.com/java/java_intro.asp                       |    |  |
|         | 4.https://www.w3schools.com/r/  |    |  |

|  | B.C.A Syllabus LOCF-CBCS with effect from 2024-2025 Onwards |               |           |       |                                |  |        |          |          |          |       |        |  |  |
|--|---|---------------|-----------|-------|--------------------------------|--|--------|----------|----------|----------|-------|--------|--|--|
| Course Coo   | de  | Cou           | rse Title | C     | ourse Ty                       | уре  | Sen    | n Hou    | rs L     | т        | Р     | С      |  |  |
| 23M5UCAI   | S1  | INTE          | RNSHIP    | II    | ITERNSI                        | HIP  | V      | -        | -        | -        | -     | 2      |  |  |
|  |   |               |           | C     | :O-PO N                        | lapping  |        |          |          |          |       |        |  |  |
| CO<br>Number   | P   | 01            | PO2       | PO3   | PO4                            | PO5  | PSO1   | PSO2     | PSO3     | PSO4     | PSO   | 05     |  |  |
| CO1  |   | Μ             | S         | S     | S                              | S  | Μ      | S        | S        | S        | S     | S      |  |  |
| CO2  |   | S             | М         | S     | S                              | S  | S      | М        | S        | S        | S     | ,<br>) |  |  |
| CO3  |   | Μ             | S         | S     | S                              | S  | М      | S        | S        | S        | S     |        |  |  |
| CO4  |   | S             | М         | S     | S                              | S S S M  |        | М        | S        | S        | S     | ,      |  |  |
| CO5  |   | M             | S         | S     | S                              | S  | М      | S        | S        | S        | S     | ,      |  |  |
| Level of Co<br>between Co                              | rrela<br>O an   | ition<br>d PO |           | L-LOW |                                | M-MEDIUM S-STRON   |        |          |          |          |       |        |  |  |
| <b>Tutorial Sch</b>                                    | edu   | le            |           |       | -                              |  |        |          |          |          |       |        |  |  |
| Teaching an  | nd Le   | earnin        | g Metho   | ds    | -                              |  |        |          |          |          |       |        |  |  |
| Assessment   | : Me  | thods         |           |       | <b>CIA</b> –<br>1. W<br>2. Tra | <b>CIA – 100 Marks</b><br>1. Work Log Book – 25 Marks<br>2. Training Report and Viva-Voce – 75 Marks |        |          |          |          |       |        |  |  |
| De   | sign  | ed By         |           | ١     | /erified                       | Ву   |        | A        | pprovec  | l By     |       |        |  |  |
| Mr.K.Vijayakumar<br>Mrs.N.Padmapriya<br>Mrs.K.Gayathri |   |               |           |       | Mr.G.Se                        | lvakuma  | ar Mer | nber Sec | retary - | · Dr.S.S | hahit | ha     |  |  |





| BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |   |              |     |       |   |   |   |   |  |  |  |  |
|---|---|--------------|-----|-------|---|---|---|---|--|--|--|--|
| Course Code   | Course Title  | Course Type  | Sem | Hours | L | т | Р | С |  |  |  |  |
| 23M6UCAPR1  | PROJECT WORK  | PROJECT WORK | VI  | -     | - | - | 4 | 4 |  |  |  |  |
| Objective   | To grasp the real-time software development environment and acquire comprehensive knowledge of the chosen problem and programming language/software for their project work. |              |     |       |   |   |   |   |  |  |  |  |

### Guidelines for Project Work and Viva Voce

#### **PROJECT PLANNING:**

Bachelor of Computer Application Project is a complex undertaking that requires meticulous planning well in advance. The topic must be selected at the beginning of the final year, with related reading, training, and project discussions to be completed during the first term.

### **SELECTION OF TEAM:**

Mini project is approached collaboratively as a team effort. It is recommended to select team members randomly, practical considerations may allow students the option to self-organize into teams of two members each, with a designated team leader. Each team must maintain written minutes of meetings and ensure clear assignment of tasks to every member. These meeting minutes will be incorporated into the project report. Despite working in groups, each student must independently handle distinct modules of the project and submit individual reports.

### **SELECTION OF TOOLS:**

Students are free to choose any platform, tools, or programming languages for their project work, with a strong recommendation towards open source options wherever feasible. The evaluation of the project will not consider the choice of tools as a criterion.

#### **REGULATIONS OF PROJECT WORK**

Three copies of the project report must be submitted by each student.

- The final outer dimensions of the project report shall be 21cm X 30 cm.
- Only hard binding should be done. The text of the report should be set in 12pt, Times New Roman, 1.5 spaced. Headings should be set as follows: CHAPTER HEADINGS 16pt, Times New Roman, Bold, All caps and Centered.

Section Headings 14pt Times New Roman, Bold, Left adjusted. Section Sub-heading 12pt, Times New Roman.

- Title of figures, tables etc.., are done in 12 point, Times New Roman, Bold and Centered.
- 1.5 space need be left above a section or subsection heading and no space may be left after them. References shall be IEEE format (see any IEEE magazine for detail).

- While doing the project keep note of all books you refer, in the correct format and include them in alphabetical order in your reference list. The Candidate should submit the filled in format as given in Annexure-I to the department for approval during the First Week of December.
- Periodically the project should be reviewed.
- A Sample format is enclosed in Annexure-II.
- Format of the Title page and Certificate are enclosed in Annexure III.
- The students may use power point presentation during their viva voce examination.

|           | CO1: Identification of Research Area                      | К4             |          |
|-----------|---|----------------|----------|
|           | CO2: Analyze of problem solving skills                    | К4             |          |
| Course    | CO3: Analyze sources for conduct of Research              | К4             |          |
| Outcome   | CO4: Evaluate the research report                         | K5             |          |
|           | <b>CO5:</b> Create the research report                    | К6             |          |
|           | Learning Resources  |                |          |
| Text      | 1. Research Methodology: Methods and Techniques, by C.R   | . Kothari, New | / Age    |
| Books     | Publications, 2009.                                       |                |          |
| Reference | 1. Research Methodology: Methods and Techniques by C.R.   | Kothari, New   | Age      |
| Books     | Publications, 1985.                                       |                |          |
|           | 2. Essentials of Research Design and Methodology by: Geof | frey R. Marczy | k, David |
|           | DeMatteo, David Festinger, 2005.                          |                |          |
| Website   | 1. http://gen.lib.rus.ec/                                 |                |          |
| Link      |   |                |          |
|           |   |                |          |

|  | BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards |  |          |       |  |                 |       |           |        |         |     |          |        |     |
|--|---|--|----------|-------|--|-----------------|-------|-----------|--------|---------|-----|----------|--------|-----|
| Course Co  | de  |  | Course T | itle  | Cours  | е Туре          |       | Sem       | Hou    | rs I    | -   | т        | Ρ      | С   |
| 23M6UCAI   | PR1   | PI                                       | ROJECT W | /ORK  | PROJECT WORK   |                 |       | VI        | VI -   |         | ,   | -        | 4      | 4   |
|  |   |  |          |       | CO-PO  | Mappir          | g     |           |        |         |     |          |        |     |
| CO<br>Number                                     | PO1   |  | PO2      | PO3   | PO4  | PO5             | PSC   | <b>D1</b> | PSO2   | PSO3    |     | SO3 PSO4 |        | SO5 |
| CO1  | Ν   | l  | М        | Μ     | М  | S               | N     | 1         | Μ      | S       |     | S        |        | S   |
| CO2  | S   |  | S        | S     | S  | S               | N     | 1         | S      | S       |     | S        |        | S   |
| CO3  | S S   |  |          | S     | S  | S               | S     | 5         | S      | S       |     | Μ        |        | Μ   |
| CO4  | S S   |  |          | S     | М  | S               | S     | 5         | S      | S       |     | Μ        |        | Μ   |
| CO5  | N   | l  | М        | М     | S  | S               | N     | 1         | М      |         |     | S        |        | S   |
| Level of Co<br>between C                         | rrelati<br>D and  | on<br>PO                                 |          | L-LOW | L-LOW M-MEI  |                 |       |           | Л      |         | ç   | S-STR(   | DNG    |     |
| <b>Tutorial Sch</b>                              | edule   |  |          |       | -  |                 |       |           |        |         |     |          |        |     |
| Teaching an                                      | id Lea  | rninį                                    | g Methoo | ls    | Working with programming languages such as R, <u>Python</u> , Java, .Net, etc, |                 |       |           |        |         |     |          |        |     |
| Assessment                                       | Meth  | nods                                     |          |       | Atter<br>Viva  | ndance,<br>Voce | Revie | ew / V    | Vork D | iary, F | ina | al Rep   | ort an | d   |
| De   | signe   | d By                                     |          |       | Verifie  | ed By           |       |           |        | Арри    | ov  | ed By    |        |     |
| Mr.K.Vijay<br>Mrs.N.Pac<br>Mrs.K.Gay<br>Mr.M.Pur | HoD   | HoD - Mr.G.Selvakumar Member Secretary - |          |       |  |                 |       | y - Dr.   | S.Sha  | hitha   |     |          |        |     |





| BCA Syllabus LOCF-CBCS with effect from 2023-2024 Onwards   |  |  |  |  |   |                                   |                                       |                                |  |  |  |  |  |  |
|---|--|--|--|--|---|-----------------------------------|---------------------------------------|--------------------------------|--|--|--|--|--|--|
| Course Code   | e Course Title   | Course Type  | Sem  | Hours  | L   | т                                 | Р                                     | С                              |  |  |  |  |  |  |
| 23M6UCAOE   | PROFESSIONAL<br>COMPETENCY<br>51 SKILL<br>(Self Study)   | COMPUTER<br>APPLICATION<br>FOR<br>COMPETITIVE<br>EXAMINATION   | -  | -  | 4   | -                                 | 4                                     |                                |  |  |  |  |  |  |
| Objective   | <ul> <li>Creating awareness among students about competitive examinations,</li> <li>imparting knowledge on their impact, and fostering a positive attitude towards appearing in such exams.</li> </ul>                                     |  |  |  |   |                                   |                                       |                                |  |  |  |  |  |  |
|   | Guidelin   | es for Competitive Exa   | aminatio   | on   |   |                                   |                                       |                                |  |  |  |  |  |  |
| This course comprehensively covers Python, Data Structures and algorithms, Open Source<br>Software Technologies, Operating Systems, Problem Solving Techniques, Database Management<br>Systems, Computer Networks, Programming Languages (with a focus on Java), Artificial Intelligence,<br>and Machine Learning.<br>It emphasizes recent advancements in these fields and aims to provide a holistic<br>understanding through factual content and multiple-choice questions (MCQs). This makes it highly<br>suitable for university and institute students preparing for entrance exams, as well as those gearing<br>up for national and state-level competitive exams like TANCET, IBPS, and SSC, which follow an MCQ<br>format. |  |  |  |  |   |                                   |                                       |                                |  |  |  |  |  |  |
| <ol> <li>Objecti</li> <li>Questici</li> <li>Test cri<br/>facts, e<br/>predict</li> <li>Empha<br/>prompti</li> <li>HOD's<br/>each promotion</li> </ol>   | ve type online examinat<br>ons must be taken from<br>itical thinking through n<br>evaluate situations, exp<br>outcomes.<br>size higher-level thinki<br>t students to recall princ<br>instruct to the faculty to<br>rogramme) with solution | tion will be conducted<br>all courses of the Data<br>nultiple-choice questic<br>plain cause and effec<br>ng with memory-plu<br>iples, rules, or facts w<br>p prepare minimum 5<br>as and circulate among | at the end<br>a Science<br>ons that<br>t relatio<br>s applica<br>ithin rea<br>00 quest<br>g the stur | nd of 6 <sup>th</sup><br>Program<br>challenge<br>nships, r<br>ation-ori<br>l-life con<br>tions boo<br>dents. | semes<br>nme.<br>e learr<br>make<br>ented<br>texts.<br>oklet (o | ster.<br>ners t<br>infero<br>ques | o inte<br>ences,<br>stions<br>llative | rpret<br>and<br>that<br>ly for |  |  |  |  |  |  |
| Course  | implementing program   | nming languages.<br>m solving techniques   | to develo  | op skills  | K:  | 1                                 |                                       |                                |  |  |  |  |  |  |
| Outcome   | for competitive exams  | •  |  |  |   | ۷                                 |                                       |                                |  |  |  |  |  |  |

КЗ

**CO3:** Organize Computational problems for real time

problems.

|                    | <b>CO4:</b> Analyze Computer techniques and software development fundamentals to produce computing-based solutions | К4             |            |  |  |  |  |  |  |  |  |
|--------------------|--|----------------|------------|--|--|--|--|--|--|--|--|
|                    | CO5: Evaluate complex computing problems to apply K5 fundamental computing principles effectively.                 |                |            |  |  |  |  |  |  |  |  |
| Learning Resources |  |                |            |  |  |  |  |  |  |  |  |
| Reference          | 1. Computer Knowledge for SBI/ IBPS Clerk/ PO/ RRB/ RBI/ SSC   | C/ Insurance   | e Exams    |  |  |  |  |  |  |  |  |
| Books              | 2nd Edition, Disha Publication.  |                |            |  |  |  |  |  |  |  |  |
|                    | 2. M.C.Qs For Competitive Exams Computer Science, LBH Auth   | ors' Divisio   | n, Library |  |  |  |  |  |  |  |  |
|                    | Book House.  |                |            |  |  |  |  |  |  |  |  |
| Website            | 1. https://nptel.ac.in/courses/106106092   |                |            |  |  |  |  |  |  |  |  |
| Link               | 2. https://www.digimat.in/nptel/courses/video/106101061/LC   | <u>)1.html</u> |            |  |  |  |  |  |  |  |  |
|                    | 3. https://www.digimat.in/nptel/courses/video/106104122/LC   | <u>)1.html</u> |            |  |  |  |  |  |  |  |  |

|   | BC                | CA Sy  | llabus LC   | CF-CB | SCS 1   | with ef                            | ffect fro | m 2   | 2023- | 2024 Or | nwai  | rds    |          |       |       |
|---|-------------------|--|---|-------|---|------------------------------------|-----------|-------|-------|---------|-------|--------|----------|-------|-------|
| Course Cod  | e                 | С  | ourse Tit   | le    |   | Cours                              | е Туре    |       | Sei   | m Ho    | urs   | L      | т        | Р     | с     |
| COMPU<br>APPLICA<br>23M6UCAOE1 FOR<br>COMPET<br>EXAMINA                     |                   | COMPUTE<br>PPLICATIO<br>FOR<br>DMPETITI<br>AMINATI | MPUTER<br>PLICATION<br>FOR<br>MPETITIVE<br>MINATION |       | PROFESSIONAL<br>COMPETENCY<br>SKILL<br>(Self Study) |                                    | V         |       |       | -       | 4     | -      | 4        |       |       |
|   | CC                | )-PO N   | lapping   |       |   | Γ                                  |           |       |       |         |       |        |          |       |       |
| CO Number   | PO                | 1  | PO2   | PO3   | 5   | PO4                                | PO5       | P     | SO1   | PSO2    | PS    | 603    | PSO4     | PS    | 505   |
| CO1   | M                 |  | М   | S     |   | S                                  | S         |       | Μ     | М       |       | S      | S        |       | S     |
| CO2   | S                 | S S  |   | S     |   | S                                  | S         |       | Μ     | S       |       | S      | S        |       | S     |
| CO3   | L                 | L M  |   | S     |   | S                                  | М         |       | S     | S       |       | S      | М        |       | Μ     |
| CO4   | М                 | M S  |   | L     |   | М                                  | S         |       | L     | S       |       | S      | М        |       | Μ     |
| CO5   | M                 | M M  |   | Μ     |   | S                                  | S         |       | Μ     | М       |       | S      | S        |       | S     |
| Level of Corr<br>between CO   | relatior<br>and P | n<br>O   |   | L-LOV | L-LOW M-M   |                                    |           | ЛЕDIU | JM    |         |       | S-STRC | ONG      |       |       |
| Tutorial Sched  | lule              |  |   |       |   |                                    |           |       |       |         |       |        |          |       |       |
| Teaching and  | Learniı           | ng N   | <b>/</b> lethods                                    |       |   | Learning Computer Science Courses. |           |       |       |         |       |        |          |       |       |
| Assessment N  | lethod            | ls   |   |       |   | CIA I                              | and CIA   | II E  | Exams | ;       |       |        |          |       |       |
| Des   | igned             | Ву   |   |       | ١   | Verifie                            | d By      |       |       |         | Apj   | prov   | ed By    |       |       |
| Mr.K.Vijayakumar<br>Mrs.N.Padmapriya<br>Mrs.K.Gayathri<br>Mr.M.Purusothaman |                   |  |   |       | ) - I   | Mr.G.S                             | elvakur   | nar   | M     | ember S | Secre | etary  | v - Dr.S | .Shah | iitha |