

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)



ESTD-1994

**MUTHAYAMMAL
COLLEGE OF ARTS
AND SCIENCE**

(Autonomous)

A UNIT OF VANETRA GROUP

Learn.
Lead

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DEGREE OF BACHELOR OF COMPUTER APPLICATION

Learning Outcomes - Based Curriculum Framework

- Choice Based Credit System

Syllabus for B.C.A

(Semester Pattern)

(For Candidates admitted from the academic year
2021 -2022 and onwards)



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

MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE (Autonomous) RASIPURAM

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, thereby 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 a resource 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 BCA

Vision

To attain global recognition in 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.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO):

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 upholding the human values and environmental sustenance
for the betterment of the society.

Graduate Attributes:

The Graduate attributes of BCA are

GA 1 Analytical Reasoning

GA 2 Critical Thinking

GA 3 Problem Solving Skills

GA 4 Communication Skills

GA 5 Leadership Quality

GA 6 Team work

GA 7 Lifelong Learning

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):

PSO1: To Recognize the Students career with necessary skills in the area related to Computer
Applications.

PSO2: To Exemplifying the emerging technologies and provide innovative solutions to real-life
Applications.

PSO3: To Execute the career in corporate sectors.

PSO4: To organize a concrete foundation and enrich the abilities to qualify for Employment, Higher
Studies and Research in Computer Application and Data science with ethical values.

PSO5: To Build the student Career in Public sector, Government organizations and Educational
Sectors.

UG-REGULATION

1. Internal Examination Marks - Theory

Components	Marks
CIA I&II	15
Attendance	5
Assignment	5
Total	25

Attendance Percentage	Marks
96 %to 100%	5
91%to 95%	4
86%to 90%	3
81%to 85%	2
75%to 80%	1
Below 75%	0

2. QUESTION PAPER PATTERN FOR CIA I,II AND ESE(3HOURS)

MAXIMUM:75Marks

SECTION-A (10 Marks) (Objective Type)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(10 x1=10 marks)

SECTION-B (10 Marks) (Short Answer)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 2 = 10 marks)

SECTION-C (25 Marks) (Either or Type)

Answer any FIVE questions

ALL Questions Carry EQUAL Marks

Either or Type (5 x 5 = 25 marks)

SECTION-D (30 Marks) (Analytical Type)

Answer any THREE Questions out of FIVE questions

ALL Questions Carry EQUAL Marks

(3 x 10 = 30 marks)

(Syllabus for CIA-I 2.5 Unit, Syllabus for CIA-II All 5 Unit).

2. a) Components for Practical CIA.

Components	Marks
CIA -I	15
CIA - II	15
Observation Note	5
Attendance	5
Total	40

2. b) Components for Practical ESE.

Components	Marks
Completion of Experiments	50
Record	5
Viva	5
Total	60

3. Guidelines for Value Education Yoga and Environmental Studies: (Part IV)

- The Course Value Education Yoga is to be treated as 100% CIA course which is offered in I Semester for I year UG students.
- The Course Environmental Studies is to be treated as 100% CIA course which is offered in II Semester for I year UG students.
- Total Marks for the Course =100

Components	Marks
TwoTests(2 x30)	60
Fieldvisitandreport(10+10)	20
Twoassignments(2 x10)	20
Total	100

The passing minimum for this course is 40%

- 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.

4. Guidelines for Extension Activity: (Part V)

- At least two activities should be conducted within semester consisting of two days each.
- The activities may be Educating Rural Children, Unemployed Graduates, Self Help Group etc.

The marks may be awarded as follows:

NoofActivities	Marks
2 x50 (Each Activityfor twodays)	100

5. Internship/Industrial Training, Mini Project and Major Project Work

Internship/Industrial Training		Mini Project	Major Project Work	
Components	Marks	Marks	Components	Marks
CIA* ²			CIA	
WorkDiary	25	-	a) Attendance 10 Marks	40
Report	50	50	b) Review/ WorkDiary* ¹ 30 Marks	
Viva-voce	25	50		
Examination				
Total	100	100		
			ESE* ²	
			a)FinalReport 40Marks	60
			b)Viva-voce 20Marks	
			Total	100

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

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

6. Guidelines for Competitive Exams - Online Mode (Part III) - Online Exam 3 hours

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

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.



BCA - Abstract under LOCF-CBCS Pattern with effect from 2021-2022 Onwards
Structure of Credit Distribution as per the TANSCH / UGC Guidelines

S.No.	Study Components	Part	Sem I		Sem II		Sem III		Sem IV		Sem V		Sem VI		No. of Paper	Total Credit
			No. of Paper	Credit	No. of Paper	Credit	No. of Paper	Credit	No. of Paper	Credit	No. of Paper	Credit	No. of Paper	Credit		
1	LANGUAGE - I	I	1	3	1	3									2	6
2	LANGUAGE - II	II	1	3	1	3									2	6
3	DISCIPLINE SPECIFIC COURSE(DSC)-THEORY	III	1	4	2	8	3	12	3	12	2	7	2	8	13	51
4	DSC - PRACTICAL	III	1	2	1	2	1	2	1	2	2	4	1	2	7	14
5	GENERIC ELECTIVE COURSES(GEC)- THEORY	III	1	4	1	4	1	4	1	4					4	16
6	GEC PRACTICAL	III			1	2			1	2					2	4
7	DISCIPLINE SPECIFIC ELECTIVE COURSES(DSE)	III									2	8	2	8	4	16
8	PROJECT WORK	III											1	4	1	4
9	INTERNSHIP	III														
10	ONLINE - COMPETITIVE EXAMINATION	III											1	2	1	2
11	SKILL ENHANCEMENT COURSES(SEC)-SBEC	IV					1	2	1	2	1	2	1	2	4	8
12	NON MAJOR ELECTIVE COURSES(NMEC)	IV					1	2	1	2					2	4
13	PROFESSIONAL ENGLISH	IV	1	2	1	2									2	4
14	ABILITY ENHANCEMENT COMPULSORY COURSES(AECC)-EVS	IV			1	2									1	2
15	ABILITY ENHANCEMENT COMPULSORY COURSES(AECC)- VALUE EDUCATION - YOGA	IV	1	2											1	2
16	EXTENSION ACTIVITY	V											1	1	1	1
Cumulative Credits			7	20	9	26	7	22	8	24	7	21	9	27	47	140

Total No. of Subjects	47
Marks	4500

PART	No. of Credits
PART - I	6
PART - II	6
PART - III	107
PART - IV	20
PART - V	1
Grand Total	140

V. V. Iyer

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RASIPURAM - 637 408, Namakkal

S.No.	PART	STUDY COMPONENTS	COURSE_CODE	TITLE OF THE COURSE	Hrs./W		CREDIT POINTS	MAX.MARKS		
					Lect.	Lab.		CIA	ESE	TOTAL
SEMESTER - I										
1	I	LANGUAGE-I	21M1UFTA01	TAMIL - I	5	-	3	25	75	100
2	II	LANGUAGE-II	21M1UCEN01	COMMUNICATIVE ENGLISH - I	5	-	3	25	75	100
3	III	DSC THEORY - I	21M1UCAC01	PROBLEM SOLVING THROUGH C	6	-	4	25	75	100
4	III	GEC THEORY - I	21M1UAAA01/ 21M1UAAA03	ALLIED - ALGEBRA AND CALCULUS/ ALGEBRA AND DISCRETE MATHEMATICS	5	-	4	25	75	100
5	III	DSC PRACTICAL - I	21M1UCAP01	PRACTICAL: PROGRAMMING IN C	-	4	2	40	60	100
6	III	GEC PRACTICAL - I	21M2UMAAP1	ALLIED PRACTICAL: MATHEMATICS	-	2	-	-	-	-
7	IV	AECC - VALUE EDUCATION	21M1UVED01	YOGA	1	-	2	25	75	100
8	IV	PROFESSIONAL ENGLISH - I	21M1UPES01	PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES - I	2	-	2	25	75	100
TOTAL					24	6	20	190	510	700
SEMESTER - II										
1	I	LANGUAGE - I	21M2UFTA02	TAMIL - II	5	-	3	25	75	100
2	II	LANGUAGE - II	21M2UCEN02	COMMUNICATIVE ENGLISH - II	5	-	3	25	75	100
3	III	DSC THEORY - II	21M2UCAC02	OBJECT ORIENTED PROGRAMMING WITH C++	4	-	4	25	75	100
4	III	DSC THEORY - III	21M2UCAC03	COMPUTER ORGANIZATION AND ARCHITECTURE	4	-	4	25	75	100
5	III	GEC THEORY - II	21M2UAAA02/ 21M2UAAA04	ALLIED: DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS/ DIFFERENTIAL EQUATIONS AND INTEGRATIONS	4	-	4	25	75	100
6	III	DSC PRACTICAL - II	21M2UCAP02	PRACTICAL: PROGRAMMING IN C++	-	3	2	40	60	100
7	III	GEC PRACTICAL - I	21M2UMAAP1	PRACTICAL: ALLIED - MATHEMATICS	-	2	2	40	60	100
8	IV	AECC - ENVIRONMENTAL STUDIES	21M2UEVS01	ENVIRONMENTAL STUDIES	1	-	2	25	75	100
9	IV	PROFESSIONAL ENGLISH - II	21M2UPES02	PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES - II	2	-	2	25	75	100
TOTAL					25	5	26	255	645	900
SEMESTER - III										
1	III	DSC THEORY - IV	21M3UCAC04	RELATIONAL DATABASE MANAGEMENT SYSTEMS	5	-	4	25	75	100
2	III	DSC THEORY - V	21M3UCAC05	OPERATING SYSTEM	5	-	4	25	75	100
3	III	DSC THEORY - VI	21M3UCAC06	DATA STRUCTURES AND ALGORITHMS	5	-	4	25	75	100
4	III	GEC THEORY - III	21M3USTA08	ALLIED : APPLIED STATISTICS - I	4	-	4	25	75	100
5	III	DSC PRACTICAL - III	21M3UCAP03	PRACTICAL: RDBMS	-	4	2	40	60	100
6	III	GEC PRACTICAL - II	21M4USTAP2	PRACTICAL: ALLIED - STATISTICS	-	2	-	-	-	-
7	IV	SEC - PRACTICAL - I	21M3UCASP1	PRACTICAL: OFFICE AUTOMATION	-	3	2	40	60	100
8	IV	NMEC - I	21M3UMAN01	QUANTITATIVE APTITUDE - I	2	-	2	25	75	100
TOTAL					21	9	22	205	495	700

S.No.	PART	STUDY COMPONENTS	COURSE_CODE	TITLE OF THE COURSE	Hrs./W		CREDIT POINTS	MAX.MARKS		
					Lect.	Lab.		CIA	ESE	TOTAL
SEMESTER - IV										
1	III	DSC THEORY - VII	21M4UCAC07	VISUAL PROGRAMMING	5	-	4	25	75	100
2	III	DSC THEORY - VIII	21M4UCAC08	MACHINE LEARNING	5	-	4	25	75	100
3	III	DSC THEORY - IX	21M4UCAC09	COMPUTER NETWORKS	5	-	4	25	75	100
4	III	GEC THEORY - IV	21M4USTA09	ALLIED : APPLIED STATISTICS - II	4	-	4	25	75	100
5	III	DSC PRACTICAL - IV	21M4UCAP04	PRACTICAL: VISUAL PROGRAMMING	-	4	2	40	60	100
6	III	GEC PRACTICAL - II	21M4USTAP2	PRACTICAL: ALLIED - STATISTICS	-	2	2	40	60	100
7	IV	SEC - PRACTICAL - II	21M4UCASP2	PRACTICAL : HTML AND WEB DESIGN	-	3	2	40	60	100
8	IV	NMEC - II	21M4UMAN03	QUANTITATIVE APTITUDE - II	2	-	2	25	75	100
				TOTAL	21	9	24	245	555	800
SEMESTER - V										
1	III	DSC THEORY - X	21M5UCAC10	JAVA PROGRAMMING	5	-	4	25	75	100
2	III	DSC THEORY - XI	21M5UCAC11	OPEN SOURCE COMPUTING	4	-	3	25	75	100
3	III	DSC PRACTICAL - V	21M5UCAP05	PRACTICAL: PROGRAMMING IN JAVA	-	4	2	40	60	100
4	III	DSC PRACTICAL - VI	21M5UCAP06	PRACTICAL: PROGRAMMING IN PYTHON	-	4	2	40	60	100
5	III	DSE - I		ELECTIVE - I	5	-	4	25	75	100
6	III	DSE - II		ELECTIVE - II	5	-	4	25	75	100
7	IV	SEC - THEORY - I	21M5UCAS01	CAMPUS TO CORPORATE TRANSMISSION	3	-	2	25	75	100
				TOTAL	22	8	21	205	495	700
SEMESTER - VI										
1	III	DSC THEORY - XII	21M6UCAC12	ARTIFICIAL INTELLIGENCE USING DEEP LEARNING	5	-	4	25	75	100
2	III	DSC THEORY - XIII	21M6UCAC13	CYBER SECURITY	5	-	4	25	75	100
3	III	DSE - III		ELECTIVE - III	5	-	4	25	75	100
4	III	DSE - IV		ELECTIVE - IV	5	-	4	25	75	100
5	III	DSC PRACTICAL - VII	21M6UCAP07	PRACTICAL: ARTIFICIAL INTELLIGENCE	-	4	2	40	60	100
6	III	PROJECT WORK	21M6UCAPR1	PROJECT WORK	4	-	4	40	60	100
7	III	ONLINE - COMPETITIVE EXAMINATION	21M6UCAOE01	COMPUTER APPLICATION FOR COMPETITIVE EXAMINATION	-	-	2	100	-	-
8	IV	SEC - PRACTICAL - III	21M6UCASP3	PRACTICAL: COREL DRAW (Naan midhavan)	-	2	2	40	60	100
9	V	EXTENSION ACTIVITY	21M6UEX01	EXTENSION ACTIVITY	-	-	1	100	-	-
				TOTAL	24	6	27	420	480	700
				OVERALL TOTAL	137	43	140	1520	3180	4500
10	VI	EXTRA		EXTRA CREDIT SWAYAM/MOOC ONLINE	-	-	2	-	-	-

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BCA Programme
Minutes of the Board of Studies

Board of Studies Meeting was held on 10.05.2023(Wednesday) at 'B' Block Meeting Hall in Muthayammal College of Arts and Science, Rasipuram.

Dr.V.Vijayadeepa, Chairman of Board of Studies welcomed and introduced the Panel Members.

The following points were discussed and approved by the members of the Board of Studies for the Academic year 2023-2024 for BCA and B.Sc Data Science programme.

I Year BCA & B.Sc Data Science Programme (AY 2023-24)

The Scheme and Syllabi have to be followed as per TANSCHÉ guidelines for the students admitted from the academic year 2023-24 and onwards.

II year BCA Programme (AY 2022-23)

As per the order of Government of TamilNadu, the board approved the incorporation of TAMIL as a course of study in the III and IV semester of BCA Programme for the students admitted in the academic year 2022-23 and onwards.

New Courses Introduced/Removed/Revised in BCA Programme for the students admitted from the academic year 2022 -2023 and onwards:

S.No	PART	Study Compount	Course code	Sem	Title of the Course	Hrs./W		Credit Points	Max. Marks			Remarks
						Lect.	Lab		CIA	ESE	Total	
1	I	Language - I	22M3UFTA03	III	Tamil - III	5	-	3	25	75	100	COURSE INTRODUCED
2	III	DSE Theory -IV	22M3UCAC04	III	Relational Database Management Systems	5	-	5	25	75	100	COURSE REVISED
3	III	DSE Theory -V	21M3UCAC05	III	Operating System	5	-	4	25	75	100	COURSE REMOVED
4	I	Language - I	22M4UFTA04	IV	Tamil - IV	5	-	3	25	75	100	COURSE INTRODUCED
5	III	DSE Theory -IX	21M4UCAC09	IV	Computer Networks	5	-	4	25	75	100	COURSE REMOVED
6	III	DSE Theory -XI	22M5UCAC11	V	Open Source Computing	4	-	4	25	75	100	COURSE REVISED
7	III	DSE Theory -XIV	22M4UCAC14	VI	Computer Networks	5	-	4	25	75	100	COURSE INTRODUCED
8	III	DSE Theory -XIII	21M6UCAC13	VI	Cyber Security	5	-	4	25	75	100	COURSE REMOVED
9	III	DSE Theory -VI	22M3UCAC06	III	Data Structures and Algorithms	5	-	4	25	75	100	COURSE REVISED

III Year BCA Programme (AY 2021-22)

Value added course offered in BCA

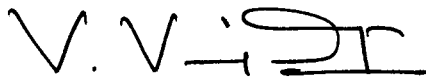
- ❖ The Board verified and approved the scheme and syllabi of the Value added Course "Adobe Photoshop 7.0" for the students admitted in the academic year 2021-22,2022-23 and onwards.
- ❖ The Board approved to include Naan Mudhalvan course for BCA programme in the VI semester

New Courses Introduced in BCA Programme (2021 -2022) and onwards in and VI Semester:

S. No	PART	Study Components	Course Code	Title of the Course	Hrs./W		Credit Points	Max. Marks		
					Lec t.	Lab		CIA	ESE	Total
1.	VI	Value Added Course		Adobe Photoshop7.0	-	-	-	-	-	-

B.Com & B.Com CA programme (Allied Courses)

The board suggested to simplify the contents of the syllabus in the course "E-Commerce" as it comes under SEC part.



Chairman-Board of Studies

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S.No.	PART	STUDY COMPONENTS	COURSE_CODE	TITLE OF THE COURSE	Hrs./W		CREDIT POINTS	MAX.MARKS		
					Lect.	Lab.		CIA	ESE	TOTAL
SEMESTER - I										
1	I	LANGUAGE-I	21M1UFTA01	TAMIL - I	5	-	3	25	75	100
2	II	LANGUAGE-II	21M1UCEN01	COMMUNICATIVE ENGLISH - I	5	-	3	25	75	100
3	III	DSC THEORY - I	21M1UCAC01	PROBLEM SOLVING THROUGH C	6	-	4	25	75	100
4	III	GEC THEORY - I	21M1UMAA01/ 21M1UMAA03	ALLIED - ALGEBRA AND CALCULUS/ ALGEBRA AND DISCRETE MATHEMATICS	5	-	4	25	75	100
5	III	DSC PRACTICAL - I	21M1UCAP01	PRACTICAL: PROGRAMMING IN C	-	4	2	40	60	100
6	III	GEC PRACTICAL - I	21M2UMAAP1	ALLIED PRACTICAL: MATHEMATICS	-	2	-	-	-	-
7	IV	AECC - VALUE EDUCATION	21M1UVED01	YOGA	1	-	2	25	75	100
8	IV	PROFESSIONAL ENGLISH - I	21M1UPES01	PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES - I	2	-	2	25	75	100
				TOTAL	24	6	20	190	510	700
SEMESTER - II										
1	I	LANGUAGE - I	21M2UFTA02	TAMIL - II	5	-	3	25	75	100
2	II	LANGUAGE - II	21M2UCEN02	COMMUNICATIVE ENGLISH - II	5	-	3	25	75	100
3	III	DSC THEORY - II	21M2UCAC02	OBJECT ORIENTED PROGRAMMING WITH C++	4	-	4	25	75	100
4	III	DSC THEORY - III	21M2UCAC03	COMPUTER ORGANIZATION AND ARCHITECTURE	4	-	4	25	75	100
5	III	GEC THEORY - II	21M2UMAA02/ 21M2UMAA04	ALLIED: DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS/ DIFFERENTIAL EQUATIONS AND INTEGRATIONS	4	-	4	25	75	100
6	III	DSC PRACTICAL - II	21M2UCAP02	PRACTICAL: PROGRAMMING IN C++	-	3	2	40	60	100
7	III	GEC PRACTICAL - I	21M2UMAAP1	PRACTICAL: ALLIED - MATHEMATICS	-	2	2	40	60	100
8	IV	AECC - ENVIRONMENTAL STUDIES	21M2UEVS01	ENVIRONMENTAL STUDIES	1	-	2	25	75	100
9	IV	PROFESSIONAL ENGLISH - II	21M2UPES02	PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES - II	2	-	2	25	75	100
				TOTAL	25	5	26	255	645	900
SEMESTER - III										
1	III	DSC THEORY - IV	21M3UCAC04	RELATIONAL DATABASE MANAGEMENT SYSTEMS	5	-	4	25	75	100
2	III	DSC THEORY - V	21M3UCAC05	OPERATING SYSTEM	5	-	4	25	75	100
3	III	DSC THEORY - VI	21M3UCAC06	DATA STRUCTURES AND ALGORITHMS	5	-	4	25	75	100
4	III	GEC THEORY - III	21M3USTA08	ALLIED : APPLIED STATISTICS - I	4	-	4	25	75	100
5	III	DSC PRACTICAL - III	21M3UCAP03	PRACTICAL: RDBMS	-	4	2	40	60	100
6	III	GEC PRACTICAL - II	21M4USTAP2	PRACTICAL: ALLIED - STATISTICS	-	2	-	-	-	-
7	IV	SEC - PRACTICAL - I	21M3UCASP1	PRACTICAL: OFFICE AUTOMATION	-	3	2	40	60	100
8	IV	NMEC - I	21M3UMAN01	QUANTITATIVE APTITUDE -I	2	-	2	25	75	100
				TOTAL	21	9	22	205	495	700

S.No.	PART	STUDY COMPONENTS	COURSE_CODE	TITLE OF THE COURSE	Hrs./W		CREDIT POINTS	MAX.MARKS		
					Lect.	Lab.		CIA	ESE	TOTAL
SEMESTER - IV										
1	III	DSC THEORY - VII	Z1M4UCAC07	VISUAL PROGRAMMING	5	-	4	25	75	100
2	III	DSC THEORY - VIII	Z1M4UCAC08	MACHINE LEARNING	5	-	4	25	75	100
3	III	DSC THEORY - IX	Z1M4UCAC09	COMPUTER NETWORKS	5	-	4	25	75	100
4	III	GEC THEORY - IV	Z1M4USTA09	ALLIED : APPLIED STATISTICS - II	4	-	4	25	75	100
5	III	DSC PRACTICAL - IV	Z1M4UCAP04	PRACTICAL: VISUAL PROGRAMMING	-	4	2	40	60	100
6	III	GEC PRACTICAL - II	Z1M4USTAP2	PRACTICAL: ALLIED - STATISTICS	-	2	2	40	60	100
7	IV	SEC - PRACTICAL - II	Z1M4UCASP2	PRACTICAL : HTML AND WEB DESIGN	-	3	2	40	60	100
8	IV	NMEC - II	Z1M4UMAN03	QUANTITATIVE APTITUDE - II	2	-	2	25	75	100
				TOTAL	21	9	24	245	555	800
SEMESTER - V										
1	III	DSC THEORY - X	Z1M5UCAC10	JAVA PROGRAMMING	5	-	4	25	75	100
2	III	DSC THEORY - XI	Z1M5UCAC11	OPEN SOURCE COMPUTING	4	-	3	25	75	100
3	III	DSC PRACTICAL - V	Z1M5UCAP05	PRACTICAL: PROGRAMMING IN JAVA	-	4	2	40	60	100
4	III	DSC PRACTICAL - VI	Z1M5UCAP06	PRACTICAL: PROGRAMMING IN PYTHON	-	4	2	40	60	100
5	III	DSE - I		ELECTIVE - I	5	-	4	25	75	100
6	III	DSE - II		ELECTIVE - II	5	-	4	25	75	100
7	III	INTERNSHIP		INTERNSHIP PROGRAMME	-	-	-	-	-	-
8	IV	SEC - THEORY - I	Z1M5UCAS01	CAMPUS TO CORPORATE TRANSMISSION	3	-	2	25	75	100
9	VI	EXTRA		VALUE ADDED COURSE	-	-	-	-	-	-
				TOTAL	22	8	21	205	495	700
SEMESTER - VI										
1	III	DSC THEORY - XII	Z1M6UCAC12	ARTIFICIAL INTELLIGENCE USING DEEP LEARNING	5	-	4	25	75	100
2	III	DSC THEORY - XIII	Z1M6UCAC13	CYBER SECURITY	5	-	4	25	75	100
3	III	DSE - III		ELECTIVE - III	5	-	4	25	75	100
4	III	DSE - IV		ELECTIVE - IV	5	-	4	25	75	100
5	III	DSC PRACTICAL - VII	Z1M6UCAP07	PRACTICAL: ARTIFICIAL INTELLIGENCE	-	4	2	40	60	100
6	III	PROJECT WORK	Z1M6UCAPR1	PROJECT WORK	4	-	4	40	60	100
7	III	ONLINE - COMPETITIVE EXAMINATION	Z1M6UCAOE01	COMPUTER APPLICATION FOR COMPETITIVE EXAMINATION	-	-	2	100	-	-
8	IV	SEC - THEORY - II (NMSDC) Naan Mudhalvan		CLOUD COMPUTING	2	-	2	25	75	100
9	V	EXTENSION ACTIVITY	Z1M6UEX01	EXTENSION ACTIVITY	-	-	1	100	-	-
				TOTAL	26	4	27	405	495	700
				OVERALL TOTAL	139	41	140	1505	3195	4500
10	VI	EXTRA		EXTRA CREDIT SWAYAM/MOOC ONLINE	-	-	2	-	-	-

V.V → DC

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NAMAKKAL DISTRICT.

BCA - Abstract under LOCF-CBCS Pattern with effect from 2022-2023 Onwards
Structure of Credit Distribution as per the TANSICHE / UGC Guidelines


S.No.	Study Components	Part	Sem I		Sem II		Sem III		Sem IV		Sem V		Sem VI		No. of Paper	Total Credit
			No. of Paper	Credit	No. of Paper	Credit	No. of Paper	Credit	No. of Paper	Credit	No. of Paper	Credit	No. of Paper	Credit		
1	LANGUAGE - I	I	1	3	1	3	1	3	1	3					4	12
2	LANGUAGE - II	II	1	3	1	3									2	6
3	DISCIPLINE SPECIFIC COURSE(DSC)-THEORY	III	1	4	2	8	2	9	2	8	2	8	2	8	11	45
4	DSC - PRACTICAL	III	1	2	1	2	1	2	1	2	2	4	1	2	7	14
5	GENERIC ELECTIVE COURSES(GEC)- THEORY	III	1	4	1	4	1	4	1	4					4	16
6	GEC PRACTICAL	III			1	2			1	2					2	4
7	DISCIPLINE SPECIFIC ELECTIVE COURSES(DSE)	III									2	8	2	8	4	16
8	PROJECT WORK	III											1	4	1	4
9	INTERNSHIP	III														
10	ONLINE - COMPETITIVE EXAMINATION	III											1	2	1	2
11	SKILL ENHANCEMENT COURSES(SEC)-SBEC	IV					1	2	1	2	1	2	1	2	4	8
12	NON MAJOR ELECTIVE COURSES(NMEC)	IV					1	2	1	2					2	4
13	PROFESSIONAL ENGLISH	IV	1	2	1	2									2	4
14	ABILITY ENHANCEMENT COMPULSORY COURSES(AECC)-EVS	IV			1	2									1	2
15	ABILITY ENHANCEMENT COMPULSORY COURSES(AECC)- VALUE EDUCATION - YOGA	IV	1	2											1	2
16	EXTENSION ACTIVITY	V											1	1	1	1
17	EXTRA CREDIT	VI												2		
	Cumulative Credits		7	20	9	26	7	22	8	23	7	22	9	27	47	140

Total No. of Subjects	47
Marks	4500

PART	No. of Credits
PART - I	12
PART - II	6
PART - III	101
PART - IV	20
PART - V	1
Grand Total	140
Extra Credit	2



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S.No.	PART	STUDY COMPONENTS	COURSE_CODE	TITLE OF THE COURSE	Hrs./W		CREDIT POINTS	MAX.MARKS		
					Lect.	Lab.		CIA	ESE	TOTAL
SEMESTER - I										
1	I	LANGUAGE-I	21M1UFTA01	TAMIL - I	5	-	3	25	75	100
2	II	LANGUAGE-II	21M1UCEN01	COMMUNICATIVE ENGLISH - I	5	-	3	25	75	100
3	III	DSC THEORY - I	21M1UCAC01	PROBLEM SOLVING THROUGH C	6	-	4	25	75	100
4	III	GEC THEORY - I	21M1UMAA01/ 21M1UMAA03	ALLIED - ALGEBRA AND CALCULUS/ ALGEBRA AND DISCRETE MATHEMATICS	5	-	4	25	75	100
5	III	DSC PRACTICAL - I	21M1UCAP01	PRACTICAL: PROGRAMMING IN C	-	4	2	40	60	100
6	III	GEC PRACTICAL - I	21M2UMAAP1	ALLIED PRACTICAL: MATHEMATICS	-	2	-	-	-	-
7	IV	AECC - VALUE EDUCATION	21M1UVED01	YOGA	1	-	2	25	75	100
8	IV	PROFESSIONAL ENGLISH - I	21M1UPES01	PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES - I	2	-	2	25	75	100
				TOTAL	24	6	20	190	510	700
SEMESTER - II										
1	I	LANGUAGE - I	21M2UFTA02	TAMIL - II	5	-	3	25	75	100
2	II	LANGUAGE - II	21M2UCEN02	COMMUNICATIVE ENGLISH - II	5	-	3	25	75	100
3	III	DSC THEORY - II	21M2UCAC02	OBJECT ORIENTED PROGRAMMING WITH C++	4	-	4	25	75	100
4	III	DSC THEORY - III	21M2UCAC03	COMPUTER ORGANIZATION AND ARCHITECTURE	4	-	4	25	75	100
5	III	GEC THEORY - II	21M2UMAA02/ 21M2UMAA04	ALLIED: DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS/ DIFFERENTIAL EQUATIONS AND INTEGRATIONS	4	-	4	25	75	100
6	III	DSC PRACTICAL - II	21M2UCAP02	PRACTICAL: PROGRAMMING IN C++	-	3	2	40	60	100
7	III	GEC PRACTICAL - I	21M2UMAAP1	PRACTICAL: ALLIED - MATHEMATICS	-	2	2	40	60	100
8	IV	AECC - ENVIRONMENTAL STUDIES	21M2UEVS01	ENVIRONMENTAL STUDIES	1	-	2	25	75	100
9	IV	PROFESSIONAL ENGLISH - II	21M2UPES02	PROFESSIONAL ENGLISH FOR PHYSICAL SCIENCES - II	2	-	2	25	75	100
				TOTAL	25	5	26	255	645	900
SEMESTER - III										
1	I	LANGUAGE-I	22M3UFTA03	TAMIL - III	5	-	3	25	75	100
2	III	DSC THEORY - IV	22M3UCAC04	RELATIONAL DATABASE MANAGEMENT SYSTEMS	5	-	5	25	75	100
3	III	DSC THEORY - VI	22M3UCAC06	DATA STRUCTURES AND ALGORITHMS	5	-	4	25	75	100
4	III	GEC THEORY - III	21M3USTA08	ALLIED : APPLIED STATISTICS - I	4	-	4	25	75	100
5	III	DSC PRACTICAL - III	21M3UCAP03	PRACTICAL: RDBMS	-	4	2	40	60	100
6	III	GEC PRACTICAL - II	21M4USTAP2	PRACTICAL: ALLIED - STATISTICS	-	2	-	-	-	-
7	IV	SEC - PRACTICAL - I (NMSDC) Naan Mudhalvan		DIGITAL TRAINING ON MICROSOFT OFFICE 365 PRODUCTIVITY SUITE OFFERINGS	-	3	2	40	60	100
8	IV	NMEC - I	21M3UMAN01	QUANTITATIVE APTITUDE - I	2	-	2	25	75	100
				TOTAL	21	9	22	205	495	700

MUTHAYAMMAL COLLEGE OF ARTS AND SCIENCE
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 (Autonomous)
 2022-2023 Onwards
 Programme : BCA

S.No.	PART	STUDY COMPONENTS	COURSE_CODE	TITLE OF THE COURSE	Hrs./W		CREDIT POINTS	MAX.MARKS		
					Lect.	Lab.		CIA	ESE	TOTAL
SEMESTER - IV										
1	I	LANGUAGE-I	22M4UFTA04	TAMIL - IV	5	-	3	25	75	100
2	III	DSC THEORY - VII	21M4UCAC07	VISUAL PROGRAMMING	5	-	4	25	75	100
3	III	DSC THEORY - VIII	21M4UCAC08	MACHINE LEARNING	5	-	4	25	75	100
4	III	GEC THEORY - IV	21M4USTA09	ALLIED : APPLIED STATISTICS - II	4	-	4	25	75	100
5	III	DSC PRACTICAL - IV	21M4UCAP04	PRACTICAL: VISUAL PROGRAMMING	-	4	2	40	60	100
6	III	GEC PRACTICAL - II	21M4USTAP2	PRACTICAL: ALLIED - STATISTICS	-	2	2	40	60	100
7	IV	SEC - PRACTICAL - II	21M4UCASP2	PRACTICAL : HTML AND WEB DESIGN	-	3	2	40	60	100
8	IV	NMEC - II	21M4UMAN03	QUANTITATIVE APTITUDE - II	2	-	2	25	75	100
				TOTAL	21	9	23	245	555	800
SEMESTER - V										
1	III	DSC THEORY - X	21M5UCAC10	JAVA PROGRAMMING	5	-	4	25	75	100
2	III	DSC THEORY - XI	22M5UCAC11	OPEN SOURCE COMPUTING	4	-	4	25	75	100
3	III	DSC PRACTICAL - V	21M5UCAP05	PRACTICAL: PROGRAMMING IN JAVA	-	4	2	40	60	100
4	III	DSC PRACTICAL - VI	21M5UCAP06	PRACTICAL: PROGRAMMING IN PYTHON	-	4	2	40	60	100
5	III	DSE - I		ELECTIVE - I	5	-	4	25	75	100
6	III	DSE - II		ELECTIVE - II	5	-	4	25	75	100
7	III	INTERNSHIP		INTERNSHIP PROGRAMME	-	-	-	-	-	-
8	IV	SEC - THEORY - I	21M5UCAS01	CAMPUS TO CORPORATE TRANSMISSION	3	-	2	25	75	100
9	VI	EXTRA		VALUE ADDED COURSE	-	-	-	-	-	-
				TOTAL	22	8	22	205	495	700
SEMESTER - VI										
1	III	DSC THEORY - XII	21M6UCAC12	ARTIFICIAL INTELLIGENCE	5	-	4	25	75	100
2	III	DSC THEORY - XIV	22M6UCAC14	COMPUTER NETWORKS	5	-	4	25	75	100
3	III	DSE - III		ELECTIVE - III	5	-	4	25	75	100
4	III	DSE - IV		ELECTIVE - IV	5	-	4	25	75	100
5	III	DSC PRACTICAL - VII	21M6UCAP07	PRACTICAL: ARTIFICIAL INTELLIGENCE	-	4	2	40	60	100
6	III	PROJECT WORK	21M6UCAPR1	PROJECT WORK	4	-	4	40	60	100
7	III	ONLINE - COMPETITIVE EXAMINATION	21M6UCAOE01	COMPUTER APPLICATION FOR COMPETITIVE EXAMINATION	-	-	2	100	-	-
8	IV	SEC - THEORY - II (NMSDC) Naan Mudhalvan	21M6UCAS02	CLOUD COMPUTING	2	-	2	25	75	100
9	V	EXTENSION ACTIVITY	21M6UEX01	EXTENSION ACTIVITY	-	-	1	100	-	-
				TOTAL	26	4	27	405	495	700
				OVERALL TOTAL	139	41	140	1505	3195	4500
10	VI	EXTRA		EXTRA CREDIT SWAYAM/MOOC ONLINE	-	-	2	-	-	-



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RASIPURAM - 637 408, Namakkal

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UCAC01	Problem Solving Through C	DSC THEORY - I	I	6	5	1	-	4
Objective	To Understand the basic concepts of computer and basics of C language, Decision statements and Loop concepts and Evaluate the performance of Structure & File Management in C.							
Unit	Course Content						Knowledge Levels	Sessions
I	Overview of Computers and Programming: Electronic Computers Then and Now , Computer Hardware, Computer Software , The Software Development Method, Applying the Software Development Method Professional Ethics for Computer Programmers Fundamentals of C Languages: History of C, Character Set, Identifiers and Overview of C:– Introduction - character set - C tokens - keyword & identifiers – constants – variables - data types – Declarations of variables ,operators - expressions Evaluation of expression - Mathematical functions - Formatted input and output.						K1-K3	15
II	Decision Statements: If, if else, switch, break, continue - the? Operator - The GOTO statement. – Loop Control Statements: Introduction – for, nested for loops – while, do-while statements – Arrays: One-dimensional - Two dimensional - Multidimensional arrays.						K1-K2	16
III	Character string handling - Declaring and initializing string variables - Reading strings from terminal - Writing strings to screen - String handling functions - User-defined functions: Need for user defined functions – Types of functions - calling a function category of functions - no arguments and no return values - Arguments but no return values - Arguments with return values – Recursion - functions with arrays. The scope and lifetime of variables in functions.						K3	16
IV	Structure: Definition- Structure initialization - Comparison of structure variables - Arrays of structures - Arrays within structures - Structures within structures – unions. Pointers: understanding pointers - accessing the address of a variable - declaring and initializing pointers - accessing a variable through its pointers - pointer expressions - pointers and arrays - pointers and character strings - pointers and functions - pointers and structures.						K4	15
V	File Management in C: defining and opening a file - closing file - I/O operations on files - error handling during I/O operations - Random access to files - command line arguments. Preprocessors.						K4	13

Course Outcome	CO1:To Recall the Basics of C.	K1
	CO2:To Construct the sequence of the program and give logical outputs.	K3
	CO3:To Demonstrate Strings & Functions Concepts in C program.	K2
	CO4:To Analyze the Structure & Pointers in C program.	K4
	CO5: To Evaluate the I/O operations in C program.	K4

Learning Resources

Text Books	1. Problem solving and program design in C / Jeri R. Hanly, Elliot B. Koffman. — 7th ed.,PEARSON 2. E. Balagurusamy, Programming in ANSI C, fifth edition, Tata McGrawHill.
Reference Books	1. V. Rajaraman Computer Programming in C Prentice Hall of India Pvt Ltd, 1st Edition,2004 2. 2 Yashwvant Kanetkar Let us C BPB Publications 13th Edition, 2014
Website Link	1. http://www.learn-c.org/ 2. http://crasseux.com/books/ctutorial/

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

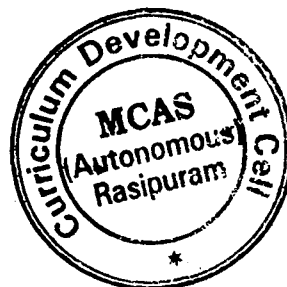
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UCAC01	PROBLEM SOLVING THROUGH C	DSC THEORY	I	6	5	1	-	4

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	L	S	S	S
CO2	M	S	S	S	S	S	M	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	M	S	S	S	M	S	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i> Mr.K.Vijayakumar <i>[Signature]</i>	Dr.V.Vijayadeepa <i>[Signature]</i>	Dr.S.Shahitha <i>[Signature]</i>



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UCAP01	PROGRAMMING IN C	DSC PRACTICAL - I	1	4	-	-	4	2
Objective	To Understand the concept of a programs and variables how a variable is declared and how it can be change and Understand the concept of a looping statements.							
S.No.	List of Experiments / Programmes						Knowl edge Levels	Sessions
1	Develop a C program to print prime numbers within the range of integers given.						K1	5
2	Develop a C Program to find the sum and average of given N numbers.						K1	4
3	Develop a C Program using all decision making and looping statements.						K2	4
4	Develop a C Program to arrange the given numbers in ascending /descending order.						K2	4
5	Develop a C Program to perform matrix multiplication.						K2	4
6	Develop a C Program to manipulate string functions.						K3-K4	4
7	Develop a C Program to find the Fibonacci series for a give number using recursive function.						K3-K4	4
8	Develop a C Program to show Call by Value and Call by Reference.						K3-K4	4
9	Develop a C program to swap two numbers using pointers.						K3-K4	4
10	Develop a C Program to update the student's details using various file modes.						K4	4
11	Develop a C Program to copy the content of one file to another file .						K4	4

Course Outcome	CO1: To Recall the syntax rules for numerical constants and variables, data types.	K1	
	CO2: To Explain the Usage of Arithmetic operator, Conditional operator, logical operator and relational operators and other C constructs.	K2	
	CO3: To Solve the C programs using decision making, branching, looping constructs.	K3	
	CO4: To Analyze the code reusability with functions and pointers.	K4	
	CO5: To Construct the File Concepts using C.	K4	
Learning Resources			
Text Books	1. Problem solving and program design in C / Jeri R. Hanly, Elliot B. Koffman. —7th ed., PEARSON 2. E. Balagurusamy, Programming in ANSI C, fifth edition, Tata McGrawHill.		
Reference Books	1. V. Rajaraman Computer Programming in C Prentice Hall of India Pvt Ltd, 1st Edition, 2004 2. Yashwant Kanetkar Let us C BPB Publications 13th Edition, 2014		
Website Link	1) https://wptripura.nic.in/C%20Programming%20Lab.pdf 2) https://www.guru99.com/c-programming-tutorial.html		

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

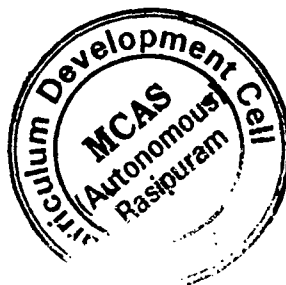
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M1UCAP01	PROGRAMMING IN C	DSC PRACTICAL I	I	4	-	-	4	2

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	S	M	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	M	S	S	S	M	S	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	-STRONG							

Tutorial Schedule	E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Model Practical - I Model Practical - II

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>N. Padmavathi</i> Mr.K.Vijayakumar <i>K. Vijayakumar</i>	Dr.V.Vijayadeepa <i>V. V. Vijayadeepa</i>	Dr.S.SHANITHA <i>S. Shanitha</i>



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UCAC02	Object Oriented Programming with C++	DSC THEORY - II	II	4	4	-	-	4
Objective	To Understand the OOPs concepts,tokens,expressions and control structures using C++.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction to C++ - key concepts of Object-Oriented Programming –Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations. Control Structures: - Decision Making and Statements: If ..else, jump, go to, break, continue, Switch case statements - Loops in C++ : for, while, do - functions in C++ - inline functions – Function Overloading.						K1	9
II	Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.						K1-K2	8
III	Operator Overloading: Overloading unary, binary operators – Overloading Friend functions – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.						K3	10
IV	Pointers – Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and delete operators – dynamic object – Binding, Polymorphism and Virtual Functions.						K4	9
V	Files – File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling - String – Declaring and Initializing string objects – String Attributes – Miscellaneous functions .						K4	9

Course Outcome	CO1:To Identify the OOPs Concepts use functions and pointers in C++.	K1
	CO2:To Discuss tokens, expressions, and Control structures in C++.	K1
	CO3:To Perform arrays,strings and create a programs using C++.	K2
	CO4:To Classify the use of constructors and destructors in C++.	K3
	CO5:To Construct the control errors Using Exception handling Mechanism.	K4
Learning Resources		
Text Books	1. E. Balagurusamy, —Object-Oriented Programming with C++”, TMH 2013, 7 th Edition	
Reference Books	1. Ashok N Kamthane, —Object-Oriented Programming with ANSI and Turbo C++”, Pearson Education 2003. 2. Maria Litvin & Gray Litvin, —C++ for you , Vikas publication 2002.	
Website Link	NPTEL & MOOC courses titled Object oriented programming concepts using C++ 1. https://nptel.ac.in/courses/106/105/106105151/ 2. http://www.learn-cpp.org/	

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UCAC02	Object Oriented Programming with C++	DSC THEORY II	II	4	4	-	-	4

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	L	M	S	S
CO2	M	S	S	S	S	S	M	S	S	S
CO3	S	S	S	S	S	S	S	M	S	S
CO4	S	S	M	S	S	S	M	S	S	S
CO5	M	S	M	L	L	S	M	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	Dr.S.SHAHITHA



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C	
21M2UCAP02	PROGRAMMING IN C++	DSC PRACTICAL - II	II	3	-	-	3	2	
Objective	To develop the C++ programming concepts using Classes & objects								
S.No.	List of Experiments / Programmes						Knowl edge Levels	Sessions	
1	Write a C++ program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write member functions ADD(), SUB(), MUL(), DIV() to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values.						K1	3	
2	Write a C++ program to create a class FLOAT that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOAT.						K1	3	
3	Write a C++ program to create a class STRING. Write a Member Function to initialize, get and display strings. Overload the operators ++ and == to concatenate two Strings and to compare two strings respectively.						K2	3	
4	Write a C++ program to create class, which consists of EMPLOYEE Detail like E_Number, E_Name, Department, Basic, Salary, Grade. Write a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade.						K2	3	
5	Write a C++ program to create a class SHAPE which consists of two VIRTUAL FUNCTIONS Calculate_Area() and Calculate_Perimeter() to calculate area and perimeter of various figures. Derive three classes SQUARE, RECTANGLE, TRIANGLE from class Shape and Calculate Area and Perimeter of each class separately and display the result.						K2	3	
6	Write a C++ program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.						K3-K4	3	
7	Write a program to convert an Infix Expression to Postfix Expression using Arrays.						K3-K4	3	
8	Write a C++ program to create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the STACK. Write a member function PUSH() to insert an element and member function POP() to delete an element. Check for overflow and underflow conditions.						K3-K4	3	
9	Write a C++ program to check whether the given string is a palindrome or not using Pointers.						K3-K4	3	
10	Write a C++ program to merge two files into a single file.						K4	3	

Course Outcome	CO1: To Define the given problem statements to create basic program designs.	K1
	CO2: To Explain the different functions for input and output, various data types, basic operators, files and functions.	K2
	CO3: To Demonstrate basic object oriented and structured programming concepts.	K3
	CO4: To Illustrate the Concepts of Pointers in C++.	K4
	CO5: To Evaluate the concepts of Files in C++.	K4
Learning Resources		
Text Books	E. Balagurusamy, —Object-Oriented Programming with C++”, TMH 2013, 7 th Edition	
Reference Books	1. Ashok N Kamthane, —Object-Oriented Programming with ANSI and Turbo C++”, Pearson Education 2003. 2. Maria Litvin & Gray Litvin, —C++ for youll, Vikas publication 2002.	
Website Link	NPTEL & MOOC courses titled Object oriented programming concepts using C++ 1. https://nptel.ac.in/courses/106/105/106105151/ 2. http://www.learn-cpp.org/	

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UCAP02	PROGRAMMING IN C++	DSC PRACTICAL II	II	3	-	-	3	2

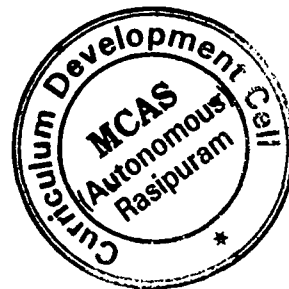
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	S	M	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	M	S	S	S	M	S	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	-STRONG							

Tutorial Schedule	E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Model Practical - I Model Practical - II

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i> Mr.K.Vijayakumar <i>[Signature]</i>	Dr.V.Vijayadeepa <i>[Signature]</i>	<i>[Signature]</i>

Dr.S.Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UCAC03	Computer Organization And Architecture	DSC THEORY - III	II	4	4	-	-	4
Objective	To Recognize the various number systems, binary codes and their applications and facilitate the students in designing a logical circuits. In this courses Evaluate the concepts of K-MAP to simplify a Boolean expression.							
Unit	Course Content						Knowledge Levels	Sessions
I	Digital Principles: Definition for digital signals – Digital waveforms – Digital logic – Moving and Storing Digital Information – Digital Operations – Digital computers – Digital Integrated Circuits. Digital Logic: The Basic Gates - NOT, OR, AND –Universal Logic Gates – NOR, NAND – AND-OR-Invert Gates – Positive and Negative Logic.						K1	10
II	Combinational Logic Circuits: Boolean Laws And Theorems – Sum-of-products Method – Truth Table to Karnaugh Map – Pairs, Quads, and Octets – Karnaugh Simplification – Don't-care Conditions – Product-of-sums Simplification. Data-Processing Circuits: 16-to-1 Multiplexer – 1-to-16 De- multiplexer – BCD-to-decimal Decoder – Decimal-to-BCD Encoder – Exclusive-or Gates – Parity Generation and Application.						K2	9
III	Number Systems and Codes: Binary Number System – Binary-to-decimal Conversion – Decimal-to- binary Conversion – Octal Numbers – Hexadecimal Numbers – The ASCII Code – The Excess-3 Code – The Gray Code. Arithmetic Circuits: Binary Addition –Binary Subtraction – Unsigned Binary Numbers – Sign-magnitude Numbers - 2'S Complement Representation - 2'S Compliment Arithmetic.						K3	9
IV	Arithmetic Circuits: Arithmetic Building Blocks – The Adder - subtractor – Fast Adder – Arithmetic Logic Unit – Binary Multiplication and Division. Clocks and Timing Circuits: Clock Waveforms. Flip- Flops: RS Flip-flops – Edge-triggered D Flip-flops - Edge triggered JK Flip-flops – JK Master-slave Flip-flops.						K3-K4	8
V	Registers: Serial-In Serial-Out – Serial-In Parallel-Out – Parallel-In Serial-Out – Parallel-In Parallel-Out. Memory: Introduction - Magnetic Memory - Optical Memory - Memory Addressing - ROMs, PROMs, EPROMs and EEPROM –RAMs. A Simple Computer Design.						K4	9

Course Outcome	CO1:To Recall the number systems and complements.	K1
	CO2: To Summarize the importance of canonical forms in the minimization or other optimization of Boolean formulas in general and digital circuits.	K2
	CO3:To Solve the type of algorithms (Boolean algebra, Karnaugh map or Tabulation method).	K3
	CO4:To Analyze the design procedures of Combinational and Arithmetic circuits.	K4
	CO5:To Compare the memory fixation using RAM & ROM.	K4
Learning Resources		
Text Books	1. Donald P Leach, Albert Paul Malvino and Goutam Saha, —Digital Principles and Applications, 8th Edition, TMH, 2006.	
Reference Books	1. Morris Mano, "Digital Logic and Computer Design," 4th Edition, Pearson, 2008 2. Thomas C Bartee, "Digital Computer Fundamentals," sixth edition, McGrawHill, 1985 3. Pradeep K. Sinha, Priti Sinha , "Computer Fundamentals," Sixth Edition, BPB Publications, 2007	
Website Link	1. https://www.javatpoint.com/computer-organization-and-architecture-tutorial	

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M2UCAC03	Computer Organization And Architecture	DSC THEORY - III	II	4	4	-	-	4

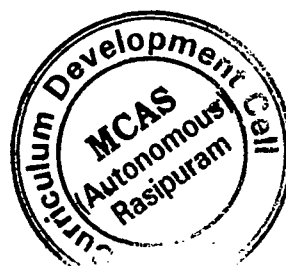
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	M	S	S
CO2	M	S	S	S	S	S	M	S	S	S
CO3	S	S	S	S	S	S	S	M	S	S
CO4	S	S	M	S	S	S	M	S	S	S
CO5	M	S	M	L	L	S	M	M	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>N. Padmavathi</i> Mr.K.Vijayakumar <i>K. Vijayakumar</i>	Dr.V.Vijayadeepa <i>V. V. Vijayadeepa</i>	<i>S. Shahitha</i>

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UCAC04	Relational Database Management Systems	DSC THEORY - IV	III	5	5	-	-	4
Objective	To Evaluate data manipulation statements (DML) to update data in the Oracle Database Design and use PL/SQL programming structure that execute DB queries efficiently &							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction: Database System Applications – DBMS Vs. File System – View of Data – Data Model – Database Languages – Database users and Administrators – Transaction Management – Database System Structure – Application Architecture. Data Models: Basic Concepts – Constraint – Keys – ER Diagram – Weak Entity – Extended ER Features - Design of an ER Schema.						K1	12
II	Relational Model: Structure of Relational Databases – Relational Algebra. SQL: Background–Basic Structure – Set Operation – Aggregate Function – Null Values – Nested Sub Queries – Views – Modification of the Database – Data Definition Language – Embedded SQL – Dynamic SQL.						K2	11
III	Data Normalization: Pitfalls in Relational Database Design – Decomposition – Functional Dependencies – Normalization – First Normal Form – Second Normal Form – Third Normal Form – Boyce-Codd Normal Form – Fourth Normal Form – Fifth Normal Form –Denormalization – Database Security: Data Security Requirements – Protecting the Data within the Database – Granting and Revoking Privileges – Data Encryption.						K3	10
IV	PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment Operation – Bind Variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control Statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF Clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.						K3	15
V	PL/SQL Composite Data Types: Records – Tables – Vs arrays. Named Blocks: Procedures – Functions – Packages – Triggers – Data Dictionary Views.						K4	12

Course Outcome	CO1:To Label the concepts of Database concepts.	K1
	CO2:To Explain the concepts of Relational Calculus.	K2
	CO3:To Determine the logical design of the database using data modeling concepts such as entity relationship diagrams.	K4
	CO4:To Categorize the programming skills in PL/SQL.	K3
	CO5:To Convince a relational database using a relational database package, function and trigger.	K4

Learning Resources

Text Books	1. A Silberschatz, H Korth, S Sudarshan, "Database System and Concepts", McGraw-Hill, 5 th Edition, 2005. 2. Alexis Leon & Mathews Leon, "Fundamentals of DBMS", Vijay Nicole Publications, 2 nd
Reference Books	1. Alexis Leon & Mathews Leon, "Essential of DBMS", Vijay Nicole Publications, 2 nd Reprint, 2009.
Website Link	https://www.codecademy.com/article/what-is-rdbms-sql

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UCAC04	Relational Database Management Systems	DSC THEORY IV	III	5	5	-	-	4

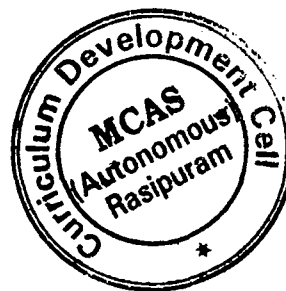
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	L	S	S	S
CO2	M	S	S	S	S	S	S	M	S	S
CO3	S	S	S	S	S	M	S	S	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2022-2023 Onwards								
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
22M3UCAC04	Relational Database Management Systems	DSC THEORY - IV	III	5	5	-	-	5
Objective	To Understand the Concepts of Data base system and it's Architecture,Data models,Normalization and PL/SQL Programming Languages.							
Unit	Course Content	Knowledge Levels	Sessions					
I	Introduction: Database System Applications -- DBMS Vs. File System – View of Data – Data Model – Database Languages – Database users and Administrators – Transaction Management – Database System Structure – Application Architecture. Data Models: Basic Concepts – Constraint – Keys – ER Diagram – Weak Entity – Extended ER Features - Design of an ER Schema.	K1	12					
II	Relational Model: Structure of Relational Databases – Relational Algebra. SQL: Background–Basic Structure – Set Operation – Aggregate Function – Null Values – Nested Sub Queries – Views – Modification of the Database – Data Definition Language – Embedded SQL - Dynamic SQL.	K2	11					
III	Data Normalization: Pitfalls in Relational Database Design – Decomposition – Functional Dependencies – Normalization – First Normal Form – Second Normal Form – Third Normal Form – Boyce-Codd Normal Form – Fourth Normal Form – Fifth Normal Form –Denormalization – Database Security: Data Security Requirements – Protecting the Data within the Database – Granting and Revoking Privileges – Data Encryption.	K3	10					
IV	PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment Operation – Bind Variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control Statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF Clause – Cursor with Parameters – Cursor	K3	15					
V	PL/SQL Composite Data Types: Records – Tables – Vs arrays. Named Blocks: Procedures – Functions – Packages – Triggers – Data Dictionary Views.	K4	12					
Course Outcome	CO1:To Label the concepts of Database concepts.	K1						
	CO2:To Explain the concepts of Relational Calculus.	K2						
	CO3:To Determine the logical design of the database using data modeling concepts such as entity relationship diagrams.	K3						
	CO4:To Categorize the programming skills in PL/SQL.	K3						
	CO5:To Convince a relational database using a relational database package, function and trigger.	K4						
Learning Resources								
Text Books	1. A Silberschatz, H Korth, S Sudarshan, "Database System and Concepts", McGraw-Hill, 5 th Edition, 2005. 2. Alexis Leon & Mathews Leon, "Fundamentals of DBMS", Vijay Nicole Publications, 2 nd Edition, 2014. 3. Nilesh Shah, "Database Systems Using Oracle", PHI, 2nd edition, 2004							
Reference Books	1. Alexis Leon & Mathews Leon, "Essential of DBMS", Vijay Nicole Publications, 2 nd Reprint, 2009.							
Website Link	https://www.codecademy.com/article/what-is-rdbms-sql							

L-Lecture

T-Tutorial P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2022-2023 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
22M3UCAC04	Relational Database Management Systems	DSC THEORY - IV	III	5	5	-	-	5

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	L	S	S	S
CO2	M	S	S	S	S	S	S	M	S	S
CO3	S	S	S	S	S	M	S	S	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i>	Dr.V.Vijayadeepa <i>[Signature]</i>	<i>[Signature]</i>
Mr.K.Vijayakumar <i>[Signature]</i>	V.V.VISI	

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[Signature]



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UCAP03	RDBMS	DSC PRACTICAL - III	III	4	-	-	4	2
Objective	To Learn data manipulation statements (DML) to update data in the Oracle Database Design in PL/SQL and describe the features and syntax of PL/SQL and Handle the runtime errors.							
S.No.	List of Experiments / Programmes						Knowl edge	Sessions
1	Data Definition of Base Tables						K1	6
2	DDL with Primary key constraints.						K1	5
3	DDL with constraints and verification by insert command.						K2	6
4	Data Manipulation of Base Tables and Views.						K2	4
5	Demonstrate the Query commands.						K2	6
6	Write a PL/SQL code block that will accept an account number from the user and debit an amount of Rs. 2000 from the account if the account has a minimum balance of 500 after the amount is debited. The Process is to fired on the Accounts table.						K3	4
7	Write a PL/SQL code block to calculate the area of the circle for a value of radius varying from 3 to 7. Store the radius and the corresponding values of calculated area in a table Areas. Areas – radius, area.						K3	6
8	Write a PL/SQL block of code for reversing a number. (Example: 1234 as 4321).						K3	4
9	Create a transparent audit system for a table Client master (client no, name, address, Bal_due). The system must keep track of the records that are being deleted or updated. The functionality being when a record is deleted or modified the original record details and the date of operation are stored in the audit client (client no, name, bal_due, operation, user-id, oupdate) table, then the delete or update is allowed to go through.						K4	4

Course Outcome	CO1: Knowledge about database concepts data modelling and normalization	K1
	CO2: Overview of oracle 9i and oracle SQL *plus	K2
	CO3: Understand PL/SQL, data types, operators and control statements	K3
	CO4: Understand database management and retrieval	K4
	CO5: Students are able to create tables and make modifications	K4
Learning Resources		
Text Books	Alexis Leon & Mathews Leon, "Essential of DBMS", Vijay Nicole Publications, 2 nd Reprint, 2009.	
Reference Books	Rdbms Relational Database Management System: A User Guide Paperback – Import, 3 October 2017- Gerard Blokdyk	
Website Link	1. https://www.youtube.com/watch?v=CAanqvDsTw 2. Oracle	

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UCAP03	RDBMS	Core Practical - III	III	4	-	-	4	2

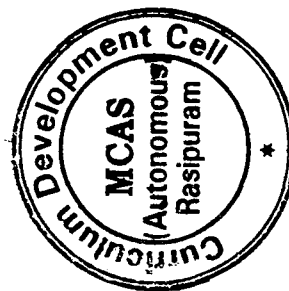
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	M	S	S	S
CO2	M	S	S	S	S	M	M	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	M	S	S	S	M	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	-STRONG							

Tutorial Schedule	E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Model Practical - I Model Practical - II

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>N.Padmavathi</i> Mr.K.Vijayakumar <i>K.Vijayakumar</i>	Dr.V.Vijayadeepa <i>V.Vijayadeepa</i>	<i>S.Shahitha</i>

Dr.-S Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UCAC05	Operating System	DSC THEORY - V	III	5	5	-	-	4
Objective	To Simplify the main components of OS and their working methods and choose the various scheduling policies of OS, to teach the different memory management techniques.							
Unit	Course Content						Knowledge Levels	Sessions
I	Operating Systems Overview: Introduction, operating system operations, process management, memory management, storage management, protection and security, distributed systems. operating systems structures: Operating system services and systems calls, system programs, operating system structure, operating systems generations.						K1	15
II	Process and CPU scheduling – Process concepts and scheduling, operation of processes, cooperating processes, threads and inter process communication – scheduling criteria, Scheduling Algorithm.						K2	12
III	Memory Management and Virtual memory – Logical versus Physical address, space, swapping, contiguous allocation, paging, segmentation, demand paging, demand segmentation, page replacement, page replacement algorithm.						K3	11
IV	Process Management and Synchronization – The critical section problem, synchronization hardware, semaphores, and classical problems of synchronization, Deadlocks – System Model, Dead locks characterization, Methods for Handling Dead locks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.						K3	10
V	File System: Concept of a file, access methods, directory structure, file system mounting, file sharing, protection. File system implementation: file system structure, file system implementation, directory implementation, allocation methods, free-space management, efficiency and performance, comparison of UNIX and windows.						K4	12

Course Outcome	CO1:To Define the Introduction & Structures of Operating System.	K1
	CO2:To Explain the various concepts and features of Operating systems.	K2
	CO3:To Determines the various operating systems with respect to characteristics and features.	K3
	CO4:To Classify the algorithm of CPU Scheduling, Memory Scheduling and disk scheduling ,File System.	K4
	CO5:To Evaluate the OS configurations & Memory Allocations.	K4

Learning Resources

Text Books	1.Abraham Silberschatz, Peter Baer Galvin, Greg Gagne (2006), Operating System Principles, 7th edition, Wiley India Private Limited, New Delhi.
Reference Books	1. Charles Crowley, "Operating System: A Design- Oriented Approach", Tata Mc-Graw Hill., 1st Edition, 2001 2. Pabitra Pal, Choudhury, "Operating Systems: Principle and Design", Prentice Hall of India, 2009
Website Link	https://www.tutorialspoint.com/operating_system/os_overview.htm

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UCAC05	Operating System	DSC THEORY - V	III	5	5	-	-	4

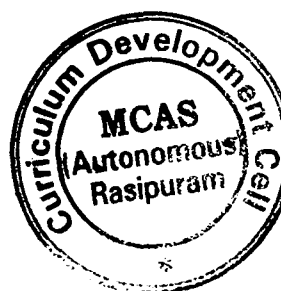
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	S	S	S	S
CO2	M	S	S	S	S	S	S	S	S	S
CO3	S	S	S	S	S	S	S	M	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmapavathi <i>(Signature)</i> Mr.K.Vijayakumar <i>(Signature)</i>	Dr.V.Vijayadeepa <i>(Signature)</i>	<i>(Signature)</i>

Dr. S. Shalitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UCAC06	Data Structures & Algorithms	DSC THEORY - VI	III	5	5	-	-	4
Objective	To Analyze and design algorithms with relevant techniques and Classify the tree and graph data structures & learn different sorting and searching algorithms.							
Unit	Course Content						Knowledge Levels	Sessions
I	Data Structures – Introduction to Data Structures, abstract data types. Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, circularly linked lists- Operations for Circularly linked lists, doubly linked list implementation, insertion, deletion and searching operations, applications of linked lists.						K1	12
II	Stack & Queue: Stack ADT - Applications - Evaluating arithmetic expressions- Conversion of Infix to Postfix- Recursion. Queue ADT – Priority Queue - applications of queues. Implementation of Stack ADT and palindrome checking using C. Implementation of Queue operations using arrays in C.						K2	13
III	Trees – Definitions, tree representation, properties of trees, Binary tree, Binary tree representation, binary tree properties, binary tree traversals, binary tree implementation, applications of trees.						K3	10
IV	Graphs:Definition – Representation of Graph – Breadth-first traversal - Depth-first traversal – Dynamic programming Technique– Greedy method - Dijkstra’s algorithm – applications of graphs. Implementation of graph, graph traversal methods, finding shortest path using Dijkstra’s algorithm in C.						K4	13
V	Searching & Sorting Algorithms: Divide and conquer methodology - Searching: Linear Search - Binary Search. Sorting: Insertion sort – Merge sort – Quick sort – Heap sort. Analysis of searching and sorting techniques. Implementation of linear search, binary search, insertion sort, merge sort and quick sort algorithms in C.						K4	12

Course Outcome	CO1:To Define the linear data structures and solve its problems.	K1
	CO2:To Discuss the linear and non-linear data structures like stacks, queues, and linked list.	K3
	CO3:To Apply the Tree Linear data structures in C.	K4
	CO4:To Perform graphs Traversal to solve the problems.	K4
	CO5: To illustrate the various searching and sorting algorithms.	K4
Learning Resources		
Text Books	<p>1.Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", 2nd Edition, Pearson Education,1997.</p> <p>2.Fundamentals of Data structures in C, 2nd Edition, E.Horowitz, S.Sahni and Susan AndersonFreed, Universities Press.</p> <p>3.Data structures A Programming Approach with C, D.S.Kushwaha and A.K.Misra, PHI.</p>	
Reference Books	<p>1.Aho, Hopcroft and Ullman, "Data Structures and Algorithms", Pearson Education,1983.</p> <p>2.S.Sridhar, "Design and Analysis of Algorithms", First Edition, Oxford University Press. 2014</p> <p>3. Byron Gottfried, Jitender Chhabra, "Programming with C" (Schaum's Outlines Series), Mcgraw Hill Higher Ed., III Edition, 2010</p> <p>4.Yashvant Kanetkar, "Data Structures Through C", BPB publications, II edition, 2003</p>	
Website Link	<p>https://www.tutorialspoint.com/data_structures_algorithms/index.htm</p>	

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UCAC06	Data Structures and Algorithms	DSC THEORY VI	III	5	5	-	-	4

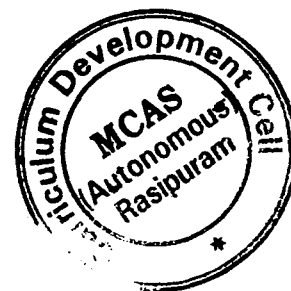
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	S	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	S	M	S	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>(Signature)</i> Mr.K.Vijayakumar <i>(Signature)</i>	Dr.V.Vijayadeepa <i>(Signature)</i>	<i>(Signature)</i>

Dr.S.Shahitha



BCA Syllabus LOCF-CBCS with effect from 2022-2023 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
22M3UCAC06	Data Structures and Algorithms	DSC THEORY - VI	III	5	5	-	-	4
Objective	To Analyze and design algorithms with relevant techniques and Classify the tree and graph data structures & learn different sorting and searching algorithms.							
Unit	Course Content	Knowledge Levels	Sessions					
I	Data Structures – Introduction to Data Structures, abstract data types. Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, circularly linked lists- Operations for Circularly linked lists, doubly linked list implementation, insertion, deletion and searching operations, applications of linked lists.	K1	12					
II	Stack & Queue: Stack ADT - Applications - Evaluating arithmetic expressions- Conversion of Infix to Postfix- Recursion. Queue ADT – Priority Queue - applications of queues. Implementation of Stack ADT and palindrome checking using C. Implementation of Queue operations using arrays in C.	K2	13					
III	Trees – Definitions, tree representation, properties of trees, Binary tree, Binary tree representation, binary tree properties, binary tree traversals, binary tree implementation, applications of trees.	K3	10					
IV	Graphs: Definition – Representation of Graph – Breadth-first traversal - Depth-first traversal – Dynamic programming Technique– Greedy method - Dijkstra’s algorithm – applications of graphs. Implementation of graph, graph traversal methods, finding shortest path using Dijkstra’s algorithm in C.	K4	13					
V	Searching & Sorting Algorithms: Divide and conquer methodology - Searching: Linear Search - Binary Search. Sorting: Insertion sort – Merge sort – Quick sort – Heap sort. Analysis of searching and sorting techniques. Implementation of linear search, binary search, insertion sort, merge sort and quick sort algorithms in C.	K4	12					
Course Outcome	CO1: To Define the linear data structures and solve its problems.	K1						
	CO2: To Discuss the linear and non-linear data structures like stacks, queues, and linked list.	K3						
	CO3: To Apply the Tree Linear data structures in C.	K4						
	CO4: To Perform graphs Traversal to solve the problems.	K4						
	CO5: To illustrate the various searching and sorting algorithms.	K4						
Learning Resources								
Text Books	1.Mark Allen Weiss, “Data Structures and Algorithm Analysis in C”, 2nd Edition, Pearson Education, 1997. 2.Fundamentals of Data structures in C, 2nd Edition, E.Horowitz, S.Sahni and Susan AndersonFreed, Universities Press. 3.Data structures A Programming Approach with C, D.S.Kushwaha and A.K.Misra, PHI.							
Reference Books	1.Aho, Hopcroft and Ullman, “Data Structures and Algorithms”, Pearson Education, 1983. 2.S.Sridhar, “Design and Analysis of Algorithms”, First Edition, Oxford University Press. 2014 3. Byron Gottfried, Jitender Chhabra, “Programming with C” (Schaum’s Outlines Series), Mcgraw Hill Higher Ed., III Edition,							
Website Link	https://www.tutorialspoint.com/data_structures_algorithms/index.htm							

L: Lecture

T-Tutorial P-Practical

C-Credit

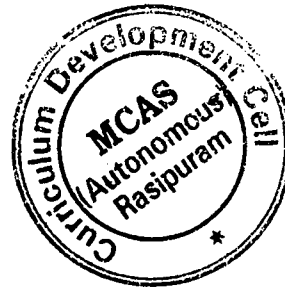
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
22M3UCAC06	Data Structures and Algorithms	DSC THEORY - VI	III	5	5	-	-	4

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	S	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	S	M	S	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>N. Padmavathi</i>	Dr.V.Vijayadeepa <i>V.V. Vijayadeepa</i>	<i>J. Chakraborty</i>
Mr.K.Vijayakumar <i>K. Vijayakumar</i>		



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UCASP1	OFFICE AUTOMATION	SEC PRACTICAL -I	III	3	-	-	3	2
Objective	To Understand Microsoft Office Applications and the students can be Able to do office and document work smoothly with the help of computers.							
S.No.	List of Experiments / Programmes						Knowl edge Levels	Sessions
1	a)Starting MS_WORD, Creating, Saving, Printing (With Options), Closing and Exiting. b)Study of Word – Menu / Toolbars						K1	3
2	a)Create a document, save it and edit the document as follows: i) Cut, Copy, Paste options. ii) Find and Replace options. iii) Undo and Redo options. b)Format the document: i) Using Bold, Underline and Italic. ii) Change Character style and size. iii) Formatting paragraph: Center, Left aligns & Right align. iv) Changing paragraph and line spacing, Using Bullets and Numbering in Paragraphs. v) Creating Hanging Paragraphs.						K1	3
3	Using tab settings enhancing the documents (Header, Footer, Page Setup, Border, Page number, watermarking, Orientation and Print Preview).						K2	3
4	Insert tables and pictures in a document as follows i) Creating Tables in a document, Selecting Rows & Column sort the record ii) Insert a picture – edit size and add name of the picture above it. iii) Also do basic text formatting like – bold, italic, underline, alignments etc in table.						K2	3
5	MS-EXCEL a) Create a worksheet, moving/ copying/ inserting/ deleting rows and columns (usage of cut, paste, commands, copying a single cell, copying a range of data, filling up a cell. Undo command, inserting a row, column, deleting rows and columns). b) Formatting worksheets i) Bold style, ii) Italic style, iii) Font size changing, iv) Formatting numbers Auto fill, date format, Currency format						K2	3
6	Open an excel and create fields as follows S. No Name of the student M1 M2 M3 M4 M5 TOTAL AVG RESULT GRADE i) Enter S. No, Name, marks for 10 students ii) Find total and average using formula. iii) Find Result whether the student is pass or fail and also assign grade as per our college norms iv) Insert a column chart showing the comparison of marks in different subjects of different students						K3	3
7	Creating charts i) Using Chart wizard ii) Changing Chart type (Pie, Bar, Line) iii) Inserting titles for the axes X, Y iv) Changing Colors v) Printing Charts						K3-K4	3

8	MS-POWERPOINT 8. i) Creating a presentation using auto content wizard ii) Different views in PowerPoint presentation iii) Printing a presentation / Importing- Exporting files iv) Creating Organization chart in PowerPoint	K4	3
9	MS-ACCESS: Prepare a payroll for employee database of an organization with the following details: Employee ID, Employee Name, Date of Birth, Department and Designation, Date Of Appointment, Basic Pay, Dearness Allowance and other deductions if any. Perform queries for different categories	K4	3
10	a) Create a forms for the Student database b) Create a report for the employee database	K4	3
Course Outcome	CO1: Students can Create a Word document with customized template.	K1	
	CO2: Student know how Word document with integrated Excel chart.	K2	
	CO3: Create slide presentations that include text, graphics, animation, and transitions.	K3	
	CO4: Identify the names and functions of the PowerPoint interface.	K4	
	CO5: Student can Store data in the form of tables and edit or customise them later as per the requirement of the user	K4	
Learning Resources			
Text Books	MS Office 2000 for Everyone, 1/e-Sanjay Saxena,Vikas Publishing		
Reference Books	Mastering MS Office [Print Replica] Kindle Edition by Bittu Kumar (Author) Format: Kindle Edition		
Website Link	Best FREE Microsoft Courses with Certification Online (2022) (guru99.com)		

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M3UCASP1	OFFICE AUTOMATION	SEC PRACTICAL - I	III	3	-	-	3	2

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	S	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	S	M	S	S	S
CO4	S	S	M	S	S	S	M	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	-STRONG							

Tutorial Schedule	E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Model Practical - I Model Practical - II

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i> Mr.K.Vijayakumar <i>[Signature]</i>	Dr.V.Vijayadeepa <i>[Signature]</i>	<i>[Signature]</i>

Dr. S. Shabitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UCAC07	Visual Programming	DSC THEORY - VII	IV	5	5	-	-	4
Objective	To Study the VB techniques and Evaluate the applications using VB.							
Unit	Course Content						Knowledge Levels	Sessions
I	Visual Basic Definition - Features of Visual Basic – The Visual Basic Philosophy – Developing an Application. Creating an Application: The Tool Box – Project Explorer – The properties Window – The Form Window– What does Visual Basic 6 have for you to create applications. IDE, Forms and Controls: The Form.						K1	12
II	Variables in Visual Basic - Writing Code in Visual Basic: The Code Window – The Anatomy of a Procedure – Editor Features – For...Next Statement – Decision Maker. If – Loop – While Loop – # Select Case.....End Select #.						K2	10
III	Menus, Sub procedures and sub functions: Menus – Common Dialog Boxes – Writing General Procedures. Multiple Forms: Multiple Forms – Standard Code Modules-Variables and Constants in Multiple-Form Projects.						K3	11
IV	List Boxes and Combo boxes - Do/Loop – For/Next Loop – Using MsgBox Function – Using String Function – Arrays: Control Arrays – Single Dimension Array – For Each/Next Statements – User defined data types – Multidimensional Arrays.						K4	15
V	Introduction to Databases: Database Access – Working with the Data Control: The Data Control - Coding – Data Access Objects – The Jet Data Base Engine – Functions of the Jet Database Engine – SQL – The DAO Object Model. Crystal and Data Report: Crystal Reports – Data Reports						K4	12

Course Outcome	CO1:To Recall the Outlines about Event Driven in GUI.	K1
	CO2:To Construct the Decision Making Statements of VB.	K2
	CO3:To Illustrate the Database Connectivity in VB.	K3
	CO4:To Construct the reports in VB software.	K4
	CO5:To develop the VB applications.	K4
Learning Resources		
Text Books	1. Gary Cornell, "Visual Basic 6 from the Ground up", McGraw-Hill Education,1998	
Reference Books	1. Mohammed Azam, "Programming with Visual Basic 6.0", 1st Edition, Vikas Publishing House Pvt.Ltd., Chennai, 2001. 2. Julia Case Bradley and Anita C.Millspaugh, "Programming in Visual Basic 6.0", Tata McGraw-HillEdition, 2011.	
Website Link	http://www.youtube.com/watch?v=W0hkymvJzfl https://www.geeksforgeeks.org/introduction-to-visual-programming-language/	

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UCAC07	Visual Programming	DSC THEORY VII	IV	5	5	-	-	4

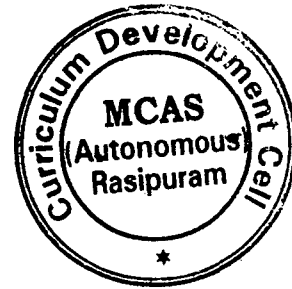
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	S	M	S	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i> Mr.K.Vijayakumar <i>[Signature]</i>	Dr.V.Vijayadeepa <i>[Signature]</i>	<i>[Signature]</i>

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards								
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UCAP04	VISUAL PROGRAMMING	DSC PRACTICAL - IV	IV	4	-	-	4	2
Objective	The Students will upgrade their knowledge in the field of Visual Programming.							
S.No.	List of Experiments / Programmes						Knowl edge Levels	Sessions
1	Construction of an Arithmetic Calculator (Simple).						K1	5
2	Writing simple programs using loops and decision making statements. a. Generate Fibonacci series. b. Find the sum of N numbers. c. To display the numbers/symbols in triangle format.						K1	5
3	Write a program to create a menu and MDI Forms.						K2	4
4	Write a program to create a simple input screen with four basic controls to read input and write it to a file.						K2	4
5	Write a program to display files in a directory using DriveListBox, DirListBox and FileListBox control and open, edit and save text file using Rich text box control.						K2	5
6	Write a program to illustrate Common Dialog Control and to open, edit and save text file						K3	4
7	Write a program to develop windows based installation file with Student Registration form and Login form using database access.						K3	5
8	Develop a program to Insert, update, delete a Record in database using ADO						K4	5
9	Write a program to implement Personal Information System using MDI and Standard ADODC controls and reports.						K4	4
10	Write a program to implement animation using timers.						K5	4

Course Outcome	CO1: To Define the list the visual programming concepts.	K1	
	CO2: To Summarize the Data Base Connectivity.	K2	
	CO3: To Illustrate the control structures in VB.	K3	
	CO4: To Categorize the Design using controls in VB.	K4	
	CO5: To Determine the Students prepare various projects by using visual programming.	K5	
Learning Resources			
Text Books	1. Gary Cornell, "Visual Basic 6 from the Ground up", McGraw-Hill Education, 1998		
Reference Books	1. Mohammed Azam, "Programming with Visual Basic 6.0", 1st Edition, Vikas Publishing House Pvt.Ltd., Chennai, 2001. 2. Julia Case Bradley and Anita C.Millsbaugh, "Programming in Visual Basic 6.0", Tata McGraw-Hill Edition, 2011.		
Website Link	http://www.youtube.com/watch?v=W0hkymvJzfl https://www.geeksforgeeks.org/introduction-to-visual-programming-language/		

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UCAP04	VISUAL PROGRAMMING	DSC PRACTICAL - IV	IV	4	-	-	4	2

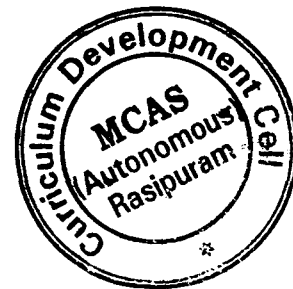
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	M	S	S	S
CO2	M	S	S	S	S	S	S	S	S	S
CO3	S	S	S	S	S	S	M	M	S	S
CO4	S	S	M	S	S	M	M	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	-STRONG							

Tutorial Schedule	E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk .
Assesment Methods	Model Practical - I Model Practical - II

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i> Mr.K.Vijayakumar <i>[Signature]</i>	Dr.V.Vijayadeepa <i>[Signature]</i>	<i>[Signature]</i>

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UCAC08	Machine Learning	DSC THEORY - VIII	IV	5	5	-	-	4
Objective	To Recognize the Artificial Intelligence and machine learning techniques and make the students to understand Machine Learning Models and Evaluate the student skills in machine learning.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction to machine learning: Introduction, Types of machine learning, Applications of Machine Learning, Perspectives and issues in machine learning, Tools in machine learning, basic types of data in machine learning, exploring structure of data, data preprocessing. Performance metrics - accuracy, precision, recall, sensitivity, specificity, AUC, RoC, Bias Variance decomposition.						K1	13
II	Probabilistic and Stochastic Models: Bayesian Learning –Bayes theorem, Concept learning, Maximum likelihood, Bayes optimal classifier, Gibbs algorithm, Naive Bayes classifier, Expectation maximization and -Gaussian Mixture Models, Hidden Markov models.						K2	13
III	Supervised learning: Introduction, Regression, Linear regression, Classification: Decision trees, k-Nearest Neighbours, Support Vector Machine, Logistic regression, Naïve Bayes, Random Forest. Artificial Neural Network: Introduction, Perceptrons, multi-layer networks and back propagation.						K3	11
IV	Unsupervised learning: Introduction, Supervised vs Unsupervised Cluster Analysis, K-means clustering, Hierarchical clustering. Dimension reduction: Principal Component Analysis, Linear Discriminant Analysis.						K4	12
V	Modelling, evaluation and Genetic algorithms: Building the model, Training a model, evaluating a model, improving a model. Genetic Algorithms – Representing hypothesis, Genetic operators and Fitness function and selection, Simple applications of the Genetic Algorithm.						K4	11

Course Outcome	CO1:To Recall the Machine Learning Concepts.	K1
	CO2:To Summarize the Probabilistic and Stochastic Model.	K2
	CO3:To Solve the Supervised learning Techniques.	K3
	CO4: To Analyze the unsupervised learning Techniques.	K4
	CO5:To Build Modelling, evaluation and Genetic algorithms.	K4
Learning Resources		
Text Books	<p>1. SaikatDutt, Subramanian Chandramouli, Amit Kumar Das, —Machine Learning, Pearson Education. Chapters 1-3, 6-10. (unit I,II,III,IV,V)</p> <p>2. ShaiShalev-Shwartz, Shai Ben-David, —Understanding Machine Learning: From Theory to Algorithms, Cambridge University Press. Chapters 20, 23-24 (Unit III,IV).</p> <p>3. Tom M.Mitchel - "Machine Learning" McGraw Hill Education (India) Private Limited, Chennai. Chapters 6,9 - (Unit - II & V).</p>	
Reference Books	<p>1. T. Hastie, R. Tibshirani and J. Friedman, —Elements of Statistical Learning, Springer.</p> <p>2. Charu C. Aggarwal, —DATA CLUSTERING Algorithms and Applications, CRC Press, 2014.</p> <p>3. C. Bishop, —Pattern Recognition and Machine Learning, Springer.</p> <p>4. Ethem Alpaydin, "Introduction to Machine Learning, MIT Press, Prentice Hall of India, Third Edition 2014.</p>	
Website Link	http://www.geeksforgeeks.org/machine-learning/	

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UCAC08	Machine Learning	DSC THEORY VIII	IV	5	5	-	-	4

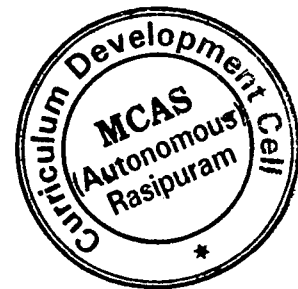
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	L	S	S	M	S	M	S	S	S
CO4	S	M	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UCAC09	Computer Networks	DSC THEORY - IX	IV	5	5	-	-	4
Objective	To understand the concept of Computer network and impart knowledge about networking and internet devices.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction – Network Hardware - Software - Reference Models - OSI and TCP/IP Models - Example Networks: Internet, ATM, Ethernet and Wireless LANs - Physical Guided Transmission Media.						K1	13
II	Wireless Transmission - Communication Satellites - Telephone System: Structure, Local Loop, Trunks and Multiplexing and Switching. Data Link Layer: Design Issues - Error Detection and Correction.						K2	12
III	Elementary Data Link Protocols - Sliding Window Protocols - Data Link Layer in the Internet - Medium Access Layer - Channel Allocation Problem Multiple Access Protocols - Bluetooth.						K3	11
IV	Network Layer - Design Issues - Routing Algorithms - Congestion Control Algorithms - IP Protocol - IP Addresses - Internet Control Protocols.						K4	12
V	Transport Layer - Services - Connection Management - Addressing, Establishing and Releasing a Connection - Simple Transport Protocol - Internet Transport Protocols (ITP) - Network Security: Cryptography.						K4	12

Course Outcome	CO1:To Recall the concept of networks and its types.	K1
	CO2:To Describe the wireless communications.	K2
	CO3:To Determine the data link protocols.	K3
	CO4:To Classify the network design issues.	K3
	CO5:To Analyze the connection issues of Networks.	K4
Learning Resources		
Text Books	1. A. S. Tanenbaum, —Computer Networks, Prentice-Hall of India 2008, 4th Edition.	
Reference Books	1. Stallings, —Data and Computer Communications, Pearson Education 2012, 7th Edition. 2. B. A. Forouzan, —Data Communications and Networking, Tata McGraw Hill 2007, 4th Edition. 3. F. Halsall, —Data Communications, Computer Networks and Open Systems, Pearson Education 2008.	
Website Link	NPTEL & MOOC courses titled Computer Networks https://nptel.ac.in/courses/106106091	

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UCAC09	Computer Networks	DSC THEORY - IX	IV	5	5	-	-	4

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	M	M	S	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>(Signature)</i> Mr.K.Vijayakumar <i>(Signature)</i>	Dr.V.Vijayadeepa <i>(Signature)</i>	<i>(Signature)</i>

Dr.S.Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UCASP2	HTML AND WEB DESIGN	SEC PRACTICAL - II	IV	3	-	-	3	2
Objective	To Develop skills in analyzing the usability of a web site and Understand how to plan and conduct user research related to web usability with HTML and CSS.							
S.No.	List of Experiments / Programmes	Knowledge Levels	Sessions					
1	Design a page having suitable background color and text color with title "My First Web Page" using all the attributes of the Font tag.	K1	3					
2	Create a HTML document giving details of your [Name, Age], [Address, Phone] and [Register Number, Class] aligned in proper order using alignment attributes of Paragraph tag	K1	3					
3	Write HTML code to design a page containing some text in a paragraph by giving suitable heading style.	K2	3					
4	Create a page to show different character formatting (B, I, U, SUB, SUP) tags.	K2	3					
5	Create a web page with an appropriate image towards the left hand side of the page, when user clicks on the image another web page should open.	K2	3					
6	Create web Pages using Anchor tag with its attributes for external links.	K3	3					
7	Write a HTML code to create a web page with pink color background and display moving message in red color.	K4	3					
8	Create a web page, showing an ordered list and unordered list of names of all the Arts Programme (Branches) in your institution.	K4	3					
9	Create a HTML document containing a nested list showing a content page of any book.	K4	3					
10	Create the following table in HTML with Dummy Data: Reg. Number Student Name Year/Semester Date of Admission	K5	3					
Course Outcome	CO1: To Recall the Basic tags of HTML programming language.	K1						
	CO2: To Summarize the Html tags for Crating Design.	K2						
	CO3: To Determine the Attributes.	K3						
	CO4: To Categorize the Types of List in Html.	K4						
	CO5: To Determine the Various Attributes for Creating Tables.	K5						

Learning Resources

Text Books	1.C Xavier, "World Wide Web with HTML", Tata McGraw Hill Education, 2000. 2. H.M.Deital, P.J. Deital, "Internet and World Wide Web - How to Program", 4th Edition "PHI Learning.
Reference Books	1. Raj Kamal, "Internet and Web Technologies", 7th Reprint, Tata McGraw Hill Education, 2007.
Website Link	https://www.w3schools.com/html/html_basic.asp

L-Lecture

T-Tutorial

P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M4UCASP2	HTML AND WEB DESIGN	SEC PRACTICAL-II	IV	3	-	-	3	2

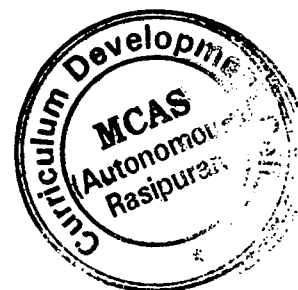
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	S	M	M	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	M	M	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	-STRONG							

Tutorial Schedule	E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Model Practical - I Model Practical - II

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>(Signature)</i> Mr.K.Vijayakumar <i>(Signature)</i>	Dr.V.Vijayadeepa <i>(Signature)</i>	<i>(Signature)</i>

Dr. S. Shantha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAC10	Java Programming	DSC THEORY - X	V	5	5	-	-	4
Objective	To Recognize Java Basics, Branching & Looping Statements and study the concepts of threads, applets & Files in Java.							
Unit	Course Content						Knowledge Levels	Sessions
I	Java Evolution – Simple Java Program – Java program structure – Java Tokens – Java Statements – JVM – Command Line Arguments – Constants, Variables, and Data Types – Operators and Expressions.						K1	13
II	Decision Making and Branching: Introduction – Decision Making with if Statement – The ?: Operator. Decision Making and Looping: Introduction – Jumps in Loops – Labelled Loops. Classes, Objects and Methods: Introduction – Defining a Class – Creating Objects – Accessing Class Members – Constructors – Methods Overloading – Static Members – Nesting of Methods – Inheritance – Overriding Methods – Final Variables and Methods – Final Classes – Finalizer Methods – Abstract Methods and Classes – Methods with Varargs – Visibility Control.						K2	11
III	Arrays, Strings and Vectors: Introduction – Types - Strings – Vectors – Wrapper Classes – Enumerated Types – Annotations. Interfaces: Introduction – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables – Packages: Introduction – Java API Packages – Using System Packages – Hiding Classes – Static Import.						K3	12
IV	Multithreaded Programming: Introduction – Creating Threads – Stopping and Blocking a Thread - Life cycle of a Thread – Synchronization – Implementing the Runnable interface – Inter thread Communication. Managing Errors and Exceptions: Introduction – Types of Errors – Exceptions – Applet Programming: Introduction – Write Applets - Building Applet code - Applet life cycle - Creating an Executable Applet – Designing a web page – Applet Tag – Adding Applet to HTML File – Running the applet – Applet Tags – Passing Parameters to Applets – Aligning the Display – Displaying Numerical values – Getting input from the user – Event handling.						K4	11

V	Graphics Programming: Introduction – The Graphics Class - Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Charts. Managing I/O Files in Java: Introduction – Concept of stream – Stream classes – Byte stream classes – Character stream classes – Using stream – Using the file class – Creation of Files – Reading/Writing characters – Reading/Writing Bytes – Handling Primitive Data types –Concatenating and buffering Bytes - Random access files.	K4	13			
Course Outcome	CO1:To Identify the Java classes and methods using a subset of data types.	K1				
	CO2:To Discuss about Decision Making Statements in Java.	K2				
	CO3:To Illustrate the Concepts of Arrays&Interfaces in Java.	K3				
	CO4:To Classify the threads & Applets in Java.	K3				
	CO5:To Justify the Graphics and File Management Concepts in Java.	K4				
Learning Resources						
Text Books	1. E. Balagurusamy, "Programming with Java," 5th Edition, Tata McGraw Hill Pub. Ltd., New Delhi,2009.					
Reference Books	1. Herbert Schild, "Java: The Complete Reference," Ninth Edition, Oracle Press, 2014 2. Rohit Khurana, "Programming with JAVA," VIKAS Pub., 2014					
Website Link	https://www.guru99.com/java-tutorial.html					
	L-Lecture	T-Tutorial	P-Practical	C-Credit		

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

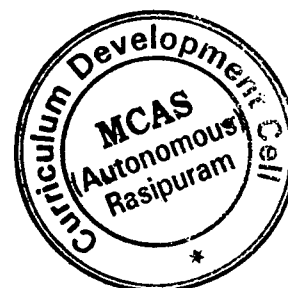
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAC10	Java Programming	DSC THEORY - X	V	5	5	-	-	4

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	L	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	M	S	S	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	
		Dr.S.Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAP05	PROGRAMMING IN JAVA	DSC PRACTICAL - V	V	4	-	-	4	2
Objective	To acquire knowledge on creation of software components using JAVA and Learn the Concept of Decision making statements,Exception Handling,Multithreads and File systems.							
S.No.	List of Experiments / Programmes	Knowl edge Levels	Sessions					
1	Write a program to implement all decision making statements.	K1	5					
2	Write a program to illustrate method overloading.	K1	4					
3	Write a program to implement constructors and destructors.	K2	4					
4	Write a program to implement interface.	K2	5					
5	Write a program that demonstrate packages.	K2	5					
6	Write a program to handle the Exception using try and multiple catch blocks.	K3	4					
7	Write a program to illustrate the use of multithreads.	K3	4					
8	Write a program to implement applets.	K4	4					
9	Write a program to illustrate event handling.	K4	5					
10	Write a program to demonstrate file operations.	K5	5					

Course Outcome	CO1: Gain the knowledge of Method overloading & Sorting Methods		
	CO2: Design and implement Matrix Formation & Decision Making Statements		
	CO3: Gain the knowledge about Packages		
	CO4: Gain knowledge of Applets & Graphics Packages		
	CO5: Design and Develop various application by using Files		
Learning Resources			
Text Books	1. E. Balagurusamy, "Programming with Java," 4th Edition, Tata McGraw Hill Pub. Ltd., New Delhi, 2009.		
Reference Books	1. Herbert Schild, "Java: The Complete Reference," Ninth Edition, Oracle Press, 2014 2. Rohit Khurana, "Programming with JAVA," VIKAS Pub., 2014		
Website Link	https://www.guru99.com/java-tutorial.html		

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAP05	PROGRAMMING IN JAVA	DSC PRACTICAL V	V	4	-	-	4	2

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	M	S	S	S
CO2	M	S	S	S	S	S	S	S	S	S
CO3	S	S	S	S	S	S	S	M	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	-STRONG							

Tutorial Schedule	E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Model Practical - I Model Practical - II

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i> Mr.K.Vijayakumar <i>[Signature]</i>	Dr.V.Vijayadeepa <i>[Signature]</i>	<i>[Signature]</i>

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAC11	Open Source Computing	DSC THEORY - XI	V	4	4	-	-	3
Objective	The Students to learn and understand Python programming basics and paradigms and using various flow controls of Python Programming.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction to Python - Python in the real world-why python- Installation and Running Python, Python interpreter. Data: Types,Values,Variables,choose Good variable names. Numbers: Booleans,Integers,Flots,Math functions.						K1	10
II	Program Flow Control: Choose with if -Comment with #,Continue Lines with \, Compare with if,elseif,and else,What is True?,Do multiple Comparisons with in. Text Strings-Loop with while and for, Tuples - Lists - Dictionaries and Sets.						K2	8
III	Functions: Definition, Call a function , Arguments and Parameters, Inner functions, closures-Generators,Decorators , Namespaces and scope,Recursion,Exceptions. Objects and Classes.						K3	9
IV	Modules,Packages, and Goodies: Modules and the import statement, import a module,import a module with another name, import only what you want from a module-Packages : Module search path,Relative and absolute imports, Namespace Packages, module versus objects, Goodies: Goodies in python standard library, more batteries : Get Python code.						K4	8
V	Python in Practice: Py Art- 2-D Graphics, 3 - D Graphics, 3 - D Animation, Graphical User Interface. Py Sci : Math Functions, Working with complex numbers Matrix multiplication, Scientific Python, SciPy, SciKit, Pandas, Python and scientific areas.						K4	10
Course Outcome	CO1:To Define the Basics of Python.						K1	
	CO2:To Discuss the concepts of control structures and looping						K2	
	CO3:To Solve the Functions & its Programs of Python.						K3	
	CO4:To Analyze Modules, Packages and Goodies						K4	
	CO5:To Work in Python						K4	

Learning Resources

Text Books	1. Bill Lubanovic, "Introducing Python", O'Reilly, 5th Edition-Second Release, 2014.
Reference Books	1. Mark Lutz, "Learning Python", O'Reilly, Fifth Edition, 2013. David M. Beazley, "Python Essential Reference", Developer's Library, Fourth Edition, 2009 2. Charles Dierbach, Introduction to Computer Science Using Python: A Computational Problem-Solving Focus, John Wiley, 2012 3. Kenneth A. Lambert, The Fundamentals of Python: First Programs, 2011 Cengage Learning, ISBN: 9781111822705.
Website Link	https://www.w3schools.com/python/

L-Lecture

T-Tutorial P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAC11	Open Source Computing	DSC THEORY XI	V	4	4	-	-	3

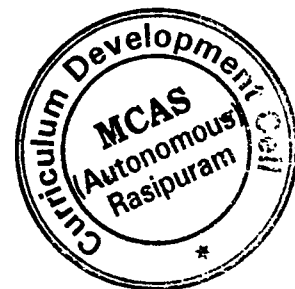
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	L	M	M	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>N.Padmavathi</i> Mr.K.Vijayakumar <i>K.Vijayakumar</i>	Dr.V.Vijayadeepa <i>V.Vijayadeepa</i>	<i>S.Shabitha</i>

Dr. S. Shabitha



BCA Syllabus LOCF-CBCS with effect from 2022-2023 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
22M5UCAC11	Open Source Computing	DSC THEORY - XI	V	4	4	-	-	4
Objective	The Students to learn and understand Python programming basics and paradigms and using various flow controls							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction to Python - Python in the real world-why python- Installation and Running Python, Python interpreter. Data: Types,Values,Variables,choose Good variable names. Numbers: Booleans,Integers,Flots,Math functions.						K1	10
II	Program Flow Control: Choose with if -Comment with #,Continue Lines with \, Compare with if,elseif,and else,What is True?,Do multiple Comparisons with in. Text Strings-Loop with while and for, Tuples - Lists - Dictionaries and Sets.						K2	8
III	Functions: Definition, Call a function , Arguments and Parameters, Inner functions, closures-Generators,Decorators , Namespaces and scope,Recursion,Exceptions. Objects and Classes.						K3	9
IV	Modules,Packages, and Goodies: Modules and the import statement, import a module,import a module with another name, import only what you want from a module-Packages : Module search path,Relative and absolute imports, Namespace Packages, module versus objects, Goodies: Goodies in python standard library, more batteries : Get Python code.						K4	8
V	Python in Practice: Py Art- 2-D Graphics, 3 - D Graphics, 3 - D Animation, Graphical User Interface. Py Sci : Math Functions, Working with complex numbers Matrix multiplication, Scientific Python, SciPy, SciKit, Pandas, Python and scientific areas.						K4	10
Course Outcome	CO1:To Define the Basics of Python.						K1	
	CO2:To Discuss the concepts of control structures and looping						K2	
	CO3:To Solve the Functions & its Programs of Python.						K3	
	CO4:To Analyze Modules, Packages and Goodies						K4	
	CO5:To work in Python						K4	
Learning Resources								
Text Books	1.Bill Lubanovic, "Introducing Python", O'Reilly, 5th Edition-Second Release, 2014.							
Reference Books	1.Mark Lutz, "Learning Python", O'Reilly, Fifth Edition, 2013. David M. Beazley,"Python Essential Reference", Developer"s Library, Fourth Edition, 2009							
Website Link	https://www.w3schools.com/python/							

L-Lecture

T-Tutorial P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2022-2023 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
22M5UCAC11	Open Source Computing	DSC THEORY - XI	V	4	4	-	-	4

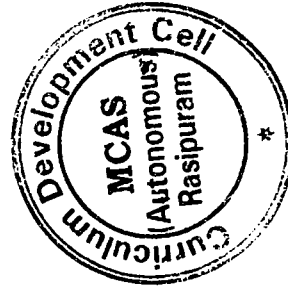
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	L	M	M	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRÖNG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i>	Dr.V.Vijayadeepa	<i>[Signature]</i>
Mr.K.Vijayakumar <i>[Signature]</i>	V.V. <i>[Signature]</i>	<i>[Signature]</i>

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BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAP06	PROGRAMMING IN PYTHON	DSC PRACTICAL - VI	V	4	-	-	4	2
Objective	Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.							
S.No.	List of Experiments / Programmes						Knowledge Levels	Sessions
1	Program using variables, constants, I/O statements in Python.						K1	5
2	Write a Program using Conditional Statements.						K1	4
3	Write a Program using Loops.						K2	4
4	Write a program using functions.						K2	5
5	Write a Program using Recursion.						K3	4
6	Write a Program using Arrays.						K4	4
7	Write a Program using Strings.						K4	4
8	Write a Program using Modules.						K4	5
9	Write a Program using Lists.						K4	5
10	Write a Program using Tuples.						K4	5
11	Write a Program using Dictionaries.						K5	5
12	Write a Program for File Handling							

Course Outcome	CO1: Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.	K1
	CO2: Express proficiency in the handling of strings and functions.	K2
	CO3: Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.	K3
	CO4: Identify the commonly used operations involving file systems and regular expressions.	K4
	CO5: Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python.	K5
Learning Resources		
Text Books	1. Bill Lubanovic, "Introducing Python", O'Reilly, First Edition-Second Release, 2014.	
Reference Books	1. Mark Lutz, "Learning Python", O'Reilly, Fifth Edition, 2013. David M. Beazley, "Python Essential Reference", Developer's Library, Fourth Edition, 2009 2. Charles Dierbach, Introduction to Computer Science Using Python: A Computational Problem-Solving Focus, John Wiley, 2012 3. Kenneth A. Lambert, The Fundamentals of Python: First Programs, 2011 Cengage Learning, ISBN: 9781111822705.	
Website Link	https://www.w3schools.com/python/	

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAP06	PROGRAMMING IN PYTHON	DSC PRACTICAL VI	V	4	-	-	4	2

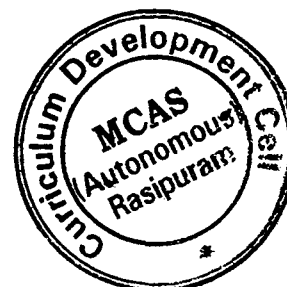
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	L	S	S	S	S
CO3	S	L	S	S	M	S	S	M	S	S
CO4	S	M	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	-STRONG							

Tutorial Schedule	E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Model Practical - I Model Practical - II

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>N. Padmavathi</i> Mr.K.Vijayakumar <i>K. Vijayakumar</i>	Dr.V.Vijayadeepa <i>V. V. Vijayadeepa</i>	<i>S. Shahitha</i>

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards								
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAC12	Artificial Intelligence using Deep Learning	DSC THEORY - XII	VI	5	5	-	-	4
Objective	To Acquire Knowledge on various AI Techniques and Expert Systems and enriched knowledge regarding heuristic search, Knowledge representation and Expert systems.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction: AI Problems – AI techniques – Problems, Problem Spaces, Search: Defining the problem as a State Space Search – Production Systems – Problem Characteristics – Issues in design of Search Programs.						K1	13
II	Heuristic Search techniques: Generate and Test – Hill Climbing – Best-First Search- Problem Reduction, Constraint Satisfaction, Means-ends Analysis.						K2	10
III	Knowledge representation issues: Representation and Mappings , Approaches to Knowledge Representation, Issues in Knowledge Representation. Using Predicate Logic -Representing Knowledge Using Rules- Symbolic Reasoning under Uncertainty.						K3	11
IV	Statistical Reasoning : Probability and Bayes' Theorem Certainty Factors and Rule -based Systems, Bayesian Networks, Dempster-Shafer Theory, Fuzzy Logic.Weak slot-and Filler structures.						K4	14
V	Strong Slot-and-Filler Structures: Conceptual Dependency - Scripts-CYC. Knowledge Representation Summary: Syntactic-sem,antic Spectrum of Representation, Logic and Slot-and-filler Structures- Other Representational Techniques, Summary of the Role of Knowledge.						K4	12
Course Outcome	CO1:To Identify the Basics of Artificial Intelligence.						K1	
	CO2:To Discuss about Heuristic Search techniques.						K2	
	CO3:To Apply the Knowledge Acquisition and Representation.						K3	
	CO4:To Construct the Statistical Reasoning.						K4	
	CO5:To Determine the Knowledge Representation Summary.						K4	
Learning Resources								
Text Books	1. Elaine Rich and Kevin Knight, Shiva Shankar Nair, "Artificial Intelligence", McGraw-Hill Companies, 3rd edition.							
Reference Books	1. Stuart Russell & Peter Norvig , "Artificial Intelligence A Modern Approach", Perason, 2nd Edition.							
Website Link	https://www.tutorialspoint.com/artificial_intelligence/index.htm							

L-Lecture

T-Tutorial P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards								
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAC12	ARTIFICIAL INTELLIGENCE USING DEEP LEARNING	DSC THEORY - XII	VI	5	5	-	-	4

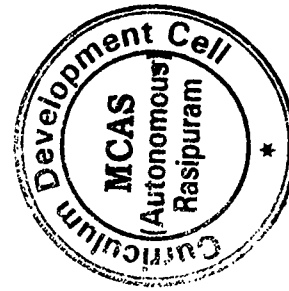
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	L	S	S	S
CO2	M	S	S	S	S	M	M	S	S	S
CO3	S	S	S	S	S	L	M	M	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi	Dr.V.Vijayadeepa	
Mr.K.Vijayakumar		

(Dr.S.SHAH)



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAP07	ARTIFICIAL INTELLIGENCE	DSC PRACTICAL - VII	VI	4	-	-	4	2
Objective	The goal is to acquire knowledge on intelligent systems and agents, formalization of knowledge, reasoning with and without uncertainty.							
S.No.	List of Experiments / Programmes	Knowl edge Levels	Sessions					
1	Write a program to implement dfs for water jug problem	K1	5					
2	To Solve a Breadth first search Algorithm	K1	4					
3	To Solve a Depth first search Problem	K2	5					
4	Write a Program for Inorder traversals	K2	5					
5	To Solve a Preorder traversal	K2	4					
6	Write a Program for Postorder traversal	K3	4					
7	To Create a Sudoku Program	K4	4					
8	To write a program for Backward chaining	K4	4					
9	Write a Program for Forward chaining	K4	4					
10	Design a Calculator using required tools.	K5	6					
CO1: To solve problems using AI								

Course Outcome	CO2: To Illustrate the concept of searching techniques	
	CO3: To Know the Concept of Tree Traversal	
	CO4: To know the working on Forward and Backward Chaining	
	CO5: To know the how to create Calender.	
Learning Resources		
Text Books	<p>1. Stuart Russell and Peter Norvig Artificial Intelligence - A Modern Approach, Pearson Education India; 3rd edition, 2015.</p> <p>2. Elaine Rich, Kevin Knight and Shiv Shankar B. Nair, Artificial Intelligence, 3rd edition, Tata McGraw Hill, 2019.</p> <p>3. Wolfgang Ertel, "Introduction to Artificial Intelligence", Second Edition, Springer, 2017.</p> <p>4. Ian Goodfellow, Yoshua Bengio, and Aaron Courville, "Deep Learning", First Edition, MIT Press, 2016.</p> <p>5. Nikhil Buduma and Nicholas Lacascio, "Fundamentals of Deep Learning", First Edition, O.Reilly, 2017</p>	
Reference Books	<p>1. Elaine Rich And Kevin Knight, Artificial Intelligence , Tata Mc Grew Hill Publisher, 2nd Edition.</p> <p>2. Dan W. Patterson Goodfellow, "Deep Learning", MIT Press, 2017.</p>	
Website Link	<p>https://www.simplilearn.com/tutorials/deep-learning-tutorial</p>	

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAP07	ARTIFICIAL INTELLIGENCE	DSC PRACTICAL VII	VI	4	-	-	4	2

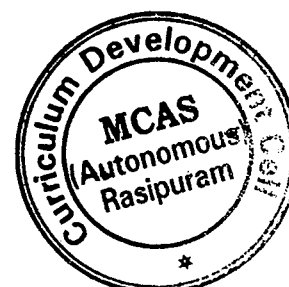
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	S	M	M	S	S
CO4	S	S	M	S	S	S	S	S	S	S
CO5	M	S	M	L	L	M	M	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	-STRONG							

Tutorial Schedule	E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Model Practical - I Model Practical - II

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAC13	Cyber Security	CORE THEORY - XIII	VI	5	5	-	-	4
Objective	The Students able to understand the Basic concepts of Cyber Security threats,risk,attack and vulnerabilities.							
Unit	Course Content						Knowledge Levels	Sessions
I	INTRODUCTION TO CYBER SECURITY: Introduction -Computer Security - Threats -Harm - Vulnerabilities - Controls - Authentication -Access Control and Cryptography – Web User Side - Browser Attacks - Web Attacks Targeting Users - Obtaining User or Website Data - Email Attacks.						K1	12
II	SECURITY IN OPERATING SYSTEM & NETWORKS: Security in Operating Systems - Security in the Design of Operating Systems –Root kit - Network security attack- Threats to Network Communications - Wireless Network Security - Denial of Service - Distributed Denial-of-Service.						K2	10
III	DEFENCES: SECURITY COUNTER MEASURES: Cryptography in Network Security - Firewalls - Intrusion Detection and Prevention Systems - Network Management - Databases - Security Requirements of Databases - Reliability and Integrity - Database Disclosure - Data Mining and Big Data.						K3	11
IV	PRIVACY IN CYBERSPACE: Privacy Concepts -Privacy Principles and Policies -Authentication and Privacy - Data Mining -Privacy on the Web - Email Security - Privacy Impacts of Emerging Technologies - Where the Field Is Headed.						K4	15
V	MANAGEMENT AND INCIDENTS: Security Planning - Business Continuity Planning - Handling Incidents - Risk Analysis - Dealing with Disaster - Emerging Technologies - The Internet of Things - Economics - Electronic Voting - Cyber Warfare- Cyberspace and the Law - International Laws - Cyber Crime - Cyber Warfare and Home Land Security.						K4	12

Course Outcome	CO1:To Recognize the basics of cyber security.	K1
	CO2:To Discuss about security concepts.	K2
	CO3:To Apply the Concepts of N/W security.	K2
	CO4:To Illustrate the Privacy concepts in cyberspace.	K3
	CO5:To Build the Emerging Technologies using Cyber security.	K4

Learning Resources

Text Books	1. Charles P. Pfleeger Shari Lawrence Pfleeger Jonathan Margulies, Security in Computing, 5th Edition , Pearson Education , 2015
Reference Books	1. George K.Kostopoulos, Cyber Space and Cyber Security, CRC Press, 2013. 2. Martti Lehto, Pekka Neittaanmäki, Cyber Security: Analytics, Technology and Automation edited, Springer International Publishing Switzerland 2015 3. Nelson Phillips and Enfinger Steuart, —Computer Forensics and Investigations, Cengage Learning, New Delhi, 2009.
Website Link	https://www.tutorialspoint.com/fundamentals_of_science_and_technology/cyber_crime_and_cyber_security.htm

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAC13	Cyber Security	DSC THEORY - XIII	VI	5	5	-	-	4

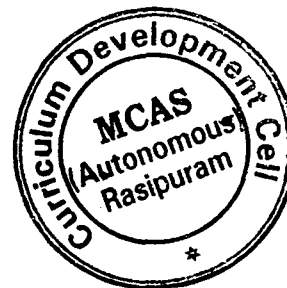
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	L	M	S	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i> Mr.K.Vijayakumar <i>[Signature]</i>	Dr.V.Vijayadeepa <i>[Signature]</i>	<i>[Signature]</i>

Dr.S.Shahitha



BCA Syllabus LOCF-CBCS with effect from 2022-2023 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
22M6UCAC14	Computer Networks	DSC THEORY - XIV	VI	5	5	-	-	4
Objective	To understand the concept of Computer network and impart knowledge about networking and internet devices.							
Unit	Course Content	Knowledge Levels	Sessions					
I	Introduction – Network Hardware - Software - Reference Models - OSI and TCP/IP Models - Example Networks: Internet, ATM, Ethernet and Wireless LANs - Physical Guided Transmission Media.	K1	13					
II	Wireless Transmission - Communication Satellites - Telephone System: Structure, Local Loop, Trunks and Multiplexing and Switching. Data Link Layer: Design Issues - Error Detection and Correction.	K2	12					
III	Elementary Data Link Protocols - Sliding Window Protocols - Data Link Layer in the Internet - Medium Access Layer - Channel Allocation Problem - Multiple Access Protocols - Bluetooth.	K3	11					
IV	Network Layer - Design Issues - Routing Algorithms - Congestion Control Algorithms - IP Protocol IP Addresses - Internet Control Protocols.	K4	12					
V	Transport Layer - Services - Connection Management - Addressing, Establishing and Releasing a Connection - Simple Transport Protocol - Internet Transport Protocols (ITP) - Network Security: Cryptography.	K4	12					
Course Outcome	CO1:To Recall the concept of networks and its types.	K1						
	CO2:To Describe the wireless communications.	K2						
	CO3:To Determine the data link protocols.	K3						
	CO4:To Classify the network design issues.	K3						
	CO5:To Analyze the connection issues of Networks.	K4						
Learning Resources								
Text Books	1. A. S. Tanenbaum, —Computer Networks , Prentice-Hall of India 2008, 4th Edition.							
Reference Books	1. Stallings, —Data and Computer Communications , Pearson Education 2012, 7th Edition. 2. B. A. Forouzan, —Data Communications and Networking , Tata McGraw Hill 2007, 4th Edition.							
Website Link	NPTEL & MOOC courses titled Computer Networks https://nptel.ac.in/courses/106106091							

L-Lecture

T-Tutorial P-Practical

C-Credit

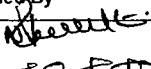
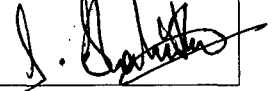
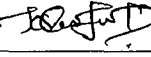
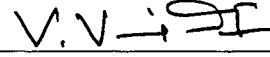
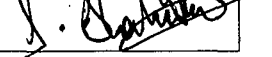
BCA Syllabus LOCF-CBCS with effect from 2022-2023 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
22M6UCAC14	Computer Networks	DSC THEORY - XIV	VI	5	5	-	-	4

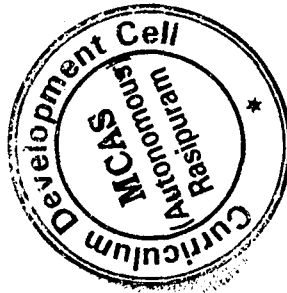
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	M	M	S	S	S
CO4	S	S	M	S	S	S	S	M	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi 	Dr.V.Vijayadeepa	
Mr.K.Vijayakumar 	V.V. 	

(Dr. V. Vijayadeepa)



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

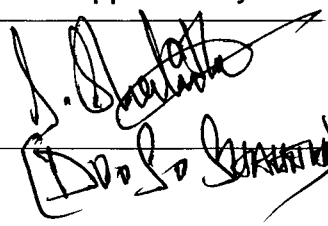
Course Code	Course Title	Course Type	Sem	Hou rs	L	T	P	C
	INTERNSHIP PROGRAMME	INTERNSHIP	V	-	-	-	-	-
Objective	To give optimum exposure on the practical aspects of mathematics in Industries							
Guidelines for Internship Programme					Knowledge Levels		Sessions	
<ol style="list-style-type: none"> 1. Duration of the internship training is 15 days during the Vacation which falls at the end of the 5th Semester. 2. The department concerned will prepare on exhaustive panel of Institutions, Industries and practitioners. 3. The individual student has to identify the institution / industry / practitioners of their choice and inform the same to the HOD / Staff-in-Charge. 4. The students hereafter will be called Trainees should maintain a work diary in which the daily work done should be entered and the same should be Attested by the Section in-charge. 5. The departments should prepare an outline of the job to be done, Sections in which they have to be attached both in the office as well as in the field. 6. The trainees should strictly adhere to the rules and regulations and office Timings of the institutions to which they are attached. 7. The trainees have to obtain a certificate on successful completion of the Internship from the Chief Executive of the organization. 8. A Staff member of a Department (Guide) will be monitoring the Performance of the Candidate. 9. Schedule of visit to be made by the staff is to be prepared by the HOD / Staff-in-charge. 10. Report writing manual and format should be prepared by the respective Departments. 11. All model forms are to be attached wherever it is necessary. 12. Report evaluation: Internal Viva-Voce examination will be conducted. 13. Report should be properly submitted after the completion of internship Training. 					K4,K5			
Course Outcome	CO1: Analyze and Evaluate to test the theoretical learning in practical situations by accomplishing the tasks assigned during the internship period.				K5			
Learning Resources								
Website Link	https://www.tutorialspoint.com/r/index.htm https://www.javatpoint.com/net-framework							

	https://www.w3schools.com/java/java_intro.asp https://www.w3schools.com/r/							
	L-Lecture	T-Tutorial	P-Practical	C-Credit				
BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards								
Course Code	Course Title	Course Type	Sem	Hou rs	L	T	P	C
	INTERNSHIP PROGRAMME	INTERNSHIP	V	-	-	-	-	=

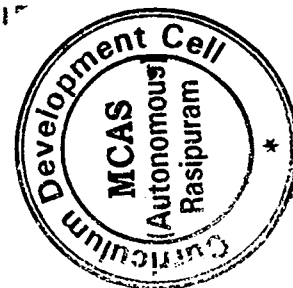
CO-PO Mapping

CO Number	PO1	PO 2	PO 3	PO 4	PO 5	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	S	S	S	S	S	S	S	S	S	S
Level of correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	
Teaching and Learning Methods	Working with programming languages such as C++, Python and Java
Assessment Methods	Viva - Voce Examination

Designed By	Verified By	Approved By
N. Anannisha N. Anisha	Dr. V. VIJAYADEEPA V.V. → DCC	

HOD-Department of BCA,
Muthayammal College of Arts & Science,
RASIPURAM - 637 408, Namakkal



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards										
Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C		
21MSUCAS01	CAMPUS TO CORPORATE TRANSMISSION	SEC THEORY- I	V	3	3	-	-	-	2	
Objective	To ensure the students to possess the necessary skills and enable the person to cope up with the corporate									
Unit	Course Content						Knowledge Levels	Sessions		
I	Overview of Corporate and Business Industry: Introduction to BPS-History of BPS- Benefits of BPS -BPS in India : Domains that BPS cater to in India. Difference Between Campus and Corporate : Ways in which Corporate is different from campus - Expectation from freshers by corporate: Domain Knowledge - Interpersonal Skills and Professional Skills - Positive Attitude.						K1	7		
II	Grooming for Corporate : Corporate Etiquette - Importance of Etiquette- Dressing and Grooming skills - Personal Hygiene - Good habits . Workplace Etiquette - E- mail Etiquette - Telephone Etiquette - Meeting Etiquette.						K2	5		
III	Skills - Presentation Skills – Impactful Presentation skill - listening Skills – Types of listening - Time management - Team skills -Significance of team management - Importance of team - stress management - causes of stress - importance of stress management.						K3	5		
IV	Communication Skills: Elementary Level: Grammar-Noun - pronoun - adjectives - verbs - adverbs - Preposition - Conjunction - Interjunction- Intermediate level english Communication - Reading comprehension- Listening Comprehension.						K4	7		
V	Advanced level english Communication - Interview skills - stages of interview - practice on your communication skill - Answering strategies - Resume writing - E-mail Writing-Group Discussion .						K4	6		
Course Outcome	CO1: To Identify the students communication (Spoken, Written, and Presentation Skills)						K1			
	CO2:To Summarize the students confidence, develop self-esteem, and bring positive changes in the attitude and behavior of the participants.						K2			
	CO3:To Determine the career-specific practical inputs along with sharing the expectations of the corporate.						K3			
	CO4: To Analyze the inputs into writing their resumes to face interviews and learning corporate etiquette.						K4			
	CO5:To Justify the personal development issues through detailed interaction and question answers sessions.						K4			
Learning Resources										
Text Books	Campus to corporate Transition-Course Material.TCS.,									
Reference Books	Global Business Communication Skills-Facilitator Guide-NASSCOM.									
Website Link	https://www.learnvern.com/soft-skills-training/campus-to-corporate									
L-Lecture			T-Tutorial			P-Practical		C Credit		

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAS01	CAMPUS TO CORPORATE TRANSMISSION	SEC THEORY-I	VI	3	3	-	-	2

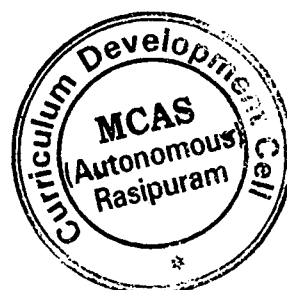
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	M	S	S	S
CO3	S	S	S	S	S	M	S	S	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	

Dr.S.Shahitha



List of Elective Course(DSE) Details for BCA
SYLLABUS - LOCF-CBCS Pattern
EFFECTIVE FROM THE ACADEMIC YEAR 2021-2022 Onwards

S.No.	COURSE_CODE	TITLE OF THE COURSE
1	21M5UCAE01	Software Engineering
2	21M5UCAE02	Web Technologies
3	21M5UCAE03	Big Data Analytics
4	21M5UCAE04	Mobile Computing
5	21M5UCAE05	Computer Graphics
6	21M5UCAE06	Ethical Hacking
7	21M6UCAE07	Data Science
8	21M6UCAE08	Internet of Things
9	21M6UCAE09	SoftwareTesting
10	21M6UCAE10	Data Mining & Warehousing
11	21M6UCAE11	Neural Networks
12	21M6UCAE12	Digital Marketing

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE01	Software Engineering	DSE-I	V	5	5	-	-	4
Objective	To Understand the concepts of software process and analysis, design of the Software life cycle models.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction: The software engineering discipline, programs vs. software products, why study software engineering, the emergence of software engineering, Notable changes in software development practices, computer systems engineering. Software Life Cycle Models: Why use a life cycle model, Classical waterfall model, iterative waterfall model, prototyping model, evolutionary model, spiral model, comparison of different life cycle models.						K1	13
II	Requirements Analysis and Specification: Requirements gathering and analysis, Software requirements specification (SRS). Software Design: Good software design, cohesion, and coupling, neat arrangement, software design approaches, object-oriented vs function-oriented design.						K1-K2	10
III	Function-Oriented Software Design: Overview of SA/SD methodology, structured analysis, data flow diagrams (DFD's), structured design, detailed design. User-Interface design: Characteristics of a good interface; basic concepts; types of user interfaces; component based GUI development, a user interface methodology.						K3	10
IV	Coding and Testing: Coding; code review; testing; testing in the large vs testing in the small; unit testing; black-box testing; white-box testing; debugging; program analysis tools; integration testing; system testing; some general issues associated with testing. Software Reliability and Quality Management: Software reliability; statistical testing; software quality; software quality management system; SEI capability maturity model; personal software process.						K4	14
V	Computer Aided Software Engineering: CASE and its scope; CASE environment; CASE support in software life cycle; other characteristics of CASE tools; towards second generation CASE tool; architecture of a CASE environment. Software Maintenance: Characteristic of software maintenance- software reverse engineering -software maintenance process models- estimation of maintenance cost.						K4	13

Course Outcome	CO1:To Recall the basic knowledge of analysis and design of systems.	K1
	CO2:To Describe the software engineering principles and techniques.	K2
	CO3:To Determine the Model a reliable and cost-effective software	K2
	CO4:To Categorize to design an effective model of the system.	K3
	CO5: To Perform Testing at various levels and produce an efficient system.	K4
Learning Resources		
Text Books	1. Rajib Mall, Fundamentals of Software Engineering, Fifth Edition, Prentice-Hall of India,2018. 2. Roger S. Pressman, Software Engineering, Seventh Edition, McGraw-Hill. 3. Ian Sommerville, Software Engineering, Tenth Edition, Pearson.	
Reference Books	1. Richard Fairley, Software Engineering Concepts, Tata McGraw-Hill publishing company Ltd, Edition 1997. 2. James A. Senn, Analysis & Design of Information Systems, Second Edition, McGraw-Hill International Editions. 3. R.A. Khan, A. Agrawal, Software Engineering, Narosa Publications	
Website Link	https://www.javatpoint.com/software-engineering-tutorial	

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE01	Software Engineering	DSE-I	V	5	5	-	-	4

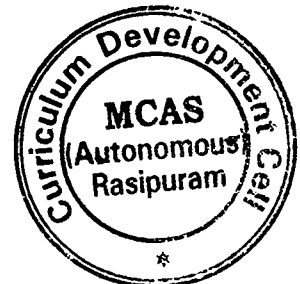
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	L	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	L	M	S	S	S
CO4	S	S	M	S	S	M	M	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i> Mr.K.Vijayakumar <i>[Signature]</i>	Dr.V.Vijayadeepa <i>[Signature]</i>	<i>[Signature]</i>

Dr.S.Shahitra



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE02	Web Technologies	DSE-II	V	5	5	-	-	4
Objective	To know the Fundamental concepts of PHP scripting language & the basic structure of a web application and Summarizere the basics of MySQL database and the relationship between the client-side/server-side scripts.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introducing PHP – Basic development Concepts – Creating first PHP Scripts – Using Variable and Operators – Storing Data in variable – Understanding Data types – Setting and Checking variables Data types – Using Constants – Manipulating Variables with Operators.						K1	12
II	Controlling Program Flow: Writing Simple Conditional Statements - Writing More Complex Conditional Statements – Repeating Action with Loops – Working with String and Numeric Functions.						K2	11
III	Working with Arrays: Storing Data in Arrays – Processing Arrays with Loops and Iterations – Using Arrays with Forms - Working with Array Functions – Working with Dates and Times.						K3	11
IV	Using Functions and Classes: Creating User-Defined Functions - Creating Classes – Using Advanced OOP Concepts. Working with Files and Directories: Reading Files-Writing FilesProcessing Directories.						K4	13
V	Working with Database and SQL : Introducing Database and SQL- Using MySQL-Adding and modifying Data-Handling Errors – Using SQLite Extension and PDO Extension. Introduction XML—Simple XML and DOM Extension.						K4	13

Course Outcome	CO1:To Identify the basic structure of a web application.	K1
	CO2:To Discuss the PHP with HTML concepts.	K2
	CO3:To Perform and deploy the enterprise web applications by using	K2
	CO4:To lassify the database connectivity using MySQL.	K3
	CO5: To Evaluate the debug in PHP scripts.	K4
Learning Resources		
Text Books	1.Vikram VASWANI, "PHP A Beginner's Guide ", Tata McGraw-Hill, 2008.	
Reference Books	1. Steven Holzner – "The PHP Complete Reference" –Tata McGraw-Hill, 2007. 2. Steven Holzer "Spring into PHP5" – Tata McGraw Hill Edition, 2011	
Website Link	https://www.w3schools.com/php/	

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE02	Web Technologies	DSE-II	V	5	5	-	-	4

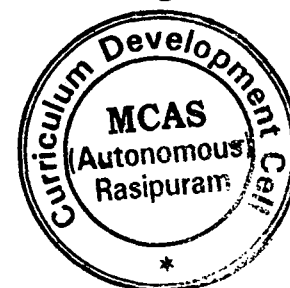
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	L	S	S	S	S
CO3	S	S	S	S	S	L	M	M	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE03	Big Data Analytics	DSE-III	V	5	5	-	-	4
Objective	To explore novel statistical, algorithmic, and implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.							
Unit	Course Content						Course Objective	Sessions
I	What Is Big Data and Why Is It Important? - A Flood of Mythic “Start-Up” Proportions - Big Data Is More Than Merely Big - Why Now? - A Convergence of Key Trends - Relatively Speaking - A Wider Variety of Data - The Expanding Universe of Unstructured Data. Industry Examples of Big Data: Digital Marketing and the Non-line World - Don’t Abdicate Relationships - Is IT Losing Control of Web Analytics? - Database Marketers, Pioneers of Big Data - Big Data and the New School of Marketing - Consumers Have Changed. So Must Marketers. - The Right Approach: Cross-Channel Lifecycle Marketing - Social and Affiliate Marketing - Empowering Marketing with Social Intelligence						C1	12
II	Fraud and Big Data - Risk and Big Data - Credit Risk Management - Big Data and Algorithmic Trading - Crunching Through Complex Interrelated Data - Intraday Risk Analytics, a Constant Flow of Big Data - Calculating Risk in Marketing - Other Industries Benefit from Financial Services’ Risk Experience - Big Data and Advances in Health Care - “Disruptive Analytics” - A Holistic Value Proposition - BI Is Not Data Science - Pioneering New Frontiers in Medicine - Advertising and Big Data: From Papyrus to Seeing Somebody - Big Data Feeds the Modern-Day Donald Draper - Reach, Resonance, and Reaction - The Need to Act Quickly (Real-Time When Possible) - Measurement Can Be Tricky - Content Delivery Matters Too - Optimization and Marketing Mixed Modeling - Beard’s Take on the Three Big Data Vs in Advertising - Using Consumer Products as a Doorway.						C2	12
III	Big Data Technology : The Elephant in the Room: Hadoop’s Parallel World - Old vs. New Approaches - Data Discovery: Work the Way People’s Minds Work - Open-Source Technology for Big Data Analytics - The Cloud and Big Data - Predictive Analytics Moves into the Limelight - Software as a Service BI - Mobile Business Intelligence is Going Mainstream - Ease of Mobile Application Deployment - Crowdsourcing Analytics - Inter- and Trans-Firewall Analytics - R&D Approach Helps Adopt New Technology - Adding Big Data Technology into the Mix - Big Data Technology Terms - Data Size 101.						C3	12

IV	Information Management : The Big Data Foundation - Big Data Computing Platforms (or Computing Platforms That Handle the Big Data Analytics Tsunami) - Big Data Computation - More on Big Data Storage - Big Data Computational Limitations - Big Data Emerging Technologies. Business Analytics : The Last Mile in Data Analysis - Geospatial Intelligence Will Make Your Life Better - Listening: Is It Signal or Noise? - Consumption of Analytics - From Creation to Consumption - Visualizing: How to Make It Consumable? - Organizations Are Using Data Visualization as a Way to Take Immediate Action - Moving from Sampling to Using All the Data - Thinking Outside the Box - 360° Modeling - Need for Speed - Let's Get Scrappy - What Technology Is Available? - Moving from Beyond the Tools to Analytic Applications.	C4	12
V	The People Part of the Equation : Rise of the Data Scientist - Learning over Knowing - Agility - Scale and Convergence - Multidisciplinary Talent - Innovation - Cost Effectiveness -Using Deep Math, Science, and Computer Science - The 90/10 Rule and Critical Thinking - Analytic Talent and Executive Buy-in - Developing Decision Sciences Talent - Holistic View of Analytics - Creating Talent for Decision Sciences - Creating a Culture That Nurtures Decision Sciences Talent - Setting Up the Right Organizational Structure for Institutionalizing Analytics. Data Privacy and Ethics : The Privacy Landscape -The Great Data Grab Isn't New - Preferences, Personalization, and Relationships - Rights and Responsibility - Playing in a Global Sandbox - Conscientious and Conscious Responsibility - Privacy May Be the Wrong Focus - Can Data Be Anonymized? - Balancing for Counterintelligence - Now What?	C5	12
Course Outcome	CO1: To Identify the Basics of Big Data Analytics.	K1	
	CO2: To Discuss about Risk & Quantity of data.	K2	
	CO3: To Apply the Knowledge Acquisition and Representation.	K2	
	CO4: To Construct the Logic Concepts using technology.	K3	
	CO5: To Determine the Peoples & Ethics	K4	
Learning Resources			
Text Books	1. Michael Minelli, Michele Chamboss, Ambiga Dhiraj , "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for today's businesses" JohnWiley , 2014.		
Reference Books	1. Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, EMC Education Services. 2. Bill Franks, Taming The Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics, Wiley, 2012. 3. Arvind Sathi, Big Data Analytics: Disruptive Technologies for Changing the Game, MC Press, 2012.		
Website Link	https://www.javatpoint.com/what-is-big-data		

L-Lecture

T-Tutorial P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE03	Big Data Analytics	DSE-III	V	5	5	-	-	4

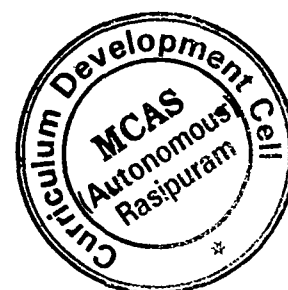
CO-PO Mapping

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CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	L	M	S	S	S
CO4	S	S	M	S	S	M	M	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	

Dr. S. Shakitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE04	Mobile Computing	DSE-IV	V	5	5	-	-	4
Objective	To Discuss about Mobile computing and its applications and learn basics of mobile computing & its types of communications, protocols and the security mechanisms used in Mobile Computing.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction: Applications - A Simplified Reference Model. Wireless Transmission: Frequencies for radio transmission – Signals – Antennas - Signal Propagation – Multiplexing – Modulation – Spread Spectrum - Cellular System.						K1	14
II	Medium Access Control: Motivation for a Specialized MAC: Hidden and exposed terminals – Near and far terminals – SDMA – FDMA – TDMA: Fixed TDM – Classical Aloha. Reservation TDMA – Multiple Access with Collision Avoidance – Polling – Inhibit Sense Multiple Access. CDMA: Spread Aloha multiple access.						K1-K2	11
III	Telecommunication Systems: GSM: Mobile Services – System Architecture – Radio Interface – Protocols - Localization and Calling – Handover – Security. UMTS and IMT 2000: UMTS releases and standardization - UMTS System Architecture - UMTS Radio Interface –UTRAN - UMTS Handover.						K3	11
IV	Satellite System: History – Applications – Basics - Routing– Localization – Handover. Wireless LAN: IEEE 802.11: System Architecture – Protocol Architecture - Physical Layer – Medium Access Control Layer. Bluetooth: User scenarios – Architecture – Radio Layer – Baseband Layer – Link Manager Protocol.						K4	13
V	Mobile Network Layer: Mobile IP: Goals, Assumption, and Requirements – Entities and Terminology – IP Packet delivery – Agent discovery – Registration. Dynamic Host Configuration Protocol Mobile Transport Layer: Traditional TCP - Congestion Control – Slow Start – Fast Retransmit.						K4	11

Course Outcome	CO1:To Recall the Application & Models.	K1
	CO2:To Discuss about Medium Access Control and the Concepts.	K2
	CO3:To Discuss about Telecommunication Systems	K2
	CO4:To Design the System Architecture.	K3
	CO5: To Determine the Mobile Network Layers.	K4
Learning Resources		
Text Books	1. Jochen Schiller, "Mobile Communications", 2nd Edition, eighth impression, Pearson Education, 2011.	
Reference Books	1. William Stallings, "Wireless Communication and Networks", 2 Edition, Pearson Education, 2005. 2. Theodore Rappaport, "Wireless Communications: Principles and Practice", Prentice Hall Communications, 1996	
Website Link	1. http://www.tutorialspoint.com/mobile_computing/index.htm 2. http://www.tutorialspoint.com/gsm/index.htm 3. http://www.tutorialspoint.com/gprs/index.htm	

L-Lecture

T-Tutorial P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE04	Mobile Computing	DSE-IV	V	5	5	-	-	4

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	S	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	L	M	S	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>N. Padmavathi</i> Mr.K.Vijayakumar <i>K. Vijayakumar</i>	Dr.V.Vijayadeepa <i>V. V. Vijayadeepa</i>	<i>S. Shahitha</i>

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE05	Computer Graphics	DSE-V	V	5	5	-	-	4
Objective	To Learn about computer graphics concepts and basic techniques. The students will be able to understand and apply the basic principles, techniques, 2D and 3D, Animation and							
Unit	Course Content						Knowledge Levels	Sessions
I	Overview of graphics Systems: - Video Display Devices – Refresh Cathode-Ray tubes -Raster Scan Displays - Random Scan Displays – Color CRT Monitors –Direct view Storage tubes Flat – Panel Displays – Three Dimensional Viewing Devices -Stereoscopic and Virtual Reality Systems.						K1	13
II	Raster – Scan Systems Video Controller – Random – Scan Systems Video Controller – Random Scan Systems – Input devices – Hard-Copy Devices - Line Drawing Algorithms:Line Function- DDA Line Drawing Algorithms – Bresenham's Line Drawing Algorithms - Circle generating Algorithms - Properties of Ellipses.						K1-K2	12
III	Two Dimensional Geometric Transformation : - Basic Transformations - Translation – Rotation –Scaling – Matrix Representations and Homogeneous Coordinates – Other Transformations Reflections -Two Dimensional Viewing : Windows to view point coordinate						K3	11
IV	Three Dimensional Concepts: Three Dimensional Display method – Parallel projection – Depth cueing visible line and surface – Three Dimensional Geometric and modeling Transformations:Translation – Rotation - Scaling – Composite Transformations. Three Dimensional Viewing: -Viewing pipeline – Viewing Coordinates – Projections – Parallel Projections – Perspective Projections.						K4	14
V	Visible Surface detection Methods : Classification VisibleSurface Detection Algorithms – Back Face Detection – Depth Buffer Method – A-Buffer Method –Scan line method – Depth sorting method – BSP tree method – Area Subdivision Method.						K4	10

Course Outcome	CO1:To Define the basics & applications of computer graphics.	K1
	CO2:The students will Construct the problem using various algorithm design techniques in CG.	K2
	CO3:To Perform 2d geometric transformations on graphics objects and their application in composite forms.	K2
	CO4:To Calculate 3d geometric transformations on graphics objects and their application in composite forms.	K3
	CO5: To Determine the projections and visible surface detection techniques for display of 3D scene on 2D screen.	K4
Learning Resources		
Text Books	1. Donald Hearn & M.Pauline Baker , "Computer Graphics",2nd Edition, 1996	
Reference Books	1. John F. Hughes, Andries Van Dam, Morgan Mcguire, David F. Sklar, James D. Foley, Steven K. Feiner, Kurt Akeley, "Computer Graphics Principles and Practice" 3rd Edition, 2014 Pearson Education, Inc	
Website Link	1. www.taylorfrancis.com 2. https://en.wikipedia.org/wiki/Computer_graphics_(computer_science)	

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE05	Computer Graphics	DSE-V	V	5	5	-	-	4

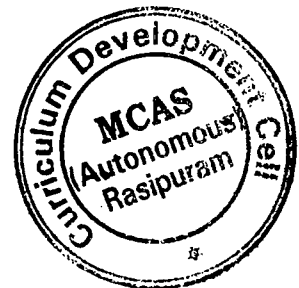
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	L	M	S	S	S
CO4	S	S	M	S	S	L	S	S	S	S
CO5	M	S	M	L	L	M	M	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

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Mrs.N.Padmavathi <i>N. Padmavathi</i> Mr.K.Vijayakumar <i>K. Vijayakumar</i>	Dr.V.Vijayadeepa <i>V. Vijayadeepa</i>	<i>S. Shahitha</i>

Dr.S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE06	Ethical Hacking	DSE-VI	V	5	5	-	-	4
Objective	To introduce the basic concepts of Ethical Hacking and Penetration Testing, To acquire knowledge about gathering information about the victim, To demonstrate Enumeration and Port Scanning.							
Unit	Course Content						Knowledge Levels	Sessions
I	INTRODUCTION TO ETHICAL HACKING: Important Terminologies - Categories of Penetration Test - Writing Reports - Structure of PT report - Vulnerability Assessment Summary - Risk Assessment Methodology - Detailed Findings Reports.						K1	14
II	INFORMATION GATHERING: Active Information Gathering - Passive Information Gathering - Sources of Information Gathering - Copying Website - locally yougetsignal.com - NeoTrace - Intercepting a Response - Acunetix Vulnerability Scanner - NetCraft - Google Hacking - Interacting with DNS Servers - DNS Cache Snooping - Sniffing SNMP Passwords - SNMP Brute Force and Dictionary Attack Tool.						K2	11
III	ENUMERATION AND PORT SCANNING: Host Discovery - Scanning for Open Ports and Services - Types of Port Scanning - TCP Three-way handshake - TCP Flags Port Status - Types TCP SYN Scan - TCP Connect Scan - NULL, FIN and XMAS SCAN - NULL Scan - FIN Scan - XMAS Scan - TCP ACK Scan - Responses UDP Port Scan Scanning a vulnerable host - Performing an IDLE scan with NMAP - Service Version Detection - OS Fingerprinting.						K3	12
IV	VULNERABILITY SCANNING: What Are Vulnerability Scanners and How Do They Work - Vulnerability Assessment with Nmap - Testing SCADA Environments with Nmap- Nessus Vulnerability Scanner - Installing Nessus - Adding a user - Creating a new policy - Safe Checks - Silent Dependencies - Port Range - Preferences.						K4	13
V	NETWORK SNIFFING: Introduction - Types of Sniffing - Hubs vs. Switches - Promiscuous Mode vs. NonPromiscuous Mode - MITM Attacks - ARP Protocol Basics - How ARP works - ARP attacks- DoS Attacks - Sniffing with Wireshark - DNS Spoofing - DHCP SpoofingHijacking the Session.						K4	10

Course Outcome	CO1:Understand the basic concepts of Ethical Hacking and Penetration Testing and will be able to prepare penetration testing reports.	K1
	CO2:To Construct the potential countermeasures to advanced hacking techniques.	K2
	CO3: To Illustrate the penetration & security testing and use safe penetration techniques.	K3
	CO4:To Analyze the techniques used to break into an insecure web application and identify relevant countermeasures.	K4
	CO5: To Design a computer against a variety of security attacks using various tools.	K4

Learning Resources

Text Books	1. Rafay Baloch, Ethical Hacking and Penetration Testing Guide , CRC Press Taylor & Francis Group, 2015.(Unit - I, Unit - II, Unit - III, Unit - IV, Unit - V)
Reference Books	2. Jon Erickson, Hacking the Art of Exploitation, No Starch Press, San Francisco, 2nd Edition, 2008.
Website Link	https://www.javatpoint.com/ethical-hacking

L-Lecture

T-Tutoria P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M5UCAE06	Ethical Hacking	DSE-VI	V	5	5	-	-	4

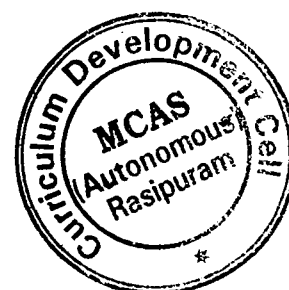
CO-PO Mapping

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CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	M	S	S	S
CO3	S	S	S	S	S	L	M	M	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	M	M	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
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Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	

Dr.S.Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE07	Data Science	DSE-VII	VI	5	5	-	-	4
Objective	The Students Learn about the Data Science Process,Base Principles of NoSQL Databases and Data Visualization Techniques.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction to Data Science:Introduction-Benefits-Uses & Facts.Data science Process:Overview of the Data science Process-Defining-Retriving-Cleansing-Integrating & Transforming Data-Build the Models.						K1	14
II	Handling Large Data on a Single Computer:General Techniques-General Programming tips Dealing with Large data sets-Distributing Data Storage & Processing with Frameworks-Hadoop -Spark map Reduce.						K2	11
III	Join with NoSQL Movement:Introduction to NoSQL-ACID- BASE Principles of NoSQL Databases-NoSQL Database Types.						K3	12
IV	The Rise of Graph Databases:Introducing the Connected Data-Neo4j Graph Database:Connected Data Examples with Engine.Text Mining &Text Analytics:Text Mining in the Real world-Text Mining Techniques.						K4	13
V	Data Visualization:Data Visualization to the End-user-Data Visualization Options-Cross Filter-Java script Map Reduce Library-Creating an Interactive Dashboard with Javascript-Dashboard development Tools.						K4	10

Course Outcome	CO1:To Recall the basics Data Science Process.		K1	
	CO2:To Summarize the Large Datasets Using Hadoop.		K2	
	CO3:To Illustrate the BASE Principles of NoSQL Databases.		K3	
	CO4:To Classify the Text Mining Techniques.		K4	
	CO5: To Determine the Data Visualization Process.		K4	
Learning Resources				
Text Books	1."Introducing Data Science" - Davy Cielen,Arno D.B Meysman & Mohamed Ali,Published by Dstreamtech Press, ISBN - 978-93-5119-937-3,2023.			
Reference Books	1.Thomas A. Runkler, "Data Analytics Models and Algorithms for Intelligent Data Analysis", Springer Vieweg, 2020. 2. Shah, Chirag,"A Hands-On Introduction to Data Science",Cambridge University Press,2020.			
Website Link	https://www.w3schools.com/datascience/ds_introduction.asp			
	L-Lecture	T-Tutorial	P-Practical	C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE07	Data Science	DSE-VII	VI	5	5	-	-	4

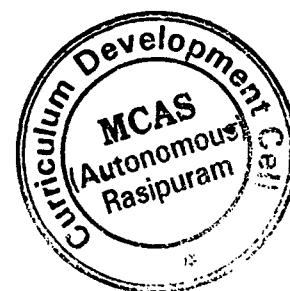
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
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CO2	M	S	S	S	S	L	M	S	S	S
CO3	S	S	S	S	S	L	M	S	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	L	M	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
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Mrs.N.Padmavathi <i>N. Padmavathi</i> Mr.K.Vijayakumar <i>K. Vijayakumar</i>	Dr.V.Vijayadeepa <i>V. V. Vijayadeepa</i>	<i>Dr. S. Shahitha</i>

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE08	Internet of Things	DSE-VIII	VI	5	5	-	-	4
Objective	To understand Smart Objects and IoT Architectures & various IOT-related protocol, build simple IoT Systems using Arduino and Raspberry Pi & understand data analytics and cloud in the context of IoT.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction - Definition & Characteristics Of Iot - Physical Design Of Iot - Logical Design Of Iot - Iot Enabling Technologies - Iot Levels & Deployment Templates. Domain Specific Iots : Home Automation - Cities - Environment - Energy - Retail - Logistics - Agriculture - Industry - Health And Life Style.						K1	13
II	Iot And M2M - Difference Between Iot And M2M - SDN And NFV For Iot - Iot Systems Management - SNMP - YANG - NETOPEER.						K2	12
III	Iot Platforms Design Methodology - Purpose And Specification - Process Specification - Domain Model Specification - Information Model Specification - Service Specification - Iot Level Specification - Functional View Specification - Operational View Specification - Device And Component Integration - Application Development.						K3	12
IV	Logical Design Using Python - Installing Python – Python Data Types And Data Structures - Control Flow - Functions - Modules - File Handling - Classes. Iot Physical Devices And End Points, Building Blocks Of Iot Device - Raspberry Pi - Linux On Raspberry Pi - Raspberry Pi Interfaces.						K4	13
V	Iot Physical Servers & Cloud Computing - WAMP - Xively Cloud For Iot - Python Web Application Frame Work – Amazon Web Services For Iot.						K5	10

Course Outcome	CO1:To Define the concept of IoT & Web Technology.	K1
	CO2:To Discuss the M2M to IoT.	K2
	CO3:To Determine the IoT Architecture.	K3
	CO4:To Analyze the IoT Applications.	K4
	CO5: To Evaluate the Implement IoT Privacy, Security and Governance.	K5

Learning Resources

Text Books	1. Vijay Madiseti and ArshdeepBahga, — Internet of Things: (A Hands-on Approach) , Universities Press (INDIA) Private Limited 2014, 1st Edition.
Reference Books	1. Michael Miller, —The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World , Pearson Education2015. 2. Francis da Costa, —Rethinking the Internet of Things: A Scalable Approach to Connecting Everything , Apress Publications 2013, 1stEdition. 3. WalteneagusDargie, Christian Poellabauer, "Fundamentals of Wireless Sensor Networks: Theory and Practice , Wiley 2014.
Website Link	1. https://github.com/connectIOT/iottoolkit 2. https://www.arduino.cc/ 3. https://www.zettajs.org/

L-Lecture

T-Tutoria P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE08	Internet of Things	DSE-VIII	VI	5	5	-	-	4

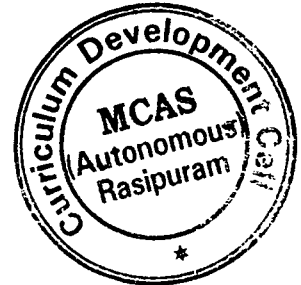
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CO1	M	S	M	S	S	M	M	S	S	S
CO2	M	S	S	S	S	M	M	S	S	S
CO3	S	S	S	S	S	L	M	M	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	M	M	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	

Dr.S.Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE09	SOFTWARE TESTING	DSE-IX	VI	5	5	-	-	4
Objective	To learn the criteria for test cases and design of test cases. To understand test management and test automation techniques and apply test metrics and measurements.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction to Software life cycle model: Phases of Software Project: Requirements Gathering and Analysis – Planning – Design – Development or Coding – Testing – Deployment and Maintenance. Quality, Quality Assurance, and Quality Control –Testing, Verification, and Validation – Process Model to Represent different Phases – Life Cycle Model : Waterfalls Model – Prototyping and Rapid Applications Development Models – Spiral or Iterative model – The V Model – Modified V Model – Comparison of Various Lifecycle Model						K1	13
II	White Box Testing: What is White Box Testing? – Statics Testing : Statics Testing by humans – Static Analysis Tools. Structural Testing – Challenges in White Box Testing – Black Box Testing – What is Black Box Testing? – How to do Black Box Testing? – Integration Testing – What is Integration Testing? – Integration Testing as a Type Of Testing –Integration Testing as a Phase of Testing – Scenario Testing.						K2	11
III	System and Acceptance Testing: System Testing Overview – Why is System Testing Done? – Functional Versus Non-Functional Testing: Functional System Testing – Non-Functional Testing – Acceptance Testing. Performance Testing: Introduction – Factors Governing Performance Testing – methodology for Performance Testing – Tools for Performance Testing – Process for Performance Testing.						K3	13
IV	Regression Testing-What is Regression Testing? - Types of Regression Testing – How to do Regression Testing? .Internationalization Testing : Introduction – Primer On Internalization – Test Phases for Internalization Testing – Internationalization Validation – Fake Language Testing – language Testing – Localization Testing. Usability and Accessibility Testing: What is Usability Testing? – Quality Factors for Usability – Accessibility Testing – Tools for Usability.						K4	13
V	Software test automation – skills needed for automation – scope of automation – design and architecture for automation – requirements for a test tool – Process Model for Automation – Selecting a Test Tool - challenges in automation – Test metrics and measurements – project, progress and productivity metrics.						K4	10

Course Outcome	CO1:To Define the concepts of Design test cases for a software development.	K1
	CO2:To Describe the test planning based on the document.	K2
	CO3:To Perform the Document test plans and test cases designed.	K3
	CO4: To Analyze and Use automatic testing tools.	K4
	CO5: To Develop and validate a test plan.	K4

Learning Resources

Text Books	<p>1. Srinivasan Desikan and Gopaldaswamy Ramesh, —Software Testing – Principles and Practices , Pearson Education, 2006.</p> <p>2. Ron Patton, —Software Testing , Second Edition, Sams Publishing, Pearson Education, 2007. AU Library.com</p>
Reference Books	<p>1. Ilene Burnstein, —Practical Software Testing , Springer International Edition, 2003.</p> <p>2. Edward Kit, Software Testing in the Real World – Improving the Process , Pearson Education, 1995.</p>
Website Link	https://www.tutorialspoint.com/software_testing/index.htm

L-Lecture

T-Tutoria P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE09	Software Testing	DSE-IX	VI	5	5	-	-	4

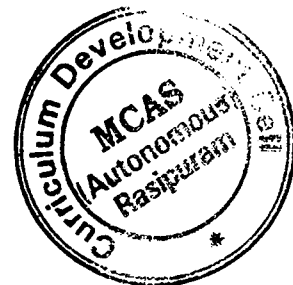
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	M	M	S	S	S
CO2	M	S	S	S	S	M	M	S	S	S
CO3	S	S	S	S	S	M	S	S	S	S
CO4	S	S	M	S	S	S	S	S	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	

Dr. S. Shalitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE10	Data mining & warehousing	DSE-X	VI	5	5	-	-	4
Objective	To Learn the basic concepts & importance of Association and Correlations Algorithms and various Classifiers. Understand the foundation of Clustering and Outlier Analysis, Data							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction: Data mining application – data mining techniques – data mining case studies- the future of data mining – data mining software. Data warehousing: Introduction – Operational data sources- data warehousing - Data warehousing design – Guidelines for data warehousing implementation - Data warehousing metadata.						K1	13
II	Online Analytical processing (OLAP): Introduction – OLAP characteristics of OLAP system – Multidimensional view and data cube - Data cube implementation - Data cube operations OLAP implementation guidelines. Association rules mining: Introduction- basics- task and a naïve algorithm- apriori algorithm – improve the efficient of the apriori algorithm – mining frequent pattern without candidate generation (FP-growth) – performance evaluation of algorithms.						K2	11
III	Classification : Introduction – decision tree – over fitting and pruning - DT rules-- naïve bayes method- estimation predictive accuracy of classification methods - other evaluation criteria for classification method – classification software.						K3	13
IV	Cluster analysis: cluster analysis – types of data – computing distances- types of cluster analysis methods - partitioned methods – hierarchical methods – density based methods – dealing with large databases – quality and validity of cluster analysis methods - cluster analysis software.						K4	13
V	Web data mining: Introduction- web terminology and characteristics- locality and hierarchy in the web- web content mining-web usage mining- web structure mining – web mining software - Search engines: Search engines functionality- search engines architecture – ranking of web pages.						K4	10

Course Outcome	CO1:To Recall the basics of data mining & Data Warehousing.	K1			
	CO2:To Disuss the OLAP & Association Rule Mining Concepts.	K2			
	CO3:To Perform the Classification Techniques.	K3			
	CO4:To Analyze the concept of Cluter Analysis	K4			
	CO5: To Determine the concept of Web data mining.	K4			
Learning Resources					
Text Books	G.K. Gupta, "Introduction to Data mining with case studies", PHI Private limited, New Delhi, 2008. 2nd Edition, PHI , 201				
Reference Books	Arun K Pujari, "Data Mining Techniques", Universities Press (India) Pvt. Ltd, February 2013.				
Website Link	https://www.javatpoint.com/data-mining				
	L-Lecture	T-Tutorial	P-Practical	C-Credit	

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE10	Data Mining & Warehousing	DSE-X	VI	5	5	-	-	4

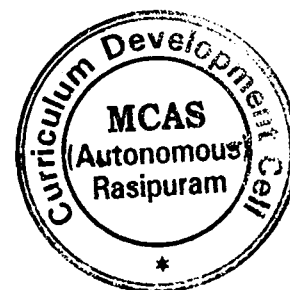
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	M	S	S	S
CO3	S	S	S	S	S	M	S	S	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>[Signature]</i> Mr.K.Vijayakumar <i>[Signature]</i>	Dr.V.Vijayadeepa <i>[Signature]</i>	<i>[Signature]</i>

Dr. S. Shahitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C	
21M6UCAE11	Neural Networks	DSE-XII	VI	5	5	-	-	4	
Objective	To understand basics of neural networks and design the models use fuzzy logic & Systems								
Unit	Course Content							Knowledge Levels	Sessions
I	Fundamentals of Neural Networks Basic Concepts of Neural Network-Human-Brain-Model of an Artificial Neuron- Neural network Architectures Characteristics of Neural Networks-Learning Methods- History of Neural network research – Some application domains.							K1	13
II	Backpropagation Networks Architecture of Backpropagation Network-Back propagation Learning - Illustrations- Applications							K2	11
III	Adaptive Resonance Theory (ART) Introduction- ART1- ART2-Applications.							K3	13
IV	Fuzzy Logic Fuzzy versus crisp-Crisp sets-Fuzzy Sets-crisp relations-Fuzzy Relations.							K4	13
V	Fuzzy systems Crisp logic-prdicate logic-Fuzzy Logic-Fuzzy Rule based system-Defuzzification Methods-Applications.							K4	10

Course Outcome	CO1:To Define the basic architecture of Neural networks.	K1
	CO2:To Explain the back propagation networks.	K2
	CO3:To Apply the knowledge about ART and its applications.	K3
	CO4:To Analyze the Fuzzy logic.	K4
	CO5: To Build Fuzzy systems.	K4
Learning Resources		
Text Books	1. S. Rajasekaran, G. A.VijayalakshmiPai, —Neural Networks, Fuzzy Logic and Evolutionary Algorithms: Synthesis & Applications, Prentice-Hall of India Pvt. Ltd., II edition, 2017.	
Reference Books	1. Fakhreddine O. Karray, Clarence De Silva, Soft Computing and Intelligent Systems Design, Pearson, 2009. 2. Sivanandam. S. N and Deepa S. N, Principles of Soft Computing, Wiley India, 2008	
Website Link	https://www.javatpoint.com/artificial-neural-network	

L-Lecture

T-Tutorial P-Practical C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE11	Neural Networks	DSE-XI	VI	5	5	-	-	4

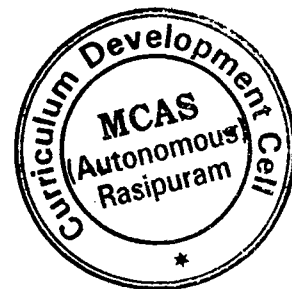
CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	M	S	S
CO2	M	S	S	S	S	M	M	S	S	S
CO3	S	S	S	S	S	M	S	S	S	S
CO4	S	S	M	S	S	M	S	S	S	S
CO5	M	S	M	L	L	S	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM	S-STRONG							

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi <i>N. Padmavathi</i> Mr. K. Vijayakumar <i>K. Vijayakumar</i>	Dr.V.Vijayadeepa <i>V. V. Vijayadeepa</i>	<i>S. Shakitha</i>

Dr. S. Shakitha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE12	Digital Marketing	DSE-XII	VI	5	5	-	-	4
Objective	To understand the significance of web marketing and enhance the skill of the students on the display networks. To impart knowledge on the social media advertising and give more insight on the email marketing To learn the concept of mobile marketing.							
Unit	Course Content						Knowledge Levels	Sessions
I	Introduction to Digital Marketing – Evolution of Digital Marketing - From Traditional to Modern Marketing - Rise of Internet - Post Dotcom - Growth of E-Concepts - Emergence of Digital Market as a Tool - Digital Marketing Channels - Application and Benefits - Internet Marketing - Basics - Digital Marketing Framework						K1	10
II	Digital Marketing Model Creation: Factors impacting Digital Marketplace - Value Chain Digitalization - Digital Market Business Model Consumers of Digital Marketing: Evolution of Consumer Behaviour Models - Understanding Consumer Demands - Integrated Marketing Communication - Impact of Digital Channel on IMC						K2	10
III	Digital Marketing Assessment Phase: Elements of Assessment Phase - Digital Market Internal Assessment - Digital Marketing Objective Planning Digital Marketing Strategy Definition: Digital Marketing Strategy Groundwork - Defining the Digital Marketing Mix - Digital Marketing Strategy Roadmap						K3	10
IV	Digital Marketing Operational Setup: Understanding the Digital Market Conversion - Basics of Web Development Management - User Experience , Usability and Service Quality Element. Digital Marketing Campaign Management: Basics Of Digital Campaigns - Implement Intent Based Campaigns - Implement Brand Based Campaigns - Campaign Execution for Emerging Marketing Models.						K4	12
V	Digital Marketing Landscape and Emerging areas: Digital Marketing-Global Landscape - The Indian View - Emerging Trend and Concepts A Career in Digital Marketing: Emerging Opportunity for Digital Marketing Professional.						K5	8

Course Outcome	CO1: Discuss digital marketing and its tools	K1
	CO2: Identify, use of Models and explain Consumer Behaviours	K2
	CO3: Explain Assessment Phase and Strategy Plan in Digital Marketing	K3
	CO4: Discuss Operational Setup and Campaign Management	K4
	CO5: Identify the careers and Emerging Areas in digital marketing	K5

Learning Resources

Text Books	1. Fundamentals of Digital Marketing 2nd Edition, Puneet Singh Bhatia , Pearson Education, 2019
Reference Books	1. Seema Gupta, Digital Marketing, Tata McGrawHill, 2018. 2. Blogging: A Practical Guide to Plan Your Blog: Start Your Profitable Home-Based Business with a Successful Blog, Jo and Dale Reardon. 3. Simon Kingsnorth, Digital Marketing Strategy, Kogan Page, 2016.
Website Link	https://www.tutorialspoint.com/digital_marketing/index.htm

L-Lecture

T-Tutoria P-Practical

C-Credit

BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAE12	Digital Marketing	DSE-XII	VI	5	5	-	-	4

CO-PO Mapping

CO Number	P01	P02	P03	P04	P05	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	S	M	S	S	L	M	S	S	S
CO2	M	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	M	S	S	S	S
CO4	S	S	M	S	S	L	M	S	S	S
CO5	M	S	M	L	L	M	S	S	S	S
Level of Correlation between CO and PO	L-LOW	M-MEDIUM		S-STRONG						

Tutorial Schedule	Home Test, E-Assignment
Teaching and Learning Methods	Presentation, Chalk & Talk
Assesment Methods	Assignment, Test, Quiz

Designed By	Verified By	Approved By
Mrs.N.Padmavathi Mr.K.Vijayakumar	Dr.V.Vijayadeepa	
<i>(Signatures)</i>	<i>(Signature)</i>	<i>(Signature)</i>

Dr. S. Sheetha



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAPR1	PROJECT WORK	PROJECT WORK	VI	4	4			4
Objective	The aim of the project is that the student has to understand the real time software development environment. The student should gain a thorough knowledge in the problem and language / software which he/she has selected for their project work.							
Unit	Course Content					Knowledge Levels		Sessions
<p>Project Planning: BCA Project is an involved exercise, which has to be planned well in advance. The topic should be chosen in the beginning of final year itself. Related reading, training and discussions of project should be completed in the first term of final year.</p>								
<p>I Selection of Team To meet the stated objectives, it is imperative that project is done through a team effort. Though it would be ideal to select the team members at random and this should be strongly recommended, due to practical consideration. Students may also be given the choice of forming themselves into teams with Two members. A team leader shall be selected. Team shall maintain the minutes of meeting of the team members and ensure that tasks have been assigned to every team member in writing. Team meeting minutes shall form a part of the project report. Even if students are doing project as groups, each one must independently take different modules of the work and must submit the report.</p>								
<p>II Selection of Tools No restrictions shall be placed on the students in the choice of platform/tools/languages to be utilized for their project work, though open source is strongly recommended, wherever possible. No value shall be placed on the use of tools in the evaluation of the project.</p>								
<p>III REGULATIONS OF PROJECT WORK</p> <ul style="list-style-type: none"> • 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 line spaced. • Headings should be set as follows: CHAPTER HEADINGS 16 pt, Arial, Bold, All caps, Centered. • Section Headings 14 pt Bookman old style, Bold, Left adjusted. • Section Sub-heading 12 pt, Bookman old style. • Title of figures, tables etc are done in 12 point, Times New Roman, Italics, centered. • Only 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.

Course Outcome	Understand of research idea	K1
	Analyze of problem solving skills	K2
	Analyze sources for conduct of Research	K3
	Evaluate the research report	K4
	Create the research report	K4

Learning Resources

Text Books	1. Bert Bates, Karthy Sierra , Eric Freeman, Elisabeth Robson, “Head First Design Patterns”, O’REILLY Media Publishers. 2. Mathew Mac Donald, “ASP.NET Complete Reference”, TMH 2005.
Reference Books	1. Jan Graba, “An Introduction to Network Programming with Java- Java 7 Compatible”, 3rd Edition, Springer. 2. Crouch Matt J, “ASP.NET and VB.NET Web Programming”, Addison Wesley
Website Link	https://www.tutorialspoint.com/r/index.htm https://www.javatpoint.com/net-framework https://www.w3schools.com/java/java_intro.asp https://www.w3schools.com/r/

L-Lecture

T- Tutorial

P-Practical

C-Credit

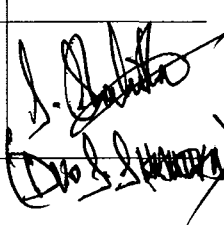
BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAPR1	PROJECT WORK	PROJECT WORK	VI	4	4			4

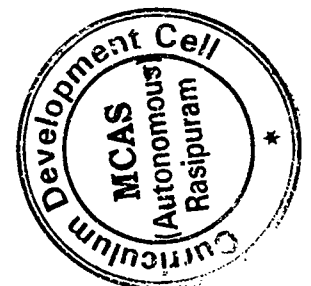
CO-PO Mapping

CO Number	PO1	PO2	PO3	PO4	PO5	PSO 1	PSO2	PSO3	PSO4	PSO 5
CO1	M	M	M	M	S	M	M	S	S	S
CO2	S	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	S	S	S	M	M
CO4	S	S	S	M	S	S	S	S	M	M
CO5	M	M	M	S	S	M	M	S	S	S
Level of Correlation between CO and PO	L-LOW			M-MEDIUM			S-STRONG			

Tutorial Schedule	
Teaching and Learning Methods	Working with programming languages such as R, Python, Java and .Net.
Assessment Methods	Attendance, Review / Work Diary, Final Report and Viva Voce

Designed By	Verified By	Approved By
N. Gounnisha N. Gounnisha	DR. V. VIJAYADEEPA V. V. S. I	

HOD-Department of BCA,
Muthayammal College of Arts & Science
RASIPURAM - 637 408, Namakkal



BCA Syllabus LOCF-CBCS with effect from 2021-2022 Onwards

Course Code	Course Title	Course Type	Sem	Hours	L	T	P	C
21M6UCAOE01	COMPUTER APPLICATION FOR COMPETITIVE EXAMINATION	ONLINE - COMPETITIVE EXAMINATION	6		-	-		2
Objective	Creating the awareness on competitive examination among students. Imparting knowledge about the appearing for Competitive Examination and it impacts and developing an attitude of appearing for such exams.							
Unit	Course Content						Knowledge Levels	Session
	<p>This course deals with the question related to Software Engineering, Internet of Things, OperatingSystem, Computer Architecture, Database Management System, Computer Networks, Programming Languages, Algorithms, Artificial Intelligence, and Mobile Computing.</p> <p>Major emphasis has been put forth to include recent developments in the subjects. This course aims to give a holistic view of all the topics which comprised of some factual text points, multiple choice questions (MCQ), it is extremely suitable for students pursuing their higher degree in University/institute for their entrance exams, students preparing for various national and state level competitive entrance exams such as TANCET, IBPS, SSC for creating MCQ pattern.</p>							
	<p>1. Objective type online examination will be conducted at the end of 4th semester.</p> <p>2. Questions must be taken from all previous questionpapers of TANCET,IBPS And SSC.</p> <p>3. Test critical thinking. Multiple choice questions to test the superficial knowledge. Learners to interpret facts, evaluate situations, explain cause and effect, make inferences, and predict results.</p> <p>Emphasize Higher-Level Thinking. Use memory-plus application oriented questions. These questions require students to recall principles, rules or facts in areal life context.</p>							
	<p>Eg.1 One Tera byte (1 TB) is equal to? (a)1028 gb (b)1012 gb (c)1000 gb (d)1024 gb</p> <p>Eg.2 URL stands for: (a)Uniform Resource Locator (b)Uniform Resource Library (c)United Resource Locators (d)None of these</p> <p>HOD's instruct to the faculty to prepare minimum500 questions booklet (cumulatively for each programme) with solutions and circulate among the students.</p>							

Course Outcome	CO1: Remember and Understand the basic language implementation techniques	K1
	CO2: Apply the problem and develop problem solving skills in competitive exams	K2
	CO3: Apply on Computational problems	K3
	CO4: Analyze computer science theory and software development fundamentals to produce computing-based solutions	K4
	CO5: Evaluate complex computing problem and to apply principles of computing	K5

Learning Resources

Reference Books	Objective Computer Science and Information Technology by Jushta Jaiswal, Jushta Jaiswal publications.
Website Link	https://nptel.ac.in/courses/106106092 https://www.digimat.in/nptel/courses/video/106101061/L01.html https://www.digimat.in/nptel/courses/video/106104122/L01.html

L-Lecture

T- Tutorial

P-Practical

C-Credit

V. V. S. I

**HOD-Department of BCA,
Muthayammal College of Arts & Sciences,
RASIPURAM - 637 408, Namakkal**

Muthayammal College of Arts and Science (Autonomous), Rasipuram

Department of Computer Applications

Free Certificate Course - Adobe PHOTOSHOP Syllabus

Objective:

To enhance images using advance editing tools to create magazine covers. Work with the Type tools and panels to type, insert and manage text. Work with layers and masks to manage your projects efficiently.

UNIT – I

Introduction - Variations in Photoshop applications - About Photoshop & Photoshop Features - Key Board practice - Editing Photo in camera raw - Creating Web Galleries, PDF converts - Opening and Importing images, Creating Documents with different sizes

UNIT – II

Marquee Tool & types - Move tool, magic wand tool, quick selection tool, lasso tool, polygonal lasso tool, magnetic lasso tool - Crop tool, slice tool, slice select tool, eyedropper tool, color sampler tool, ruler tool, note tool, count tool – Brush & Healing Brush Tool - Clone stamp tool, pattern tool, history brush tool, art history tool - Eraser tool, background eraser tool magic eraser, gradient tool paint bucket tool

UNIT - III

Pen tool, freeform pen tool, add anchor point tool, delete anchor point tool, convert to point tool, horizontal type tool, vertical type tool, horizontal type mask tool, vertical type mask tool - Path selection tool, direct selection tool, custom shape tools, hand tool, zoom tool - Blur tool, sharpen tool, smudge tool, dodge tool, burn tool, sponge tool - About color information, Color Modes - Working with layers & layer styles - Create Droplet & Conditional Mode Change, Fit Image, Picture Package

UNIT – IV

Web Photo Gallery in Bridge cs5 - Use the Merge To HDR command to combine multiple images & Export Layers To Files - About Copy Merged, Paste in to, Clear, Fill, Stroke - Define Brush Preset , Define Pattern, Define Custom Shape - Free Transform, Scale, Rotate, Distort, Skew, Content-Aware Scale, Perspective - Auto Blend Layers, Auto Align layers, RGB or grayscale images.

UNIT – V

Adjustments, Exposure, Curves Color Balance, Black & White Selective Color, Match color Desaturate, Replace color - Channel Mixer, Gradient Map Photo Filter Shadow/Highlight Invert, Equalize - Variations, Canvas Size Calculations, Apply Image - Layer Mask, Vector Mask Merge Layers, Flatten all layers Matting - Color Range, Grow, Similar Blur Filters - 3d object creation.

TEXT BOOK :

“PHOTOSHOP 7 FOR WINDOWS” – Elaine Weinmann Peter Lourekas – BPB Publications.