NALLAMUTHU GOUNDER MAHALINGAM
COLLEGE (AUTONOMOUS)

U.G. DEPARTMENT OF COMPUTER TECHNOLOGY

(C.T.)

CYGNET

SYLLABUS

2025 – 2028 Batch

(With Effect From 2025-2028 Batch and Onwards)

DEPARTMENT OF COMPUTER TECHNOLOGY

Syllabus

BATCH: 2025 – 2028

Faculty Members

Dr. M. Rajasenathipathi, M.C.A., M. Phil.,Ph.D.,

Dr. C. Keerthana, M.Sc., M. Phil., Ph.D.,

Dr. K. S. Leelavathi, M.Sc., M. Phil., NET., SET., Ph.D.,

Dr. R. Jayaprakash, M.C.A., M.Phil., Ph.D.,

Dr. A. Kalaivani, M.C.A., M. Phil., Ph.D.,

Nallamuthu Gounder Mahalingam College

An Autonomous Institution affiliated to Bharathiar University

Re-Accredited with A++ by NAAC (4th Cycle) &

ISO 9001:2015 Certified Institution

Pollachi – 642 001.

NGM COLLEGE

Vision

Our dream is to make the college an institution of excellence at the national level by imparting quality education of global standards to make students academically superior, socially committed, ethically strong, spiritually evolved and culturally rich citizens to contribute to the holistic development of the self and society.

Mission

Training students to become role models in academic arena by strengthening infrastructure, upgrading curriculum, developing faculty, augmenting extension services and imparting quality education through an enlightened management and committed faculty who ensure knowledge transfer, instill research aptitude and infuse ethical and cultural values to transform students into disciplined citizens in order to improve quality of life.

DEPARTMENT OF COMPUTER TECHNOLOGY

Vision

To continue to be the Premier Department for Computer Technology and to become regionally top-ranked and nationally recognized for Academic Excellence

Mission

- To offer a broad-based education, encourage lifelong learning, foster teamwork, promote creativity, discovery and competitiveness
- To turn out highly qualified graduates into world-class professionals capable of competing in the IT Arena as well as in a research environment

Program Educational Objectives:

PEO1	Demonstrating the concepts and technologies of Software Industry
PEO2	Motivate to select one domain knowledge and develop smart software solutions as per industry standard
PEO3	Focus to solve real time problems in terms of various technologies.
PEO4	Understand the concepts of software project life cycle during software development.
PEO5	Apply the knowledge of various levels of security in computer field.

Program Outcomes:

PO1	***Problem solving*** : Under Graduate students are to apply, algorithmic, real time and Industry standard reasoning to a variety of computational problems.
PO2	***Effective Communication Skills:*** Develop the ability to convey ideas clearly and concisely through verbal, written, and digital mediums. Enhance collaboration and teamwork by effectively communicating technical and non-technical information to diverse audiences in the IT industry.
PO3	***Self-directed learning*** : Combine the knowledge of mathematics and Software Technologies in the field of Software project development
PO4	***Information/digital literacy*** :Implement industry standard projects of their own choice using latest tools.
PO5	***Analytical reasoning***: Improve the aptitude skill to clear various levels of entrance exams in their carrier.
PO6	***Physical and mental wellness:*** The Under Graduate students are recognize the Human Excellence and ethical responsibilities through yoga in various disciplines
PO7	***Reflective thinking and Communication Skills***: Demonstrate global Industry demand related subjects and transferable skills that a relevant to global industry and employment opportunities
PO8	***Professional Ethics:*** Professional Ethics: Develop a strong ethical foundation by understanding and adhering to professional standards, responsibilities, and legal considerations in the IT industry.
P09	***Cooperation/Team work***: Ability to analyze the local and global impact of computing on individuals, organizations and society.
P10	***Multicultural competence:*** Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

Program Specific Outcomes:

PSO – 01	*Academic skills and abilities*: Acquire academic excellence with professional skill for employment and higherstudies.
PSO – 02	*Explore Software Development Solutions*: Create, select and apply modern tools and techniques to analyze and developsuccessful software in IT Industry.

Mapping

PEO / PO	PEO1	PEO2	PEO3	PEO4	PEO5
PO1	H	M	M	M	L
PO2	H	L	H	M	M
PO3	H	H	M	M	L
PO4	H	M	H	H	H
PO5	M	H	L	H	M
PO6	H	M	H	M	L
PO7	H	L	H	H	M
PO8	M	H	M	H	M
PO9	H	M	M	H	H
PO10	M	M	L	H	H
PSO-01	H	H	H	H	H
PSO-02	H	H	H	H	H

*H-High; M-Medium; L-Low

B.Sc. – For Computer Technology

(FOR THE CANDIDATES ADMITTED FROM THE ACADEMIC YEAR 2025 - 2026 ONWARDS)

I to VI SEMESTERS

SCHEME OF EXAMINATIONS

SEMESTER - I										
Part	Subject Code	Title of the Paper	Hrs. / Week		Hrs. / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External		
I	25UTL1C1	Tamil Paper-I	5	-	-	3	25	75	100	3
	25UHN1C1	Hindi Paper-I								
	25UFR1C1	French Paper-I								
II	25UEN101	Communication Skills – I	5	-	-	3	25	75	100	3
III	25UCT101	**CC I:** Programming in C	4			3	25	75	100	4
	25UCT102	**CC II:** Foundations of Computer Technology	4			3	25	75	100	4
	25UCT1A1/ 25UCT1A2	**GE I – Allied I:** Mathematics - I: Vedic Methods and Discrete Mathematics /Mathematical Structures For Computer Science	5			3	25	75	100	4
	25UCT103	**CC Lab I:** Programming in C		4			20	30	50	2
IV	25EVS201	**AECC I:** Environmental Studies	2			2	-	50	50	2
	25HEC101	Human Excellence - Personal Values & SKY Yoga Practice - I	1	-	-	2	20	30	50	1
EC		Online Course (Optional) (MOOC / NPTEL / SWAYAM)								Grade
Total			**30**				**165**	**485**	**650**	**23**

EC – Extra Credit Course / Certificate Course / Co-scholastic Course / Job Oriented Course

CC – Core Course; GE – Generic Elective; AECC - Ability Enhancement Compulsory Course

SEMESTER - II										
Part	Subject Code	Title of the Paper	Hrs. / Week		Hrs. / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External		
I	25UTL2C2	TamilPaper-II	5	-	-	3	25	75	100	3
	25UHN2C2	Hindi Paper-II								
	25UFR2C2	French Paper-II								
II	25UEN202	Communication Skills – II	5	-	-	3	25	75	100	3
III	25UCT204	**CC III**: Java programming	4			3	25	75	100	4
	25UCT205	**CC IV**: DataStructures	4			3	25	75	100	4
	25UCT2A1 / 25UCT2A2	**GE II – Allied II**: Mathematics II – Operations Research / Statistics	5			3	25	75	100	4
	25UCT206	**CC Lab II**: Java programming Lab		4		3	20	30	50	2
	25UCT2S1/ 25UEL2S1	**SEC I**: Naan Mudhalvan : Data Visualization Tools Lab / Professional Skills		2		2	20	30	50	2
IV	25HEC202	Human Excellence - Family Values & SKY Yoga Practice - II	1			2	20	30	50	1
EC	25CMM201	**IKS**:ManaiyiyalMahathuvam - I			15 Hrs.	2	-	50	50	Grade
	25CUB201	**IKS**:UzhavuBharatham - I			15 Hrs.	2	-	50	50	Grade
		Online Course (Optional) (MOOC / NPTEL / SWAYAM)								Grade
Total			**30**				**185**	**465**	**650**	**23**

EC – Extra Credit Course / Certificate Course / Co-scholastic Course / Job Oriented Course
CC – Core Course; GE – Generic Elective; AECC - Ability Enhancement Compulsory Course;
SEC – Skill Enhancement Course; IKS – Indian Knowledge System;

SEMESTER - III										
Part	Subject Code	Title of the Paper	Hrs. / Week		Hrs. / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External		
I	25UTL3C3	TamilPaper-III	3	-	-	3	25	75	100	3
	25UHN3C3	Hindi Paper-III								
	25UFR3C3	French Paper-III								
II	25UEN3C3	Communication Skills – III	3	-	-	3	25	75	100	3
III	25UCT307	**CC V**: Advanced Java Programming	5			3	25	75	100	4
	25UCT308	**CC VI**: Database Management Systems	4			3	25	75	100	4
	25UCT3A1 / 25UCT3A2	**GE III – Allied III**: Operating Systems / Fundamentals of Block chain Technology	4			3	25	75	100	4
	25UCT309	**CC Lab III**: Advanced Java Programming Lab		4		3	20	30	50	2
	25UCT310	**CC Lab IV**: Database ManagementSystems Lab		4		3	20	30	50	2
IV	25UCT3N1/ 25UCT3N2	**SEC: Non-Major Elective I**: Office Automation Lab / Multimedia Lab	2	-	-	2	-	50	50	2
	25HEC303	Human Excellence - Professional Values & Ethics - SKY Yoga Practice - III	1	-	-	2	20	30	50	1
V	25UHW301	Health and Wellness	2*	-	30 Hrs	-	100 Reduce To 25	-	100 Reduce To 25	1
EC	25CMM302	**IKS:**ManaiyiyalMahathuvam - II			15 Hrs.	2	-	50	50	Grade
	25CUB302	**IKS:**Uzhavu Bharatham - II			15 Hrs.	2	-	50	50	Grade
	25UCt3VA	**VAC I:** Web Based Scripting Languages			30 Hrs.					2*
					45 Hrs.					3*
Total			30				185	515	725	26

EC – Extra Credit Course / Certificate Course / Co-scholastic Course / Job Oriented Course
CC – Core Course; GE – Generic Elective; VAC-Department Specific Value Added Course;
*Extra Credits; IKS – Indian Knowledge System;

SEMESTER - IV										
Part	Subject Code	Title of the Paper	Hrs. / Week		Hrs. / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External		
I	25UTL4C4	TamilPaper-IV	3	-	-	3	25	75	100	3
	25UHN4C4	Hindi Paper-IV								
	25UFR4C4	French Paper-IV								
II	25UEN4C4	Communication Skills – IV	3	-	-	3	25	75	100	3
III	25UCT411	**CC VII**: Python Programming	4			3	25	75	100	3
	25UCT412	**CC VIII**: LINUX Programming	4			3	25	75	100	3
	25UCT4A1 / 25UCT4A2	**GE IV – Allied IV**: Computer Networks / Software Testing	4			3	25	75	100	3
	25UCT413	**CC Lab V**: Python Programming Lab		4		3	20	30	50	2
	25UCT414	**CC Lab VI**: LINUX Programming Lab		3		3	20	30	50	2
	25UCT4S1/ 25UCT4S2	**SEC II: Naan Mudhalvan :** R Programming Lab /Desktop Publishing Lab		2		2	20	30	50	2
IV	25UCT4N1/ 25UCT4N2	**SEC: Non-Major Elective Paper -II** : Scripting Languages Lab / Pencil 2D	2	-	-	2	-	50	50	2
	25HEC404	Human Excellence - Social Values & SKY Yoga Practice - IV	1	-	-	2	20	30	50	1
V		Extension Activities - Annexure I	-	-	-	-	50	-	50 Reduce To 25	1
EC	25CMM403	**IKS:**ManaiyiyalMahat huvam - III			15 Hrs.	2	-	50	50	Grade
	25CUB403	**IKS:**UzhavuBharatha m - III			15 Hrs.	2	-	50	50	Grade
	25 UCT 4VA	**VAC II: Hardware PC Troubleshooting and CCTV**			30 Hrs.					2*
					45 Hrs.					3*
Total			30				205	545	775	25

EC – Extra Credit Course / Certificate Course / Co-scholastic Course / Job Oriented Course
CC – Core Course; GE – Generic Elective; SEC – Skill Enhancement Course; VAC-Department Specific Value Added Course; IKS – Indian Knowledge System;
*Extra Credits;

SEMESTER - V										
Part	Subject Code	Title of the Paper	Hrs. / Week		Hrs. / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External		
III	25UCT515	**CC IX**: Open Source Technologies (PHP & MySQL)	5			3	25	75	100	5
	25UCT516	**CCX**: Information and Cyber Security	5			3	25	75	100	5
	25UCT5E1/ 25UCT5E2/ 25UCT5E3	**DSE -I:***	6			3	25	75	100	5
	25UCT517	**CC Lab VII**: Open Source Technologies (PHP & MySQL) Lab		5		3	20	30	50	2
	25UCT518	**CC Lab VIII**: Web Designing Lab		5		3	20	30	50	2
	25UCT5S1 / 25UCT5S2	**SEC III**: Framework Technologies Lab / UI/UX Programming Lab		3		2	20	30	50	2
IV	25HEC505	Human Excellence - National Values & SKY Yoga Practice - V	1	-	-	2	20	30	50	1
EC	25CSD501	Soft Skills Development - I								Grade
	25GKL501	General Awareness – (Self Study	SS		-	2	-	50	50	Grade
	25UCT5AL	**ALC - I**: (Optional)- Self Study: Digital Marketing	SS					100	100	Credits**
Total			30				155	345	500	22

Discipline Specific Elective (DSE) – I*

25UCT5E1: Artificial Intelligence and Machine Learning
25UCT5E2: Cloud Computing
25UCT5E3: Computer Vision

EC – Extra Credit Course / Certificate Course / Co-scholastic Course / Job Oriented Course
CC – Core Course; DSE – Discipline-Specific Elective; SEC – Skill Enhancement Course
ALC-Advanced Learner Course (Optional)

*Extra Credits;**Credits – Based on course content maximum of 4 credits

SEMESTER - VI										
Part	Subject Code	Title of the Paper	Hrs. / Week		Hrs. / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External		
III	25UCT619	**Core XI :** Mobile Application Development	5			3	25	75	100	3
	25UCT6E4 / 25UCT6E5 / 25UCT6E6	**DSE -II:****	6			3	25	75	100	4
	25UCT6E7 / 25UCT6E8 / 25UCT6E9	**DSE -III:*****	6			3	25	75	100	4
	25UCT620	**CC Lab IX:** Mobile Application Development Lab		5		3	20	30	50	2
	25UCT621	**CC Lab X: Cloud Workspace Lab**		5		3	20	30	50	2
	25UCT622	Project	-	-		3	25	75	100	3
	25UCT6S1/ 25UCT6S2	**SEC IV: Naan Mudhalvan:** MERN Stack Development Lab / Animation Lab		2		3	20	30	50	2
IV	25HEC606	Human Excellence - Global Values & SKY Yoga Practice - VI	1	-	-	2	20	30	50	1
EC	25CSD602	Soft Skills Development - II								Grade
	25UCT6AL	**ALC - II:** (Optional)-Self Study: Data Mining and Warehousing	SS					100	100	Credits**
Total			**30**				**180**	**420**	**600**	**21**
Grand Total									**3900**	**140**

Discipline Specific Elective (DSE) – II **	Discipline Specific Elective (DSE) – III ***
25UCT6E4: – Data Analytics	25UCT6E7: Virtual Reality
25UCT6E5: Software Project Management	25UCT6E8: Internet of Things
25UCT6E6: Grid Computing	25UCT6E9: Mobile Computing

EC – Extra Credit Course / Certificate Course / Co-scholastic Course / Job Oriented Course
CC – Core Course, DSE – Discipline-Specific Elective, SEC – Skill Enhancement Course
ALC-Advanced Learner Course (Optional) *Extra Credits,**Credits – Based on course content maximum of 4 credits

List of Abbreviations:

CC – Core Course
GE – Generic Elective
AECC – Ability Enhancement Compulsory Course
SEC – Skill Enhancement Course
DSE - Discipline-Specific Elective
VAC – Value Added Course
ALC - Advanced Learner Course (Optional)

Grand Total = 3900; Total Credits = 140

HoD

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CDC Co-ordinator

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COE

CDC / 25 R 1.4

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Question Paper Pattern
(Based on Bloom's Taxonomy)

K1-Remember; K2- Understanding; K3- Apply; K4-Analyze; K5- Evaluate

1. Theory Examinations: 75 Marks (Part I, II, & III)

(0 Test- I & II, ESE:

Knowledge Level	Section	Marks	Description	Total
K1 & K2 (Q1 - 10)	A (Q1 – 5 MCQ) (Q6 – 10 Define / Short Answer / MCQ)	10 * 1 = 10	MCQ / Define	75
K3 (Q11-15)	B (Either or pattern)	5 * 5 = 25	Short Answers	
K4 & K5 (Q16 – 20)	C (Either or pattern)	5 * 8 = 40	Descriptive/ Detailed	

2. Theory Examinations: 38 Marks (3 Hours Examination) (Part III: If applicable)

Knowledge Level	Section	Marks	Description	Total
K1 & K2 (Q1 - 10)	A (Q 1 – 10 MCQ)	10 * 1 = 10	MCQ	50 (Reduced to 38)
K3 (Q11 – 15)	B (Either or pattern)	5 * 3 = 15	Short Answers	
K4 & K5 (Q16-20)	C (Either or pattern)	5 * 5 = 25	Descriptive/ Detailed	

3. Theory Examinations: 38 Marks (2 Hours Examination) (Part IV: If applicable)

Knowledge Level	Section	Marks	Description	Total
K1 & K2 (Q1-10)	A (Q1 – 5 MCQ) (Q6–10 Define / Short Answer)	10 * 1 = 10	MCQ / Define	50 (Reduced to 38)
K3, K4 & K5 (Q11-15)	B (Either or pattern)	5 * 8 = 40	Descriptive/ Detailed	

4. Practical Examinations:

Paper	Maximum Marks	Marks for		Components for CIA		
		CIA	CEE	Tests	Observation Note	Record Note
Practical (Core / Elective)	50	20	30	10	05	05
Practical (Core / Elective)	75	30	45	20	05	05
Practical (Core / Elective)	100	40	60	30	05	05

5. Project:

Paper	Maximum Marks	Marks for		
		CIA	CEE	
			Evaluation	Viva-voce
Project	100	25	50	25
Project	150	40	75	35
Project	200	50	100	50

* CIA – Continuous Internal Assessment & CEE – Comprehensive External Examinations

Components of Continuous Internal Assessment (CIA)

THEORY

Maximum Marks: 100; CIA Mark: 25; CEE Mark: 75;

Components		Calculation	CIA Total
Test 1	75	(75+75+15+10)/7	25
Test 2 / Model	75		
Assignment / Digital Assignment	15		
Others*	10		

*Others may include the following: Seminar / Socratic Seminars,Group Discussion, Role Play, APS, Class participation, Case Studies Presentation, Field Work, Field Survey, Term Paper, Workshop / Conference Participation, Presentation of Papers in Conferences, Quiz, Report / Content Writing, etc.

Maximum Marks: 50; CIA Mark: 12; CEE Mark: 38; (Part III: If applicable)

Components		Calculation	CIA Total
Test 1	50	(50+50+10+10)/10	12
Test 2 / Model	50		
Assignment / Digital Assignment	10		
Seminar	10		

PROJECT

Maximum Marks: 100; CIA Mark: 25; CEE Mark: 75;

Components		Calculation	CIA Total
Review I	5	5+5+5+10	25
Review II	5		
Review III	5		
Report Submission	10		

Maximum Marks: 200; CIA Mark: 50; CEE Mark: 150;

Components		Calculation	CIA Total
Review I	10	10+ 10+10+20	50
Review II	10		
Review III	10		
Report Submission	20		

* *Components for 'Review' may include the following:*

Originality of Idea, Relevance to Current Trend, Candidate Involvement, and Presentation of Report for Commerce, Management & Social Work.

Synopsis, System Planning, Design, Coding, Input form, Output format, Preparation of Report & Submission for Computer Science cluster.

Continuous Internal Assessment for Project

For Commerce, Management & Social Work Programme

The Final year Commerce, Management & Social Work students should undergo a project work during (V/VI) semester

- The period of study is for 4 weeks.
- Project / Internship work has to be done in an industrial organization (or) work on any industrial problem outside the organization is allowed.
- Students are divided into groups and each group is guided by a Mentor.
- The group should not exceed four students, also interested student can undergo individually.
- A problem is chosen, objectives are framed, and data is collected, analyzed and documented in the form of a report / Project.
- Viva – Voce is conducted at the end of this semester, by an External Examiner and concerned Mentor (Internal Examiner).
- Project work constitutes 100 marks, out of which 25 is CIA and 75 is CEE Marks.

Mark Split UP

CIA	CEE	Total
25	75	100

S. No	Components for CIA	Marks
1	Review – I *	5
2	Review – II *	5
3	Review – III *	5
4	Rough Draft Submission	10
Total		**25**

* Review includes Objectives and Scope, Research Methodology, Literature Review, Data Analysis and Results, Discussion and Interpretation, Recommendations and Implications, Presentation and Format, Creativity and Originality, and Overall Impact and Contribution.

S. No	Components for CEE	Marks
1	Evaluation*	50
2	Viva-Voce	25
Total		**75**

* Evaluation includes Originality of Idea, Relevance to Current Trend, Candidate Involvement, Thesis Style / Language, and Presentation of Report.

Continuous Internal Assessment for Project

For Science Stream

The Final year Science students should undergo a project work during (V/VI) semester

- The period of study is for 4 weeks.
- Project / Internship work has to be done in an industrial organization (or) work on any industrial problem outside the organization is allowed.
- Students are divided into groups and each group is guided by a Mentor.
- The group should not exceed four students, also interested student can undergo individually.
- A problem is chosen, objectives are framed, and data is collected, analyzed and documented in the form of a report / Project.
- Viva – Voce is conducted at the end of this semester, by an External Examiner and concerned Mentor (Internal Examiner).
- Project work constitutes 200 marks, out of which 50 is CIA and 150 is CEE Marks.

Mark Split UP

CIA	CEE	Total
50	150	200

S. No	Components for CIA	Marks
1	Review – I *	10
2	Review – II *	10
3	Review – III *	10
4	Rough Draft Submission / Report Submission	20
Total		**50**

* **Review I:** - Problem Analysis

* **Review II:** - Data collection & Design

* **Review III:** - Data Analysis

S. No	Components for CEE	Marks
1	Evaluation *	100
2	Viva-Voce	50
Total		**150**

* Evaluation includes Problem and Hypothesis, Experimental Design / Materials / Procedure, Variables / Controls / Sample Size, and Data Collection / Analysis.

Continuous Internal Assessment for Project

For Computer Science Cluster

Maximum Marks: 100 Marks

Components for CIA: 25 Marks

Criterion	Mode of Evaluation	Marks	Total
I	Synopsis, Company Profile, System Specification, Existing System, Proposed System OR (For Android Developments) Planning Stage	05	25
II	Supporting Diagrams like system flowchart, ER, DFD, Usecase and Table Design OR UI and UX Design Application Architect and Prototyping	05	
III	Coding, Input forms, Output format, Testing OR Development, Testing	05	
IV	Preparation of Report & Submission	10	

ComponentsforCEE: 75 Marks

ComponentsforCEE	Marks	Total	Grand Total
Evaluation			75
Title Relevance of the Industry/Institute	10	50	
Technology	10		
Design and Development Publishing	10		
Testing, Report	20		
Viva Voce			
Project Presentation	10	25	
Q&A Performance	15		

HEALTH AND WELLNESS COURSE

Scheme of Evaluation

Part	Description	Marks
A	Report	40
B	Attendance	20
C	Activities (Observation During Practice)	40
	Total	100

COMPUTER SCIENCE PROJECT and VIVA VOCE

Guidelines

Introduction

The title of the project work and the organization will be finalized at the end of the fifth Semester. Each student will be assigned with a Faculty for guidance. The Project work and coding will be carried by using the facility of the computer science lab as well as in the organization. The periodical review will be conducted to monitor the progress of the project work. The project report will be prepared and submitted at the end of the semester. An external examiner appointed by the Controller of Examination will conduct the viva voce examination along with a respective guide.

Area of Work

- Web Based Development
- Mobile app development
- Website development
- IoT Projects
- Big Data and Data Mining Projects
- Cloud Computing Projects
- Networking Projects
- Artificial Intelligence and Machine learning Projects
- Data Analytics Projects using Python, R, Tableau etc.
- System Software
- Web Security Projects
- Image Processing

Methodology

Arrangement of Contents:

The sequence in which the project report material should be arranged and bound is as follows:

1. Cover Page & Title Page
2. Bonafide Certificates
3. Declaration
4. Acknowledgement
5. Synopsis
6. Table of Contents
7. Chapters
8. Appendix
9. References

Format of Table of Contents

TABLE OF CONTENTS

Chapter No.	Title	Page No.
i	**Certificates**	
ii	**Declaration**	
iii	**Acknowledgement**	
iv	**Synopsis**	
1.	**Introduction**	
	1.1 Introduction	
	1.2 Objective of the Project	
	1.3 Company Profile	
	1.4 System Specification	
	1.4.1 Hardware Specification	
	1.4.2 Software Specification	
2	**System Study**	
	2.1 Existing System	
	2.1.2 Drawbacks	
	2.2 Proposed System	
	2.3 Planning and Scheduling	
3	**System Design**	
	3.1 Overview of the Project	
	3.2 Modules of the Project	
	3.3 Input Design Format	

3.4 Output Design

3.5 Table Design

3.6 Supporting Diagrams (ER/DFD/Use Case)

4 **Implementation and Testing**

4.1 Coding Methods

4.2 Testing Approach

4.3 Implementation and Maintenance

5 **Project Evaluation**

5.1 Project Outcome

5.2 Limitations of the Project

5.3 Further Scope of the Project

6 **Conclusion**

7 **Appendix**

7.1 Source Code

7.2 Screenshots and Reports

8 **References**

Size of the Project

The Project Report contents should be a maximum of not exceeding 70 pages.

STUDENT SEMINAR EVALUATION RUBRIC

Grading Scale:

A	B	C	D
8-10	5-7	3-4	0-2

CRITERIA	A - Excellent	B - Good	C - Average	D - Inadequate
Organization of presentation	Information presented as an interesting story in a logical, easy-to-follow sequence	Information presented in logical sequence, easy to follow	Most of the information is presented in sequence	Hard to follow, sequence of information jumpy
Knowledge of the subject & References	Demonstrated full knowledge; answered all questions with elaboration & Material sufficient for clear understanding AND exceptionally presented	As usual, answered all questions but failed to elaborate & Material sufficient for clear understanding AND effectively presented	At easy with information; answered most questions & Material sufficient for clear understanding but not clearly presented	Does not have a grasp of information; answered only rudimentary Questions & Material are clearly related to the topic OR background dominated seminar
Presentation Skills using ICT Tools	Uses graphics that explain and reinforce text and presentation	Uses graphics that explain the text and presentation	Uses graphics that relate to text and presentation	Uses graphics that rarely support text -- and presentation
Eye Contact	Refers to slides to make points; engaged with the audience	Refers to slides to make points; eye contact the majority of the time	Refers to slides to make points; occasional eye contact	Reads most slides; no or just occasional eye contact
Elocution – (Ability to speak English language)	Correct, precise pronunciation of all terms The voice is clear and steady; the audience can hear well at all times	Incorrectly pronounces a few terms Voice is clear with few fluctuations; the audience can hear well most of the time	Incorrectly pronounces some terms Voice fluctuates from low to clear; difficult to hear at times	Mumbles and/or incorrectly pronounces some terms Voice is low; difficult to hear

WRITTEN ASSIGNMENT RUBRIC

Grading Scale:

A	B	C	D	F
13-15	10-12	7-9	4-6	0-3

CRITERION	A - Excellent	B - Good	C - Average	D - Below Average	F - Inadequate
Content & Focus	Hits on almost all content exceptionally clear	Hits on most key points and the writing is interesting	Hits in basic content and writing are understandable	Hits on a portion of content and/or digressions and errors	Completely off track or did not submit
Sentence Structure & Style	• Word choice is rich and varies • Writing style is consistently strong • Students own formal language	• Word choice is clear and reasonably precise • Writing language is appropriate to the topic • Words convey intended message	• Word choice is basic • Most writing language is appropriate to the topic • Informal language	• Word choice is vague • Writing language is not appropriate to the topic • Message is unclear	• Not Adequate
Sources	Sources are cited and are used critically	Sources are cited and some are used critically	Some sources are missing	Sources are not cited	Sources are not at all cited
Neatness	Typed; Clean; Neatly bound in a report cover; illustrations provided	Legible writing, well-formed characters; Clean and neatly bound in a report cover	Legible writing, some ill-formed letters, print too small or too large; papers stapled together	Illegible writing; loose pages	Same as below standard
Timeliness	Report on time	Report one class period late	Report two class periods late	Report more than one week late	Report more than 10 days late

HoD

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SEMESTER I

Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT101			Title	Batch:	2025 - 2028
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	Title CC I: Programming in C	Semester:	I
					Credits:	4

Course Objective

To focus on the language and syntax of C programming concepts.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To remember data types, identifier, arrays, strings and pointers	K1
CO2	To understand how to write and use control statements and functions in C	K2
CO3	To implement the concept of pointers, structure and union	K3
CO4	To evaluate string functions and file Operations in C programming for a given application	K4
CO5	To evaluate random file operations, preprocessor and command line arguments	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	M	M	L	H	M	M	M	M	M	M
CO2	H	L	H	M	M	M	L	M	M	M	M	M
CO3	H	H	M	M	L	H	H	H	L	H	M	H
CO4	H	M	H	H	H	M	H	H	H	H	L	H
CO5	M	M	L	H	M	H	M	M	M	M	H	M

*H-High; M-Medium; L-Low

Units	25UCT101 Content	Hrs
Unit I	**Introduction to C** :Overview of C – History and Importance of C – Basic Structure of C programs - Executing a 'C' program – Character set –C Tokens-Keywords – Identifiers – Constants– Variables – Rules for defining variables- Data types, – Declaring and initializing variables-Operators & Expressions-Precedence of arithmetic Mathematical functions – **Managing Input and output operations**: Introduction – Reading a character–Writing a character Formatted input- Formatted output Simple Programs	12
Unit II	**Control Statements:** IF, IF..ELSE Statements, ELSE...IF ladder – Switch Statement – GOTO Statement – WHILE Statement – Do Statement – FOR Statement,-Jumps in loops. **Arrays:** One dimensional Arrays – Two Dimensional Arrays –simple Structures: Arrays within Structures–Union.	12
Unit III	**Functions:** User-defined functions- -Elements of user defined function, definition of function - Return value & their types, function calls &declarations-Category of functions: No arguments & No return values-arguments that No return values – Arguments with return values-No arguments that return a value -Recursion	12
Unit IV	**String manipulation:** Introduction- Declaring & Initializing String variables –Reading string from terminal, Writing string to screen – String handling Functions. **Pointers:** Introduction - Accessing, Declaring & Initializing pointer Variables	12
Unit V	**Files:** Defining and opening a file – Closing a file –I/O operations on sequential file– Command line arguments- Programs using Files and Command Line Arguments	12
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	E.Balagurusamy	Programming in ANSI C	Tata McGraw-Hill Publishing Co&Ltd., Eighth Edition	2019

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Greg Perry, Dean Miller	C Programming – Absolute Beginner's Guide	Third Edition	2013
2	Yashvant Kanetkar	Let us C	17th Edition	2020

Web References

1. https://www.javatpoint.com/data-types-in-c
2. https://www.tutorialspoint.com/cprogramming/c_arrays.html
3. https://www.programiz.com/c-programming/c-functions
4. https://www.programiz.com/c-programming/c-pointers
5. https://www.geeksforgeeks.org/basics-file-handling-c/

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. K.S. Leelavathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT102			Title	Batch:	2025 - 2028
				Title	Semester:	I
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	–	CC II: FUNDAMENTALS OF COMPUTER TECHNOLOGY	Credits:	4

Course Objective

To Acquire knowledge on basics of Computers, logic gates and about interfacing of various components.

To cover the various digital components used in the Organization and Hardware design of digital computers

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Acquire knowledge on basics of Computers and OS.	K1
CO2	Understand the concept of Number Systems.	K2
CO3	To Develop the concepts of Boolean laws, logic gates and derived gates.	K3
CO4	Analyze the Karnaugh Map for the appropriate solutions, adders and Subtractor.	K4
CO5	Evaluate Flip-Flops and memory hierarchy.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	L	H	M	H	H	M	M	M
CO2	H	L	H	M	M	M	L	M	M	M	H	M
CO3	H	H	L	M	L	M	H	H	L	H	M	H
CO4	H	L	H	H	H	M	H	M	H	H	L	H
CO5	M	M	L	H	M	H	M	M	M	M	H	L

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction to Computers - History of computers- History of Internet- Input-Output Devices- Internet the Ubiquitous Network - Computer Organization - Theoretical Concepts of Operating System- Computer Ethics and Cyber Security	15
Unit II	Number Systems and Binary Codes: Digital Electronics – Integrated circuits or Chip - Decimal System - Binary system – Octal System – Hexadecimal System – Binary addition – Binary Multiplication and Division – 1's Complement of a binary Number- 9's Complement - 10's Complement - BCD – Gray Code - Excess-3 Code	15
Unit III	Boolean Algebra-Logic Gates– Boolean Algebra – Gates – Inverter or NOT Gate – OR Gate – AND Gate – NOR Gate NAND Gate– Exclusive OR Gate – Exclusive NOR Gate –	15
Unit IV	Karnaugh Map Karnaugh Map Construction and Properties – Minimization of SOP form using Karnaugh map Arithmetic and Logic circuits: Half Adder – Full Adder – Half- Subractor – Full- Subtractor - Sequential Circuits,	15
Unit V	Flip-Flops: Flip-Flops- R-S Flip- Flops- J-K Flip-Flop- Registers: Register – Decoder – Encoder – Multiplexer – Demultiplexer. Memory Organization: Memory Hierarchy– Main Memory– Auxiliary Memory– Associative Memory.	15
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THEBOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	E Balagurusamy	Fundamentals Of Computers ISBN:978-0070141605	3rd Ed, McGraw Hill India	2021
2	Puri.V.K	Digital Electronics Circuits and Systems (ISBN-13: 978-0074633175)	22nd Reprint, TATA Mc- Graw Hill Publications	2017
3	Morris Mano. M	Computer SystemArchitecture	3rd Edition	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Donald P Leach, Albert Paul Malvino,Gautam Saha	Digital Principles and Applications	8th Edition, TATA McGraw-Hill Publications.	2014
2	Mandal S K	Digital Electronics: Principles and Applications	1st Edition, ISBN-13:978-0070153820.	2017
3	Saini S.P.S	Computer System Architecture and Organization	S. K. Kataria & Sons Publication, ISBN-13:978-8189757731	2015
4	SumanSingh	Emerging Trends in Information Technology	ABS Books	2020
5	Alexis Leon and Mathews Leon	Fundamentals of Information Technology	2nd Edition, Vikas Publisher	2009

Web References

1. https://circuitglobe.com/number-system-in-digital-electronics.html
2. https://www.tutorialspoint.com/digital_circuits/digital_circuits_logic_gates.html
3. https://www.tutorialspoint.com/digital_circuits/digital_circuits_flip_flops.html
4. https://www.tutorialspoint.com/computer_fundamentals/computer_cpu.htm
5. https://www.tutorialsmate.com/2020/04/types-of-computer-memory.html
6.https://www.edx.org/course/information-technology-foundations
7.http://techined.ualberta.com

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT1A1			Title	Batch:	2025 - 2028
				GE I – Allied I: Mathematics - I: Vedic Methods and Discrete Mathematics	Semester:	I
Lecture Hrs./Weekor Practical Hrs./Week	5	Tutorial Hrs./Sem.	–		Credits:	4

Course Objective

To understand and apply Vedic mathematics techniques for arithmetic operations and algebraic structures, grasp fundamental principles of mathematical logic and functions, analyze types and properties of relations, and effectively utilize graph theory concepts and algorithms to solve practical problems in various fields.

Course Outcomes (CO)

K1	CO1	Remember the Fundamental Techniques and Notation of Vedic Mathematics, Including Methods For Addition, Subtraction, and Squaring.
K2	CO2	To keep in mind about the Set theory and its laws
K3	CO3	To understand the law relating to Prepositional calculus, Tautologies and Contradiction
K4	CO4	To implement the conceptual knowledge of Relations and Functions
K5	CO5	To Analyze Various Types of Functions And Relations, including their Compositions and Properties.

Mapping

POs / COS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PIO	PSO1	PSO2
CO1	H	M	L	L	M	H	L	M	L	L	H	M
CO2	M	H	L	L	L	M	L	M	L	L	H	H
CO3	H	H	M	L	M	H	M	M	M	L	H	M
CO4	M	M	H	L	M	H	M	M	M	M	H	H
CO5	M	H	H	M	H	H	M	M	H	M	H	H

S-Strong H-High M-Medium L-Low

Syllabus

Units	Content	Hrs
Unit I	What is Vedic Mathematics? - Why is Vedic Mathematics Essential? - Vedic Sutras - Vedic Sub-sutra - Addition- Introduction, Vedic Methods for addition – Puranapuranabhyam, Sankalan Vyavkalanabhyam and Ekadhikena Purvena. Meaning of Vedic Sutras and their applications.	15
Unit II	Subtraction: Introduction, Vedic Method for subtraction – Nikhilam Navatascaramam Dasatah and Vinculum method. Digit Separator Method for subtraction.	15
Unit III	Set theory-Introduction-Set & its Elements - Set Description - Types of sets-*Venn-Euler Diagrams**- Set operations & Laws of set theory-Fundamental products-partitions of sets - minsets- Algebra of sets and Duality.	15
Unit IV	Mathematical logic – Introduction - Prepositional calculus – Basic logical operations - Tautologies - Contradiction - Argument - Method of proof.	15
Unit V	Relations – Binary Relations – Set operation on relations-Types of Relations – Partial order relation – Equivalence relation – Composition of relations – Functions – Types of functions – Invertible. Functions.	15
	Total Contact Hrs	75

Note: **Italicized* texts are for self study

Power Point Presentations, Quiz, Assignment, Case Study

Books for Study

1. Rajesh Kumar Thakur (2013), "The Essentials of Vedic Mathematics", Rupa Publications India Pvt.Ltd (ISBN: 978-81-291-2374-9)
2. Sharma J. K, (2020) "Discrete Mathematics", 3rd Edition, MacMillan India Ltd, ISBN-13: 9780230322301.

Books for Reference

1. Tremblay J.P, Manohar R, (2017), "Discrete Mathematics Structures with Applications to Computer Science", TATA McGraw-Hill Publications.
2. Dr. Venkataramen .M.K, Dr Sridharan .N, Chandarasekaran .N, (2003) "Discrete Mathematics" The National publishing Company Chennai. ISBN-13: 9788172863722.
3. http://pdfebooklibrary.com/ebooks/discrete-mathematics-book-download.pdf
4. Bharati Krishna Tirthaji Maharaja, V. S. Agarwala (2024) , Vedic Mathematics: Sixteen Simple Mathematical Formulae From The Vedas, Indologlcal Publishers , Delhi. 9789391024000 (ISBN-13), 9391024009 (ISBN-10)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. A. Kalaivani Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT1A2			Title	Batch:	2025 - 2028
				GE I – Allied I: Mathematics - I: Mathematical Structures For Computer Science	Semester:	I
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Sem.	-		Credits:	4

Course Objective

To gain knowledge of the concepts of matrices, algebraic equations, numerical differentiation, integration and correlation for computer applications.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To remember an in-depth knowledge in Matrices, Determinants, Inverse of a matrix, Rank of a Matrix and Eigen value Problems	K1
CO2	To understand the concepts of numerical differentiation and integration	K2
CO3	To apply an appropriate numerical method for solving algebraic	K3
CO4	To figure out the concept of Mean, Median, Mode, Measures of dispersion and the law relating to Correlation and Regression	K4
CO5	To evaluate the concept of correlation and correlation evaluation regression	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	M	M	L	H	M	H	H	M	M	M
CO2	M	H	H	M	M	M	L	M	H	H	H	M
CO3	H	H	L	H	L	M	H	H	L	H	L	H
CO4	L	L	H	H	H	M	H	M	H	H	L	H
CO5	M	M	L	L	M	H	M	M	H	M	H	L

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Matrices** – Introduction – Determinants – Inverse of a matrix – Rank of a Matrix – Eigen Value problems	15
Unit II	**System of Simultaneous Linear algebraic Equation:** Gauss elimination, Gauss Jordan. **The solution of Numerical Algebraic and Transcendental equation** – Bisection method – Newton Raphson method.	15
Unit III	**Numerical Differentiation:** Newton's forward Difference - Backward Difference – **Startling formula Numerical Integration**: Trapezoidal Rule and Simpson's rule - **Numerical solution of ordinary differential equations:** Taylor method.	15
Unit IV	**Measures of central tendency:** Mean (Individual Series), Median Discrete Series) and Mode (Continuous Series) – Relationship among mean, median and mode. Case study: Calculate mean, median and mode for students mark list. **Measures of dispersion:** Range, quartile deviation, mean deviation and Standard deviation.	15
Unit V	**Correlation**: Karl Pearson's coefficient of correlation – **Rank correlation regression:** Regression Equations – Difference between Correlation and Regression.	15
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Dr. Venkataraman. M. K	Engineering Mathematics	Volume II, Third Edition, NPC – (Unit I).	2001
2	Kandasamy.P, Thilagavathi.K, Gunavathi. K	Numerical Methods	Revised Edition, New Delhi, S. Chand and Company Ltd, ISBN-13: 9788121914383.	2013
3	Pillai.R.S.N, Bagavathi.V	Statistical Methods	New Delhi, Sultan Chand and Sons Company Limited, (Unit IV &V). ISBN-13: 978-9352533091	2016

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	N. P. Bali., Dr. Manish Goyal	A text book of Engineering Mathematics	Vol1, 9th edition, University science Press, New Delhi. ISBN 13:-9788131808320.	2013
2	Gupta .S.C, Kapoor .V.K	Fundamental of Mathematical Statistics	Sultan Chand and Sons-Tb,ISBN-13:9788180549687.	2018

Web references:

1. https://www.vedantu.com/maths/types-of-matrices
2. https://byjus.com/maths/gauss-elimination-method/
3. http://www.math.pitt.edu/~sparling/052/23052/23052notes/23052notesrojan14th/node3.html
4. https://statistics.laerd.com/statistical-guides/measures-central-tendency-mean-mode-median.php
5. https://www.bmj.com/about-bmj/resources-readers/publications/statistics-square-one/11-correlation-and-regression

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. A. Kalaivani Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT103			Title	Batch:	2025 - 2028
				CC Lab I:Programming in C	Semester :	I
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	–		Credits:	2

Course Objective

On successful completion of this subject the students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in C.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To remember the concept of data types, decision making and looping control statements	K1
CO2	To get the idea of array, strings and functions in C	K2
CO3	To access the file information through open/close and reading/writing operations in a file	K3
CO4	To remember the concept of pointers	K4
CO5	To get the idea of file functions	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	M	M	L	H	M	H	H	M	H	M
CO2	M	M	H	L	M	M	L	H	H	H	H	M
CO3	H	H	L	H	H	M	H	H	L	H	L	H
CO4	L	H	H	H	H	H	H	M	H	H	L	H
CO5	M	M	L	L	M	H	M	L	H	M	H	L

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Write a C program to illustrate the concept of operators in C. 2. Write a C program to illustrate the concept of conditional and unconditional control statements. 3. Write a C program to illustrate the concept of Arrays. 4. Write a C program to illustrate the concept of string and its functions. 5. Write a C program to illustrate the concept of Functions. 6. Write a C program to illustrate the concept of call by value. 7. Write a C program to illustrate the concept of call by reference. 8. Write a C program to illustrate the concept of pointers. 9. Write a C program to illustrate the concept of File and its Operations. 10. Write a C program to illustrate the concept of Command line Arguments.	60
Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. K.S Leelavathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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SEMESTER- II

Programme Code:	B.Sc			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT204			Title	Batch:	2025 - 2028
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem	-	CC III: Java programming	Semester:	II
					Credits:	4

Course Objective

To provide profound coverage on classes, multithreading, exception handling, applets and file handling in Java

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember about classes, objects, members of a class and relationships among them needed for a specific problem	K1
CO2	Comprehend the concepts of inheritance, interface and package	K2
CO3	Examine error handling techniques using exception handling	K3
CO4	Evaluate the concepts of thread, applet and files	K4
CO5	Developed skills in designing abstract window toolkit	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Fundamentals of Object – oriented programming – Introduction –Basics Concept of Object-object oriented programming. Benefits of OOP – Applications of OOP – Java Evolution – History –Java features. How java differs from C and C++ - Java and the Internet – Java and World Wide Web – Web Browsers – Java Environment – Overview of Java Language – Simple Java Program – Java Program Structure – Java Tokens – Java Statements – Implementing Java – Java Virtual Machine – Command Line Arguments.	12
Unit II	Constants, Variables and Data Types – Declaration of variables – Scope of Variables – Symbolic Constants –Type Casting – Operators and Expressions – Arithmetic Operators – Relational Operators – Logical Operators – Assignment Operators – Increment and Decrement Operators –Conditional Operator – Bitwise operator – Special Operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators - Type Conversions in Expressions – Operator Precedence and Associativity – Decision Making and Branching – Decision Making with If statement – Simple If statement – if-Else statement – Nesting of if-Else statement – The Else if ladder – the switch statement – the ?: operator.	12
Unit III	Decision Making and Looping – The While Statement – the Do statement – The For statement – Jumps in Loops– Classes, Objects and Methods –Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing Objects – Constructors – Method Overloading – static members – Nesting of Methods – Inheritance – Overriding methods Abstract Methods and classes – Arrays and Strings – Wrapper classes – Enumerate types.	12
Unit IV	Interfaces – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface variables – Packages – Java API Packages- Creating Packages – Accessing a Package – Using a Package – Adding a class to a package – Hiding classes – static import – Multithreaded	12

	Programming – Creating Threads – Extending the Thread classes – Stopping and Blocking a Thread – Lifecycle of Thread – Using Thread methods	
Unit V	Types of Errors – Exception – Syntax of Exception handling code – Multiple catch statements – Using Finally statement – Throwing our own Exceptions - Applet Programming – How Applet differs from Applications –Building Applet Code – Applet Lifecycle – Creating an Executable Applet – Concept of Streams – Stream Classes – Byte-Stream classes – Character Stream classes – Using Streams – other useful I/O classes – Using the file class – I/O functions – Creating of files – Reading / Writing characters – Reading /writing bytes – Random Access files – Interactive I/O	12
	Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Balagurusamy, E	Programming With JAVA A Primer	6th Edition, Tata McGraw Hill Publications, ISBN-13: 9780070141698.	2019

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	John R. Hubbard	Programming with Java	2nd Edition, Schaum's Outline Series, Tata McGraw Hill Publications, ISBN-13: 9780070589421.	2013
2	Timothy Budd	Understanding Object Oriented Programming with Java	2nd Edition, Pearson Education, ISBN-13: 9780201308815.	2016
3	Deitel&Deitel	Java TM: How to Program	9th Edition, PHI, ISBN-13: 9780136123712	2013

Web references:

1. iiti.ac.in/people/~tanimad/JavaTheCompleteReference.pdf
2. http://www.onlineprogrammingbooks.com/learning-java-4th-edition/
3. https://www.javatpoint.com/serialization-in-java
4. https://www.journaldev.com/2452/serialization-in-java
5. https://www.tutorialspoint.com/java/index.htm

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT205			Title	Batch:	2025 – 2028
				CC IV: Data Structures	Semester:	II
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	–		Credits:	4

Course Objective

To understand the concepts of array, stack, queue, list, linked list, tree and their computer applications.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To remember arrays, stack/queue operations and trees	K1
CO2	To understand and develop skills to analyze simple linear and non linear datastructures	K2
CO3	To apply the concept of linked lists, graphs and trees for the realworldproblems	K3
CO4	To evaluate file organizations, various searching and sorting methodologies	K4
CO5	To apply the concept of Binary trees	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	L	H	M	H	H	M	M	M
CO2	M	H	H	L	H	M	L	H	H	M	H	M
CO3	H	H	L	H	H	L	H	M	L	H	L	H
CO4	L	H	M	H	H	H	H	M	H	H	M	H
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Introduction** - Definition – Structure and properties of Algorithms – Development of an Algorithm – Data structures and Algorithms – Data structure – Definition and Classification. **Arrays:** Introduction – Array Operations - Number of elements in an array- representation of Arrays in memory, Applications	12
Unit II	Stacks: Introduction – Stack Operations – Applications .Queues: Circular Queues – Other types of Queues – Applications.	12
Unit III	Linked Lists: Introduction – Singly Linked Lists – Circular Linked Lists – Doubly Linked Lists – Applications.	12
Unit IV	**Trees**: Introduction – Trees – Basic Terminologies - Representation of Trees. **Binary Trees**: Basic Terminologies and Types - Representation of Binary Trees - Binary Search Tree – Applications. **Graphs**: Introduction – Definition andbasic Terminologies.	12
Unit V	File Organizations: Introduction – Files - Keys – Basic File Operations – Sequential File Organizations – Indexed sequential File Organizations – Direct File Organizations. Searching: Linear search– Binary search. Sorting: Merge sort and Quick sort.	12
	Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	GAV Pai	Data Structures and Algorithms – Concepts, Techniques and Applications	Tata MCGrawHill Publications ISBN-10: 0070667268	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Aaron M Tanenbaum, Yedidyeh langsam, Moshe J Augenstein,	Data Structure using C	Facsimile Edition, Pearson India, ISBN-13:978-8131702291.	2018
2	Ashok N Kamthane	Programming and Data Structures	PearsonEducation, 1st Indian Print, ISBN-13:978-131724224.	2009

Web references:

1. https://www.w3schools.in/cplusplus-tutorial/working-with-files/
2. https://www.javatpoint.com/ds-stack-vs-queue
3. https://www.javatpoint.com/ds-linked-list
4. https://www.javatpoint.com/binary-tree
5. https://www.javatpoint.com/bubble-sort

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT2A1			Title	Batch:	2025 - 2028
				GE II – Allied II: Mathematics II – Operations Research	Semester:	II
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Sem.	–		Credits:	4

Course Objective

Every industrial organization faces multifaceted problems to identify best possible solution to their problems. OR aims to help the executives to obtain optimal solution with the use of OR techniques and to locate best or optimal solution.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To recollect the modeling tools and computational tools as well as analytic skills to evaluate the problems.	K1
CO2	To understand how to translate real world problem given in words into a mathematical formulation.	K2
CO3	To apply mathematical optimization techniques, existing optimization tool kits to write computer programs and to implement algorithms and solve problems.	K3
CO4	To analyze the problem situation leading to better control, better co-ordination, better systems and finally better decisions.	K4
CO5	To analyze the concept of CPM and PERT	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	L	H	M	H	H	M	M	H
CO2	M	M	H	L	MH	M	L	H	H	H	H	M
CO3	H	H	L	H	H	M	H	M	L	H	L	H
CO4	L	H	M	H	H	H	H	M	H	H	L	L
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Linear Programming Problem:** Graphical Solution Method- General Linear Programming Problem (Definition alone) - Canonical and Standard forms of LPP. **Simplex Method:** Basic Solution and Degenerate Solutions to Linear Equation.	12
Unit II	**Transportation Problem**: North West Corner Method- Least Cost Method- Vogel's Approximation Method-.**Assignment Problem**: Definition- Assignment Algorithm.	12
Unit III	Inventory Control: Introduction – Types of Inventory – Inventory Decision- Economical Order Quantity (EOQ) - Deterministic Inventory Problems.(Simple Problems)	12
Unit IV	Sequencing Problems: Introduction- Problems with n Jobs and 2 Machines- Problems with n Jobs and k Machines.	12
Unit V	**Network Scheduling:** Introduction- Network and Basic Components- Rules of Network Construction- Time calculation in Networks-CPM-PERT- PERT Calculations- Difference between CPM and Pert Network.	12
	Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	KantiSwarup, P.K.Gupta, Man Mohan	Operations Research	Sultan Chand & Sons, Seventh Edition ISBN-13: 978-8180547713	2010

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	R. Paneer Selvam,	Operation Research	Prentice Hall of India Pvt Ltd, second edition	2016

Web references:

1. https://ncert.nic.in/ncerts/l/lemh206.pdf
2. https://www.mygreatlearning.com/blog/transportation-problem-explained/
3. https://www.researchgate.net/publication/245280760_Deterministic_Inventory_Models_for_Variable_Production
4. https://link.springer.com/chapter/10.1007%2F978-3-662-08011-5_10
5. https://en.wikipedia.org/wiki/Network_congestion

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: MS. K. S. Leelavathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: [illegible] Signature:

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Programme:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT2A2			Title	Batch:	2025 - 2028
				GE II – Allied II: Mathematics II – Statistics	Semester:	II
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Sem.	–		Credits:	4

Course Objective

Learning various statistical methods like central tendency, dispersion, correlation and regression, probability and sampling theory.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To remember the formula of different Means, Median, Mode, Deviations, Correlation, Regression, Probability, Chi square test, Degree of Freedom, etc.,	K1
CO2	To understand the concepts Central tendency, Dispersion, Correlation and regression, Probability and Sampling theory.	K2
CO3	To solve the problems by using formula to apply the programs.	K3
CO4	To analyze the solution is right or wrong.	K4
CO5	To evaluate the results through the program outputs	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	L	H	M	H	H	M	M	H
CO2	M	M	H	L	MH	M	L	H	H	H	H	M
CO3	H	H	L	H	H	M	H	M	L	H	L	H
CO4	L	H	M	H	H	H	H	M	H	H	L	L
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Measures of central tendency: Mean: Arithmetic Mean, Weighted Arithmetic Mean, Combined Arithmetic Mean, Geometric Mean, Harmonic Mean, Median and mode – Relation between mean, median and mode.	12
Unit II	Dispersion: Range - Mean deviation - Standard deviation - Coefficient of Variation – Quartile Deviation.	12
Unit III	Correlation: Karl Pearson's Coefficient of Correlation – Rank correlation. Regression: Regression Equations - Difference between correlation & Regression	12
Unit IV	Probability: Permutation and Combination- Important terms in probability Measurement of Probability: Classical Approach- Relative Frequency theory of probability – Personalistic view of probability – Axiomatic Approach of probability. Theorems of probability: Addition –Multiplication – Odds.	12
Unit V	Sampling Theory and Test of Significance: Introduction – Estimation theory – Testing of hypothesis – Testing if significance for large samples and small samples. Chi Square Test: Introduction – x^2test, Degrees of freedom, Test of goodness of fit, Test of Independence.	12
	Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Pillai R. S. N. Bagavathi V,	Statistical Methods	8th Edition, Sultan Chandand Sons & Company Ltd. New Delhi.	2019

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Gupta. S.C. Kapoor. V.K.	Fundamentals of Mathematical Statistics.	11th edition. S. Chand and Sons.	Reprint 2014

Web references:

1. Statistics Tutorial	Tutorialspoint
2. A Complete Tutorial On Statistics And Probability	Edureka
3. https://books.google.co.in/books?id=FmuH3IcYIRYC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false
4. https://content.kopykitab.com/ebooks/2016/07/8069/sample/sample_8069.pdf
5. https://www.gacwrmd.in/learning/Maths/STATISTICS-I-%207BMA5C2.pdf

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: MS. K. S. Leelavathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT206			Title	Batch:	2025 - 2028
				CC Lab II: Java programming Lab	Semester:	II
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	–		Credits:	2

Course Objective

To utilize java programming concepts for developing, compiling and running java applications and applets.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic concepts of Java Programming with emphasis on ethics and principles of professional coding	K3
CO2	Demonstrate the creation of objects, classes and methods and the concepts of constructor, methods overloading, Arrays, branching and looping	K4
CO3	Create data files and Design a page using AWT controls and Mouse Events in Java programming Implement the concepts of code reusability and debugging.	K3
CO4	Develop applications using Strings, Interfaces and Packages and applets	K4
CO5	Construct Java programs using Multithreaded Programming and Exception Handling	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	M	L	H	M	M	H	M	M	H
CO2	M	H	H	L	H	M	L	H	H	M	H	M
CO3	H	H	L	H	H	L	H	M	L	H	L	H
CO4	L	H	M	M	H	H	H	M	H	H	M	H
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Write a Java program to implement the Stack operations. 2. Write a Java program to implement the Queue operations. 3. Write Java programs that use both recursive and non recursive functions for implementing the following searching methods: (a) Linear search (b) Binary search 4. Write a java program to illustrate the concept of Package creation. 5. Write a java program to illustrate the concept of threading. 6. Write a java program to illustrate the concept of synchronization. 7. Write a java program to illustrate the concept of Exception Handling Mechanism. 8. Write a java program to develop an Applet. 9. Write a java program to implement to the concept of decision making statements. 10. Write a java program using file concept.	60
al Contact Hours	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT2S1			Title	Batch:	2024 - 2027
				SEC I: Naan Mudhalvan : Data Visualization Tools Lab	Semester:	II
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem.	-		Credits:	2

Course Objective

To understand the importance of data visualization for business intelligence and decision making.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Use Power BI for data visualization	K3
CO2	Apply data visuals to convey trends in data over time using Power BI	K4
CO3	Construct effective data visuals to solve workplace problems and able to create table, matrix visuals to present detailed data in a structured and organized manner.	K3
CO4	Summarize data and perform basic analysis to identify trends, patterns, and key insights using Power BI visuals and measures.	K4
CO5	Learn and create effective visualizations7	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	M	L	H	M	M	H	M	M	H
CO2	M	H	H	L	H	M	L	H	H	M	H	M
CO3	H	H	L	H	H	L	H	M	L	H	L	H
CO4	L	H	M	M	H	H	H	M	H	H	M	H
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Write a Power BI "Program" to Import and Clean Excel Data. 2. Write a Power BI "Program" to Resize a Visual. 3. Write a Power BI "Program" to Create a Basic Sales Report. 4. Write a Power BI "Program" to Change the Color of a Visual 5. Write a Power BI "Program" to Visualize Sales Trends Over Time. 6. Write a Power BI "Program" to Calculate Percentage of Total Sales. 7. Write a Power BI "Program" to Filter and Slice Data. 8. Write a Power BI "Program" to Create a Geographical Sales Map. 9. Write a Power BI "Program" to Create a Simple Table Visualization. 10. Write a Power BI "Program" to Create a Clustered Column.	30
Total Contact Hours	**30**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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SEMESTER- III

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT307			Title	Batch:	2025 – 2028
				CC V: Advanced Java Programming	Semester:	III
Lecture Hrs./Week or Practical Hrs./Week	05	Tutorial Hrs./Sem.	06		Credits:	04

Course Objective

To inculcate the students to understand the advanced JAVA concepts and develop Java based applications by applying these advanced concepts to implement in web based applications.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Create Applications using Swing Components.	K4
CO2	Understand about Servlets and Server Side Includes	K2
CO3	Implement JDBC connectivity and Java Server Pages	K3
CO4	Review the various types of beans	K4
CO5	Understand and apply Well-Formed XML and different types of XML Schemas	K5

Mapping

PO /PSO / CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	H	M
CO3	H	M	H	M	H	H	M	H	M	H	L	M
CO4	M	H	L	H	M	M	H	L	H	M	M	H
CO5	H	L	H	M	H	H	L	H	M	H	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Tour of Swing. JApplet- Icons and Labels – JText Fields – JButtons – JCombo Boxes - JTabbed Panes – JScroll Panes – JTrees – JTables– Exploring Swing.	12
Unit II	Servlet Overview and Architecture, Movement to Server-Side Java – Java Servlet - Practical applications for Java Servlets – Java Servlet Alternatives – Reasons to Use Java Servlets – Java Servlet Architecture. Servlet Basics – The Life Cycle of a Servlet – A Basic Servlet – Basic Servlet Source – Building and Installing the Basic Servlet – The HTML Required to Invoke the Servlet – Dissecting the Basic Servlet.	12
Unit III	JSP –Conditions – Directives – Declarations- Implicit Variables – Scriptlets – Expressions. Servlet Sessions: Session Tracking – Working with Cookies.	12
Unit IV	Enterprise Java Bean: Introduction – Enterprise Java Bean Technology - Types of Bean - Examples of EJB. Server-Side includes - Servlet chaining: Uses for Servlet chain - Invoking a Servlet Chain– A practical Example using Servlet Chaining.	12
Unit V	Servlets and JDBC– Two and Three-tier Database Access Models – JDBC Driver Types – JDBC Basics – A Basic JDBC Servlet – JDBC RMI.	12
	Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Herbert Schildt	JAVA 2: The Complete Reference	5th Edition, Tata-McGraw Hill, ISBN-13: 9780070495432	2017
2	James Goodwill	Developing Java Servlets	2nd Edition, Tech media, ISBN-13 : 978-0672321078	2014
3	Rima Patel Sriganesh, Gerald Brose, Micah Silverman.	Mastering Enterprise Java Beans 3.0	Wiley India Edition, Wiley India Pvt. Ltd, ISBN-13 : 978-0471785415	2011

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	SubrahmanyamAllaramaju,Cedric Buest , Marc Wilcox, Sameer Tyagi	Professional Java Server Programming J2EE	1.3 Edition, WROX Press Ltd, ISBN-13:9781861005373	2001
2	Jayson Falkner and Kevin Jones.	The J2EE Technology Web Tier	1stEdition,Addison-Wesley Professional ISBN: 0321136497.	2004

Web References

1. https://www.tutorialspoint.com/javascript
2. https://www.w3schools.com/
3. https://www.swayaminfotech.com/blog/tag/j2ee/
4. https://onlinecourses.nptel.ac.in/noc19_cs84/preview
5. https://www.tutorialspoint.com/listtutorial/Web-Application-J2EE-perspective/3142

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. C. Keerthana Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT308			Title	Batch:	2025 – 2028
				CC VI: Database Management Systems	Semester:	III
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	08		Credits:	04

Course Objective

The learner would have to understood the fundamental concepts of database systems & use the features available in a DBMS package

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Keep in mind Queries in a DBMS, Structure of a DBMSattributes and entity sets	K1
CO2	Comprehend deep knowledge about the basics of Relational Model and ACID properties	K2
CO3	Apply joins and set operators, control structures and embedded SQL for data management and retrieval techniques	K3
CO4	Analyze the basic issues of transaction processing, concurrency control and understand the importance of Normalization	K4
CO5	Familiarity on Parallel, Object Oriented & Distributed databases	K4

Mapping

PO / PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	M	H	M	H	H
CO3	H	M	H	M	H	M	H	M	H	M	H	L
CO4	M	H	M	H	L	H	M	H	L	H	M	M
CO5	H	L	H	L	H	M	H	L	H	M	H	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Database Concepts – A Relational approach:** Database – Relationships – DBMS – The Relational Data Model – Integrity Rules – Theoretical Relational Languages. **Database Design: Data Modeling and Normalization:** Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams –De Normalization.	12
Unit II	**Oracle9i: An Overview:** Personal Database – Client/Server Databases - Oracle9i: An Introduction – The SQL *Plus Environment – SQL – Sample Databases. **Oracle Tables: Data Definition Language (DDL):** Naming Rules and Conventions – Data Types – Constraints – Create, Display, Alter, Drop, *Rename and Truncating Oracle Table**.	12
Unit III	**Working with Tables: Data Management and Retrieval:** DML – Adding a New Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – Retrieving Data from a Table – Arithmetic Operations – Restricting Data with a WHERE clause – Sorting. **Functions and Grouping**: Built-In functions – Grouping Data.	12
Unit IV	**Multiple Tables: Joins and Set operators**: Join – Set Operators. **PL/SQL – A Programming Language:** History – Fundamentals of PL/SQL – PL/SQL Block Structure – Comments – Data Types – *Other Data Types** – Variable Declaration — Assignment Operation – **Control Structures and Embedded SQL**: Control Structures – SQL in PL/SQL – Data Manipulation – Transaction Control Statements.	12

Unit V	**PL/SQL Exceptions and Composite Data Types:** Cursors: Types of Cursor – Implicit cursor – Explicit cursor -Exceptions – Types of Exceptions. Composite Data Types – PL/SQL Records – PL / SQL Tables. **Named Blocks:** Procedures – Functions – Triggers. Case study: Connection of front end VB 6.0 and Back end Oracle 9i.	12
	Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Nilesh Shah	Database Systems Using Oracle	Second edition, PHI Publication, Indian Reprint	2014

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	ArunMajumdar and Pritimoy Bhattacharya	Database Management Systems	1st Edition, TMH, ISBN-13: 978-0074622391.	2017
2	Gerald V. Post	Database Management Systems	3rd Edition, TMH Publication, ISBN-13: 9780070635265	2018
3	Jonathan Gennick	Oracle SQLPlus Pocket Reference	2nd Edition, E.H. J. Pallett Publication, ISBN-13: 978-0596526887.	2019

Web References

1. http://freecomputerbooks.com/An-Introduction-to-Relational-Database-Theory.html
2. https://swayam.gov.in/nd2_cec19_cs05/preview
3. https://www.featuredcustomers.com
4. https://onlinecourses.nptel.ac.in/noc19_cs46/preview
5. https://www.slideshare.net/NILESHX/database-management-system-28774171

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. K. S. Leelavathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT3A1			Title	Batch:	2025 – 2028
				GE III – Allied III: Operating Systems	Semester:	III
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	04		Credits:	04

Course Objective

To recognize the concepts and principles, techniques and approaches which constitute a coherent body of knowledge in operating systems.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Keep in mind about operating system services, process, schedoling and memory allocations	K1
CO2	Comprehend the various process management concepts including scheduling, synchronization, and deadlocks	K2
CO3	Implement CPU Scheduling algorithms for process scheduling and deploy a deep knowledge about the memory management concepts including swapping, paging and segmentation	K3
CO4	Review synchronization problems, accessing methods in Files, Disk scheduling	K4
CO5	Demonstrate an understanding of different I/O techniques in operating system.	K4

Mapping

PO / PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	M	M	H	H	H	H	H	H	H	H	L	H
CO2	H	M	H	M	H	M	H	H	M	H	M	H
CO3	M	M	H	M	H	M	H	L	M	H	M	H
CO4	M	H	M	H	L	H	M	M	H	M	H	M
CO5	M	L	H	L	H	M	H	H	M	H	M	L

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction: What is an Operating System – Evolution of Operating system **Operating- System Structures**: System Components- Operating System Services – System Calls – System Programs – System Structure.	15
Unit II	**Process Management**: Process Concept – Process scheduling. **Threads:** Overview – Benefits- User and Kernel Threads- Multithreading Models. **CPU Scheduling**: Scheduling Criteria – Scheduling Algorithms. **Process Synchronization:** The Critical-Section Problem – Semaphores – Classic problems of Synchronization.	15
Unit III	**Deadlocks**: Deadlock Characterization – Methods for handling Deadlock – Deadlock prevention – Deadlock avoidance – Deadlock detection – Recovery from Deadlock – **Storage Management**: Swapping – Contiguous Memory allocation – Paging – Segmentation.	15
Unit IV	**Virtual memory**: Demand Paging –Page Replacement: FIFO Page Replacement – Optimal Page Replacement – LRU Page Replacement. **File-System Interface**: File concept – Access methods – Directory Structure.	15
Unit V	**File-System Implementation**: File System Structure – Allocation methods. **Mass Storage Structure:** Disk Structure – Disk Scheduling. **Case study:** Linux, Windows XP, Android OS (Memory management).	15
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Abraham Silberschatz, Peter Baer Galvin, Greg Gagne	Operating System Concepts	9th Edition, John Wiley and Sons, ISBN-13 9789812530554	2017

Reference Books

S.No	Author	Title of The Book	Publishers \ Edition	Year Of Publication
1	Achyut.SGodbole	Operating Systems	1st Edition, TMH Publications, ISBN- 9780070591134.	2010
2	H. M Deitel	Operating Systems	3rd Edition, Pearson Education Publication, ISBN 13: 9780536212153.	2012

Web References

1. http://nptel.ac.in/courses/106108101/13
2. https://developer.android.com/topic/performance/memory-overview.html
3. https://www.geeksforgeeks.org/operating-system-types-operating-systems-awaiting-author/
4. https://www.slideshare.net/ashanrajpar/operating-system-presentation-60556413
5. https://www.os-book.com/OS9/slide-dir/index.html

25UCT3A1

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT3A2			Title	Batch:	2025 - 2028
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	GE III: Allied III: Fundamentals of Blockchain Technology	Semester:	III
					Credits:	4

Course Objective

On successful completion of this subject the students can understand various concepts of Blockchain, Cryptocurrency, Digital Signature ,Bitcoins etc.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To keep in mind the fundamentals of block chain technology and crypto currency.	K1
CO2	To understand the mining mechanism in block chain.	K2
CO3	To apply and identify security measures, and various types of services that allow people to trade and transact with bitcoin.	K3
CO4	To analyze security, privacy, and efficiency of a given Blockchain system.	K4
CO5	To Assess the concepts of Blockchain, Cryptocurrency, Bitcoin and Digital Signature	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	M	H	H	H	M	H	M	H	H	H	H	H
CO2	M	H	H	M	M	M	H	M	H	M	M	H
CO3	M	M	M	H	H	M	H	H	M	H	H	H
CO4	H	H	H	H	H	M	H	H	H	M	H	H
CO5	H	H	H	H	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Block Chain – Introduction – Problems with centralized System – Overview – Fundamentals.	15
Unit II	Bitcoin: Introduction – Transaction life cycle - Block chain2.0 – Smart Contracts. Block in Block chain Architecture - Distributed Consensus - Economics behind Block Chain Consensus	15
Unit III	The Chain and the Longest chain – Cryptocurrency to Block chain 2.0 – Permissioned model of Block chain. Cryptographic hash function – Properties – Hash pointer and Merkle tree.	15
Unit IV	Digital Signature - Public Key Cryptography - A basic cryptocurrency - Creation of coins - Payments and double spending - FORTH – the precursor for Bitcoin scripting - Bitcoin Scripts.	15
Unit V	Bitcoin P2P Network - Transaction in Bitcoin Network - Block Mining - Block propagation and block relay - Why Consensus ; Distributed consensus in open environments - Consensus in a Bitcoin network.	15
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder	Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction	Princeton University Press	2016
2	Antonopoulos	Mastering Bitcoiin: Unlocking Digital Cryptocurrencies	O'Reilly Media Inc	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Rodrigo da Rosa Righi, Antonio Marcos Alberti, Madhusudan Singh	Blockchain Technology for Industry 4.0	Springer	2020
2	Satoshi Nakamoto	Bitcoin: A Peer-to-Peer Electronic Cash System	Oxford University Press	2019

Web References

1. https://www.slideshare.net/Mithileysh/blockchain-technology-181440314
2. https://www.slideshare.net/asrithak/blockchain-technology-ppt
3. https://www.buffalo.edu/content/dam/www/ubblockchain/files/basics/001%20What%20is%20Blockchain.pdf
4. https://blockchain.cse.iitk.ac.in/slides-NPTEL-BlockchainTechnologyApplications.pdf
5. https://mrcet.com/downloads/digital_notes/CSE/IV%20Year/CSE%20B.TECH%20IV%20YEAR%20II%20SEM%20BCT%20(R18A0534)%20NOTES%20Final%20PDF.pdf

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. [illegible] Balaivani Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: [illegible] Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT309			Title	Batch:	2025 – 2028
				CC Lab III: Advanced Java Programming Lab	Semester:	III
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	0		Credits:	02

Course Objective

To build GUI applications and connect to JDBC, create Web applications using server side programming languages – Servlets, JSP and Java beans.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect the concept of Swing Components and cookies	K3
CO2	Understand and integrate Servlets, JDBC and JSP to develop web applications	K4
CO3	Validate the idea of Java Beans to build enterprise applications	K3
CO4	Develop an request object method using enterprise applications	K4
CO5	Illustrate the concept of Server-side Includes and Servlet chaining	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Create a program to illustrate the concept of Introspection. 2. Create a bean program to design a simple property of the bean. 3. Create a java program to illustrate the concept of Generic Servlet. 4. Create a java program to illustrate the concept of Http Servlet. 5. Create a java program to illustrate the concept of Servlet chaining. 6. Create a java program to illustrate the concept of Server-side Includes. 7. Create a java program to illustrate the concept of Request Object Method. 8. Create a java program to illustrate the concept of JDBC Connectivity. 9. Create a jsp program to illustrate the concept of Implicit Objects. 10. Create a program to illustrate the concept of Sessions in JSP.	60
Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
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Name: Dr. C. Keerthana Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT310			Title	Batch:	2025 – 2028
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	-	CC Lab IV: Database Management Systems Lab	Semester:	III
					Credits:	02

Course Objective

To enable the students to know about database concepts with practical Knowledge

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect the basic commands such as DDL, DML, TCL	K3
CO2	Understand about various set, join operations and group functions in PL/SQL	K4
CO3	Develop various set and join operation in SQL	K4
CO4	Use PL/SQL stored procedure, stored functions, cursors and packages to query the database.	K4
CO5	Validate the PL/SQL cursors, GROUPBY clauses	K4

Mapping

PO / PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	H	H	M	H	M	H	H	M	H
CO3	H	M	H	H	H	M	H	M	H	L	M	H
CO4	M	H	L	M	M	H	L	H	M	M	H	M
CO5	H	L	H	H	H	L	H	M	H	H	M	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs **Sample Programs** 1. Write a query for DDL and DML commands. 2. Write a query for TCL commands. 3. Write a query for NOT NULL, CHECK, UNIQUE constraints. 4. Write a query to implement functions in SQL. 5. Write a query for JOIN operations. 6. Write a query to implement set operator 7. Write a SQL program for user-defined exception 8. Write a SQL block to delete and update using trigger. 9. Write a query for the HAVING clause. 10. Write a query for GROUP BY clause	60
Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT3N1			Title	Batch:	2025 – 2028
				SEC: Non-Major Elective I: Office Automation Lab	Semester:	III
Lecture Hrs./Week or Practical Hrs./Week	02	Tutorial Hrs./Sem.	0		Credits:	02

Course Objective

To familiarize the students in preparation of documents and presentations with office automation tools

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Keep in mind about the menus and icons functionalities in MS Word	K3
CO2	Understand and apply mathematical functions to calculate mean, median and standard deviation using Excel	K3
CO3	Apply different build in functions and their usage.	K4
CO4	Prepare a power point presentation for a range of events	K4
CO5	Include graphs, tables and images to power point presentation	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Content	Hrs.
MS WORD	
1. Type the text, check spelling and grammar, bullets and numbering list items, align the text to left, right, justify and centre.	
2. Prepare a job application letter enclosing your bio-data.	
3. Performing mail merge operation and preparing labels.	
4. Preparing a neatly aligned, error free document, add header and footer, also perform find and replace operation.	
5. Prepare a document in newspaper column layout.	
MS EXCEL	30
6. Worksheet Using formulas.	
7. Worksheet Manipulation for electricity bill preparation.	
8. Drawing graphs to illustrate class performance.	
9. An excel worksheet contains monthly Sales Details of five companies.	
MS POWER POINT	
10. Prepare a power point presentation for Department inaugural function.	
Total Contact Hrs.	**30**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT3N2			Title	Batch:	2025 – 2028
				SEC: Non-Major Elective I - Multimedia Lab	Semester:	III
Lecture Hrs./Week or Practical Hrs./Week	02	Tutorial Hrs./Sem.	0		Credits:	02

Course Objective

To offer the knowledge of creating and working with digital images and to manipulate them and to develop a presentation package using multimedia tools

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Keep in mind the concept of Basic Multimedia Techniques	K3
CO2	Discuss the application of multimedia concepts in the development of information visualization and business applications.	K4
CO3	Validate the creation of a simple applications using multimedia tools	K4
CO4	Use scripting Techniques for dynamic effects and to validate form input entry	K3
CO5	Comprehend and analyse the fundamentals of animation, virtual reality, underlying technologies, principles and applications.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Cropping images using Lasso Tool 2. Designing Pictures using Paint Tools 3. Designing Text using Text Tools 4. Applying Layer Effects to Images and Texts 5. Designing an Employee or Student ID card 6. Designing a seasonal greetings 7. Design a photograph applying Filter effects 8. Design an invitation for a conference 9. Design a brochure or poster for a technical symposium 10. Designing a Flexible banner for your college	30
Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. C. Keerthana Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT3VA	Title	Batch:	2025-2028
		Value Added Course 1: Web Based Scripting Languages	Semester	III
Hrs/Week:		Total Hours : 30 hrs	Credits:	02

Course Objective

Students will gain the skills and Web-based experience needed for entry into application and development careers.

- To learn the fundamentals of web designing.
- To design and develop standard and interactive web pages.
- To learn some popular web scripting languages.

Course Outcomes (CO)

K1	CO1	To remember Hyper Text Markup Language Tags for formatting, creating Table, frames and forms in a web page
K2	CO2	To Design and develop a website
K3	CO3	Acquire programming skills in scripting language.
K4	CO4	To interpret the web techniques and tools in developing efficient website

Syllabus

Unit – I **[10 Hours]**

Hyper Text Markup Language and Graphics: Introduction to Hyper Text Markup Language – Document Structure Tags – Formatting Tags – List Tags – Hyper Link Tags **Tables:** Introduction – The Table Tags – Alignment – Controlling Other Table Attributes – Spanning Multiple Rows and Columns – Table Section and Column Properties.

Unit - II **[10 Hours]**

Frames: Introduction – Setting up a Frames Document – Placing Content in Frames with the <FRAME>Tag **Forms:**Creating Forms – Labeling Input Fields –Form Field Event Handlers – Passing Form Data.

UNIT – III **[10 Hours]**

Style Sheets: Introduction – Style Sheets - Types of Style Sheet - Linking to Style Information in a Separate File – Embedded Style Information – Inline Style Information – External Style Sheet.

Power point Presentations, Seminar, Quiz, and Assignment.

Books for Study

1. ErricLadd, Jim O'Donnell, (2017), "Using Html 4,Xml,Java 1.2", Platinum Edition, 1st Edition, ISBN-13: 9788120315396.

Books for Reference

1. AtulKahate, (2015), "Web Technologies", Tata McGraw Hill, Sixth Reprint, ISBN-13: 9789332900912.
2. Goldberg, (2012), "XML",2nd Edition, Pearson India,ISBN-13 9788131734742.
3. Thomas A. Powell, (2014), "Html & CSS: The Complete Reference, 5th Edition, McGraw Hill Education, ISBN-13 9780070701946.
4. http://freecomputerbooks.com/webHtmlBooks.html
5. https://www.tutorialspoint.com/html/html_style_sheet.htm

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: [illegible] Signature:

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SEMESTER- IV

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT411			Title	Batch:	2025-2028
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	04	CC VII: Python Programming	Semester:	IV
					Credits:	03

Course Objective

The course is designed to provide Basic knowledge of Python. Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To develop python programs for core python and data types using objects and functions.	K4
CO2	To develop python programs for List, Stack, Queues.	K2
CO3	To implement File Objects and Object-Oriented Programming using python.	K3
CO4	To manage Errors and Exceptions and summarize the Network Programming.	K4
CO5	Understand and apply Well-Formed Object Oriented Features.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	H	M
CO3	H	M	H	M	H	H	M	H	M	H	L	M
CO4	M	H	L	H	M	M	H	L	H	M	M	H
CO5	H	L	H	M	H	H	L	H	M	H	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Basics: Python- Variables- Executing Python From the Command Line- Editing Python Files-Python Reserved Words-Basic Syntax-Comments-Strings And Numeric Data Types-Simple Input and Output.	12
Unit II	Control Statements: Control Flow and Syntax-Indenting- If Statement- Relational Operators- Logical Operators- Bit Wise Operators- While Loop- Break and Continue-For Loop-Lists-Tuple -Sets-Dictionaries.	12
Unit III	Functions: Definition- Passing Parameters to a Function-Variable Number of Arguments- Scope-Passing Functions to a Function- Mapping Functions in a Dictionary-Lambda-Modules- Standard Modules- Sys-Math- Time- Dir Function.	12
Unit IV	Error Handling: Run Time Errors-Exception Model-Exception Hierarchy-Handling Multiple Exceptions-Data Streams-Access Modes Writing-Data to a File Reading-Data From a File.	12
Unit V	Object Oriented Features: Classes Principles of Object Orientation-*Creating Classes*-Instance Methods-File Organization-Special Methods-*Class Variables- Inheritance*-Polymorphism-Type Identification-Simple Character Methods.	12
	Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Mark Summerfield	"Programming in Python 3 ", A Complete Introduction to the Python Language"	2nd Edition, Addison-Wesley Professional	2019
2	Anurag Gupta, G P Biswas	Python Programming	McGraw Hill Education	2020

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Allen Downey, Jeffrey Elkner, Chris Meyers	Learning With Python	Green Tea Press, Wellesley, Massachusetts	2016
2	Wesley J Chun	Core Python Application Programming.	3rd Edition, Prentice Hall Press Upper Saddle River, NJ, USA	2012

Web References

1. http://docs.python.org/3/tutorial/index.html.
2. http://interactivepython.org/courselib/static/pythonds.
3. http://www.ibiblio.org/g2swap/byteofpython/read/
4. https://www.edureka.co/blog/polymorphism-in-python
5. https://www.programiz.com/python-programming/inheritance

Course Designed by	Verified by HOD	Checked by	Approved by
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Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT412			Title	Batch:	2025-2028
				CC VIII: LINUX Programming	Semester:	IV
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	4		Credits:	03

Course Objective

This course introduces basic understanding of Linux OS, Linux commands and File system and to Familiarize students with the Linux environment.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the operating system architecture and low level interfaces that are required to build Linux systems	K1
CO2	Understand different commands used by system administrator and file related commands	K2
CO3	Apply various Linux operating system commands and utilities in Linux systems	K3
CO4	Evaluate the shell scripts with different programming goals	K4
CO5	Analyze different types of shell associated commands	K5

Mapping

PO / PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	M	H	H	M	H
CO3	H	M	H	M	H	M	H	M	H	H	M	H
CO4	M	H	L	H	M	H	L	H	M	M	H	L
CO5	H	L	H	M	H	L	H	M	H	H	L	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Introduction:** Hardware Requirements for Linux – Salient Features – Multiuser Capability, Multitasking Capability, Communication, Security, Portability –Linux System Organization – Types of Shells – Bourne Shell, C shell, Korn Shell – Unix Commands. **Unix File System:** Creating Files – Indulging in File Play – Listing Files and Directories – Masking File Permissions – Directory Permissions – Removing File Forcibly – Directory Related Commands – Miscellaneous Commands.	12
Unit II	**File System:**The Boot Block, The Super Block, The Inode Table, Data Blocks – Storage of Files – Disk Related Commands – Disk Usage. **Essential Linux Commands:** Password - cal command – banner command –touch command – file command – Links with DOS – File Related Commands –wc, sort, cut, grep, dd – Viewing Files – File Compression.	12
Unit III	**VI Editor:** Modes of Operations – Learning the Ropes – Adding Text, Delete Text, Overwriting Text, Quitting vi – Block Commands – Search Strings – Find and Replace, Delete and Paste, Yank and Paste – Set Command – Customizing vi Environment – Multiple File Editing in vi. **Processes in Linux:**ps command – Background Process – The nohupCommand Killing a Process – Changing Process Priorities – Scheduling of Processes –'at' command – 'batch' command – 'crontab' command.	12
Unit IV	**Programming with Shell:** Introduction to shell script-creation and execution-system variables-profile-read statement-command line arguments-logical operators && and ||-exit-if conditional-case-while statement-for set-shift-trap statement-shell variables-cd command-merging stream-expr command-eval command-shell programs.	12
Unit V	**System Administration:** System Administrator-Booting and shutting down-super user status (su) - security-user services - disk management (fsck) - operation -file system administration-backups utilities - cpio- afio- shutdown – mount –unmount – df - find commands-creating device files-installing and managing printers.	12
	Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	YashavantKanetkar	UNIX Shell Programming (Unit I – III)	BPB Publications, 3rd Edition	2016
2	Sumitabha das	UNIX System Concepts and Applications(Unit IV,V)	Tata McGraw - Hill, Fourth edition	2014

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Mark.G.Gobell	Red Hat LINUX-Reference Manual	Pearson education	2014

Web References

1. https://www.tutorialspoint.com/unix
2. https://lecturenotes.in/subject/455/linux-programming-lp
3. https://linuxconfig.org/linux-command-line-tutorial
4. https://www.guru99.com/unix-linux-tutorial.html
5. https://onlinecourses.swayam2.ac.in/aic20_sp26/preview

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. A. Kalaivani Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT4A1			Title	Batch:	2025 – 2028
				GE IV – Allied IV: Computer Networks	Semester:	IV
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	03		Credits:	03

Course Objective

To provide a strong background of computer network concepts, a good foundation covering the layers of OSI and TCP/IP model to acquire knowledge and network functionalities into layers.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember computer network basics, network architecture, and TCP/IP and OSI reference models.	K1
CO2	Understand the knowledge about essential protocols and their operations.	K2
CO3	Apply aspects of network security.	K3
CO4	Familiarize the different types of protocols.	K4
CO5	Evaluate detection and correction of errors in transmission.	K5

Mapping

PO / PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	M	H	H	M
CO2	H	M	H	M	H	H	M	H	M	H	L	M
CO3	H	M	H	M	H	H	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	L	H	M	H	M
CO5	H	L	H	M	H	H	L	H	M	H	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Introduction**: Uses of Computer Network-**Network Hardware**: LAN– WAN – MAN – Wireless – Home Networks. **Network Software**: Protocol Hierarchies – Design Issues for the Layers – Connection-oriented and connectionless services – Service Primitives – The Relationship of services to Protocols.	12
Unit II	**Reference Models:** OSI Reference Model– TCP/IP reference Model. **Physical Layer** - Guided Transmission Media: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. **Wireless Transmission:** Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Light Waves.	12
Unit III	**Communication Satellites:** Geostationary, Medium-Earth Orbit, Low Earth-orbit Satellites – Satellites versus Fiber. **Data-Link Layer:** Error Detection and correction– Elementary Data-link Protocols–Sliding Window Protocols.	12
Unit IV	**Network Layer:** Routing algorithms – Congestion Control Algorithms – IPv4 Addresses – IPv6 Addresses. **Transport Layer:** Elements of Transport Protocols – Internet Transport Protocols: TCP – Quality of Service.	12
Unit V	**Application Layer:** DNS –E-mail: SMTP, POP– File Transfer Protocol– HTTP – Telnet Protocols. **Case Studies:** Network Security.	12
	Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Andrew S. Tanenbaum	Computer Networks	5th Edition, Prentice Hall, ISBN-13: 978-0-13-212695-3	2016

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Behrouz A. Forouzan	Data Communicationsand Networking	4th Edition, Tata McGraw-Hill Publishing Company Limited, ISBN-13: 978-0070634145.	2017
2	Achyut S.Godbole	Data Communicationsand Networks	2nd ed. Tata McGraw-Hill Publishing Company Limited, ISBN-13: 978-0-07-047297.	2017

Web References

1. https://onlinecourses.swayam2.ac.in/cec19_cs07/preview
2. https://www.tutorialspoint.com/data_communication_computer_network/index.htm
3. http://www.engppt.com/2009/12/networking-fourozan-ppt-slides.html
4. https://www.slideshare.net/SalihinNirbhoy/basic-computer-networking-tutorial
5. https://www.slideshare.net/HarpreetDhaliwal/presentation-on-data-communication

25UCT4A1

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Mr. R. [illegible] Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT4A2			Title	Batch:	2025 – 2028
				GE IV – Allied IV: : Software Testing	Semester:	IV
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	2		Credits:	03

Course Objective

To study fundamental concepts in software testing and discuss various software testing issues and solutions in software unit test, integration and system testing.

To List a range of different software testing techniques and strategies and be able to apply specific automated unit testing method to the projects.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic concepts and the processes that lead to software testing	K2
CO2	Design test cases from the given requirements using Black box testing techniques	K3
CO3	Identify the test cases from Source code by means of white box testing techniques	K3
CO4	Know about user acceptance testing and generate test cases for it	K4
CO5	Examine the test adequacy criteria to complete the testing process	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	M	H	H	H
CO2	H	M	H	L	H	H	H	M	L	H	H	H
CO3	H	H	M	H	L	H	M	H	H	H	H	H
CO4	H	H	H	M	H	M	H	L	H	H	H	H
CO5	H	H	H	H	M	H	L	H	H	H	H	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing – Challenges in White-Box Testing.	12
Unit II	Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase f Testing – Scenario Testing – Defect Bash.	12
Unit III	System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.	12
Unit IV	Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.	12
Unit V	Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting –Best Practices. Test Metrics and Measurements: Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics.	12
	Total Contact Hrs	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Srinivasan Desikan and Gopalswamy Ramesh	Software Testing Principles and Practices	Pearson Education	2016
2	Limaye M G	Software Testing Principles, Techniques and Tools	Second Reprint, TMH Publishers	2010

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	William E. Perry,	Effective Methods of Software Testing	Wiley India, 3rd ed.	2017
2	Renu Rajani, Pradeep Oak,	Software Testing	TMH, 3rd ed,	2014

Web References

1. https://nptel.ac.in/courses/106/101/106101163/
2. https://www.guru99.com/software-testing-seven-principles.html
3. https://www.geeksforgeeks.org/software-engineering-seven-principles-of-software-testing/
4. http://www.cse.hcmut.edu.vn/~hiep/KiemthuPhanmem/Tailieuthamkhao/Introduction%20to%20Software%20Testing.pdf
5. https://www.tutorialspoint.com/software_testing/index.htm

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. K.S.Leelavathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT413			Title	Batch:	2025 – 2028
				CC Lab V: Python Programming Lab	Semester:	IV
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	0		Credits:	02

Course Objective

The course is designed to provide Basic knowledge of Python. Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To develop python programs for list and control statements and understand the Different loops such as "for", "while" and "do-while".	K1
CO2	To Manage Errors and Exception and summarization of networks	K2
CO3	To implement File Objects and Object-Oriented Programming using python.	K3
CO4	Analyze the use control structures in programming.	K4
CO5	Design Python scripting language to develop innovative real time applications.	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	H	H	H	H	H	H	M	H	L	H	H
CO3	H	M	H	H	M	H	L	H	M	H	H	H
CO4	H	H	M	H	H	L	H	H	L	M	H	H
CO5	H	H	H	M	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

Content	Hrs.
List of Programs 1. Write a program to display the following information: Your name, Full address, Mobile number, College name, Course. 2. Write a program to find the largest three integers using if-else and conditional operator. 3. Write a program to find first n prime numbers. 4. Write a program to find the product of two matrices. 5. Write a program to find the GCD of two integers. 6. Write a program to print the Fibonacci sequence. 7. Write a GUI program that converts Celsius temperature to Fahrenheit temperature. 8. Write a GUI program that displays your details when a button is clicked. 9. Write a program that opens a specified text file and then displays a list of all unique words Found in the file. 10. Write a program that opens a specified text file and then displays the most frequent words in a text read from a file.	60
Total Contact Hrs.	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. [illegible] Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT414			Title	Batch:	2025 – 2028
				CC LAB VI: LINUX Programming Lab	Semester:	IV
Lecture Hrs./Week or Practical Hrs./Week	03	Tutorial Hrs./Sem.	0		Credits:	02

Course Objective

To enable the students to write program in Linux for solving specified problems.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Apply the various Linux distributions.	K3
CO2	Evaluate the basic set of commands and utilities in Linux systems.	K4
CO3	Validate various shell scripts with different programming concepts.	K3
CO4	Apply and change the ownership and file permissions using advance Unix commands.	K4
CO5	Create shell scripts for real time applications.	K5

Mapping

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	M	H	M	H	M
CO3	H	M	H	M	H	M	H	M	H	M	H	M
CO4	M	H	L	H	M	H	L	H	M	H	L	H
CO5	H	L	H	M	H	L	H	M	H	L	H	M

*H-High; M-Medium; L-Low

Content	Hrs.
List of Programs 1. Write a shell script to stimulate the file commands: rm, cp, cat, mv, cmp, wc, split 2. Write a Shell Script to implement the following: pipes, Redirection and commands 3. Write a shell script for displaying current date, user name, file listing and directories by getting user choice. 4. Write a shell script to implement the filter commands. 5. Write a shell script to remove the files which has file size as zero bytes. 6. Write a shell script to find the sum of the individual digits of a given number. 7. Write a shell script to implement command line arguments. 8. Write a shell script for executing control statements 9. Write a shell script to print the multiplication table of the given argument using for loop 10. Write a shell script to show the following system configuration : a. currently logged user and his log name b. current shell , home directory , Operating System type , current Path setting c. show currently logged number of users, show all available shells d. show CPU information like processor type , speed e. show memory information	60
Total Contact Hrs.	**60**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. A. Kalaivani Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT4S1			Title	Batch:	2025 – 2028
				SEC II: Naan Mudhalvan : R Programming Lab	Semester:	IV
Lecture Hrs./Week or Practical Hrs./Week	02	Tutorial Hrs./Sem.	0		Credits:	02

Course Objective

To enable the students to write program in use of basic functions, Create their own customized functions, Construct tables and figures for descriptive statistics.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Enable to build programming logic and thereby developing skills in Programming.	K3
CO2	Clear understanding on how to organize data and analyze data using real time examples.	K4
CO3	Validate various new data sets and functions	K3
CO4	Apply built in real time cases for analysis and visualization.	K4
CO5	Create projects for real time applications.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	M	H	M	H	M
CO3	H	M	H	M	H	M	H	M	H	M	H	M
CO4	M	H	L	H	M	H	L	H	M	H	L	H
CO5	H	L	H	M	H	L	H	M	H	L	H	M

*H-High; M-Medium; L-Low

Content	Hrs.
List of Programs 1. Write a program to check whether a year (integer) entered by the user is a leap year or not? 2. Write an R program to find the sum of natural numbers without formula using the if-else statement and the while loop. 3. Write an R program to make a simple calculator that can add, subtract, multiply and divide using switch cases and functions. 4. Write a program to perform searching within a list (1 to 50). If the number is found in the list, print that the search is successful otherwise print that the number is not in the list. 5. Create a list and data frame that stores the marks of any three subjects for 10 students. Find out the total marks, average, maximum marks and minimum marks of every subject. 6. Write the steps to import data from Excel to CSV files and apply data viewer functions like rm(),dim(), head(), tail(), sorting, filtering, searching to view few set of rows.. 7. Write a program to create two 3 X 3 matrices A and B and perform the following operations a) Transpose of the matrix b) addition c) subtraction. 8. Write an R program to create a list containing strings, numbers, vectors and logical values and do the following manipulations over the list. a. Access the first element in the list b. Give the names to the elements in the list c. Add element at some position in the list d. d. Remove the element	15
Total Contact Hrs.	**15**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT4S2			Title	Batch:	2025 - 2028
				SEC II: Naan Mudhalvan : Desktop Publishing Lab	Semester:	IV
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0		Credits:	2

Course Objective

To provide the students understanding of the techniques essential to build their career in desktop publishing using suitable hardware and software tools.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To keep in mind about the formatted text and graphics.	K3
CO2	To realize about the Print Industry, Printing technology	K4
CO3	To validate the Designing standards, Print layout Design and creative visualization for intuitive layout	K5
CO4	Visualize the special effects, Exporting drawings, outlining & filling objects	K4
CO5	Drawing lines, shapes .inserting pictures, objects, tables, templates	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	M	H	H	H	H	M	H	H	H	H
CO2	H	H	H	H	H	H	H	H	L	H	H	M
CO3	H	H	H	M	H	L	H	H	H	M	H	H
CO4	L	H	L	H	L	H	M	M	L	H	M	H
CO5	H	H	H	H	M	H	H	H	H	M	H	L

* H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Bokeh Effect / Blur Background using photoshop 2. To create a Visiting card using Adobe Photoshop tools. 3. To draw a frame using Custom Shape Tool in Shape preset. 4. Convert a color photo to black and white photo. 5. Explain the procedure to Creating a Cover Page for a text book 6. Explain the steps for Designing a Passport Size Photo on a Max Size Paper 7. Explain the elements of Adobe Photoshop window 8. Layers in Photoshop	15
Total Contact Hrs	**15**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. K. S. Leelavathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT4N1			Title	Batch:	2025 - 2028
				SEC: Non-Major Elective Paper -II Scripting Languages Lab	Semester:	IV
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0		Credits:	02

Course Objective

To Understand the concepts of scripting languages for developing web based projects.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand VB Script language programming constructs and ability to understand the differences between Scripting languages and programming languages	K1
CO2	Gain knowledge of JavaScript language programming constructs.	K2
CO3	Understand the important HTML tags for designing static pages and separate design from content using Cascading Style sheet.	K3
CO4	Develop a dynamic web page using client side and server side scripting language.	K4
CO5	Able to gain some fluency programming in HTML and Java Scripting.	K5

Mapping

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO1	H	H	H	H	H	H	H
CO2	H	M	H	H	H	H	H
CO3	H	H	M	H	L	H	H
CO4	H	H	H	H	M	H	H
CO5	H	H	M	H	H	M	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Introduction to basic HTML elements. 2. Use table tag to format web page. Also create the Time Table of your class using table tag . 3. Create your profile page i.e. educational details, Hobbies, Achievement, My Ideals . 4. Create Style sheet to set formatting for text tags and embed that style sheet on web pages created for your site. 5. Design a web page and embed various multimedia features in the page. 6. Write a JavaScript program to determine whether a given year is a leap year in the Gregorian calendar. 7. Write a JavaScript program to convert temperatures to and from Celsius, Fahrenheit 8. Write a program outputs the squares, roots, cubes and complements of integers between 1 and 100. 9. Write a script to Sort numbers and strings. 10. Write a script to create a digital clock.	30
Total Contact Hrs	**30**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. A. Kalaivani Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT4N2			Title	Batch:	2025 - 2028
				SEC: Non-Major Elective Paper -II : Pencil 2D	Semester:	IV
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0		Credits:	02

Course Objective

To learn about the multimedia platform and get to understand the designing concepts.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recall the concepts of 2D animation.	K1
CO2	Understand the tools and attributes, bitmap and vector graphics used in 2D animation	K2
CO3	Design and implement various 2D animation effect using Pencil 2D.	K3
CO4	It is built and designed to meet the demands of today's working designer to create ads or collateral for print or for the web.	K4
CO5	Apply the various platforms and get to understand the animation techniques and designed to help businesses types of user interfaces for popular desktop platforms.	K5

Mapping

PO /PSO / CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO1	H	H	H	H	H	H	H
CO2	H	M	H	H	H	H	H
CO3	H	H	M	H	L	H	H
CO4	H	H	H	H	M	H	H
CO5	H	H	M	H	H	M	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Create natural scenery using 2D pencil. 2. Create a glossy button using 2D pencil. 3. Apply the filter effect in image or font using 2D pencil. 4. Create a Text animation using 2D pencil. 5. Create a movie clip animation using 2D pencil. 6. Create a Bouncing Ball using 2D pencil. 7. Create a Burning Candle using 2D pencil. 8. Create a Moving Car using 2D pencil.	30
Total Contact Hrs	**30**

Pedagogy

Assessment Methods

Direct Instruction, Flipped Class, Digital Presentation

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
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Programme Code:	B.Sc. CT	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT4VA	Title	Batch:	2025-2028
		Value Added Course : Hardware PC Troubleshooting and CCTV Installation	Semester	II/IV/VI
Hrs/Week:		Total Hours : 30 hrs	Credits:	02*

Course Objective

This course enables the students to understand the fundamentals of PC Assembly and CCTV Installation

Course Outcomes (CO)

K1	CO1	Understand the basic concepts of Assemble/setup and upgrade personal computer systems
K2	CO2	Knowledge of CCTV components with modern equipments
K3	CO3	Identify and Optimize system performance techniques
K4	CO4	Know about Install and connect peripherals among different devices
K5	CO5	Diagnose and isolate faulty components of the devices

Syllabus

Units	Content	Hrs
Unit I	Computer Components – Computer Tools – Computer Case Preparation - Mother Board - Installing a CPU - Installing a Computer Memory. Installing a Mother Board - Installing a Power Supply - Computer Wiring - Installing a Hard Drive – DVD Drive.	10
Unit II	Installing a Graphics Card – Booting the computer – Install Drivers – Installing Windows 7 and10 – Trouble Shooting – Case Study.	10
Unit III	Electronic Sulveillance : Objective : Introduction to Electronic Surveillance - Introducing CCTV - CCTV Technology - Designing of the CCTV System: Objective - Pre-Installation Activities - Customer Requirements and Site Analysis - Selection of Components	10
	Total Contact Hrs	**30**

Power point Presentations, Seminar, Quiz, and Assignment.

Books for Study

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Prabhu	CCTV Camera Installation Training	1st ed, CHIP SYSTEMS	2019

Web References

1. https://www.build-your-own-computer.net/support-files/build-your-own-computer.pdf
2. CCTV Installation Technician – National Skill Development Corporation – Facilitator Guide
3. https://nsdcindia.org/sites/default/files/FG-ELEQ4605-CCTV-Installation-Technician-09-03-2018.pdf
4. https://www.instructables.com/id/How-To-Assemble-A-Basic-Desktop-PC/
5. https://choosemypc.net/assemblyguide/
6. http://ptgmedia.pearsoncmg.com/images/9781587132636/samplechapter/9781587132636_ch03.pdf

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SEMESTER- V

Programme Code:	B.Sc. UCT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT515			Title	Batch:	2025 - 2028
				CC IX: Open Source Technologies (PHP & MySQL)	Semester:	V
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Sem.	2		Credits:	05

Course Objective

To impart basic knowledge of PHP and MySQL and development of web applications using open source web technologies like Apache, MySQL and PHP (LAMP/XAMP).

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Obtaining the basic concepts of PHP	K1
CO2	Gain the basic knowledge on Decision making and Looping	K1, K2
CO3	Understand the concept in string manipulation and arrays	K1, K3
CO4	Gain detailed knowledge on MySQL Commands	K4
CO5	Obtain knowledge about database manipulation using MySQL and design dynamic web pages.	K5, K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	M	H	H	H	M	H	H	M	H
CO2	H	H	M	H	H	L	H	H	H	H	H	H
CO3	H	M	H	H	H	H	L	H	H	H	H	M
CO4	H	H	H	M	H	L	H	M	H	M	M	H
CO5	H	M	H	H	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Introducing PHP:** History – Unique features – Basic Development Concepts – Creating your First PHP Script – Sample Applications. **Using Variables and Operators:** Storing Data in Variables – Understanding PHP's Data types – Setting and Checking Variable Data Types – Using Constants – Manipulating Variables with Operators – Handling Form Input.	15
Unit II	**Controlling Program Flow:** Writing Simple Conditional Statements –-Writing More Complex Conditional Statements – Repeating Actions with Loops – Working with String and Numeric Functions. **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.	15
Unit III	**Using Functions and Classes:** Creating User-Defined Functions – Creating Classes – Using Advanced OOP Concepts. **Working with Files and Directories:** Reading Files – Writing Files – Processing Directories.	15
Unit IV	**Working with Files and Directories:** Performing Other File and Directory Operations. **Working with Databases and SQL:** Introducing Databases and SQL – Creating and Populating a Database – Using PHP's MySQLi Extension.	15
Unit V	**Working with Databases and SQL:** Adding or Modifying Data – Handling Errors. Using PHP's SQLite Extension – Using PHP's PDO Extension – Using a MySQL Database – Switching to a different Database.	15
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	VikramVaswani	PHP: A Beginner's Guide	Tata McGraw Hill Publications , Second Reprint	2012

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Alan Forbes	The Joy of PHP: A Beginner's Guide to Programming Interactive Web Applications with PHP and MySQL	Kindle Edition	2020
2	RasmusLerdorf, Kevin Tatroe	Programming PHP	O'Reilly Media , 3rd Edition	2013
3	Luke Welling; Laura Thomson	PHP and MySQL-Web Development	4th Edition	2013
4	Robin Nixon	Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition	O'reilly Media	2014

Web References

1. https://www.tutorialspoint.com/php/
2. https://www.siteground.com/tutorials/php-mysql/
3. https://onlinecourses.swayam2.ac.in/aic20_sp32/preview
4. https://www.geeksforgeeks.org/php-mysql-database-introduction/
5. https://www.w3schools.com/php/php_mysql_intro.asp

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr.K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT516			Title	Batch:	2025 - 2028
				CC X: Information and Cyber Security	Semester:	V
Lecture Hrs./Week or Practical Hrs./Week	05	Tutorial Hrs./Sem.	2		Credits:	05

Course Objective

To understand the essentials of information security and learn the algorithms for implementing security.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember and understand the fundamentals of security algorithm in various layers.	K1, K2
CO2	Analyze the various symmetric key and public key algorithms	K4
CO3	Understand the techniques to secure data in Hash algorithms.	K2
CO4	Assess cyber security risk management policies in order to adequately protect critical information and assets.	K3
CO5	Analyze the various attacks in networks and discover how to protect personal data, securing simple computer networks, and safe Internet usage.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	M	H
CO2	H	H	H	M	H	H	L	M	H	H	M	H
CO3	H	H	L	H	H	M	H	H	H	H	H	H
CO4	H	H	M	L	H	H	L	H	H	M	H	M
CO5	H	H	H	H	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Attacks on Computers and Computer Security**: Introduction – Need For Security – Types Of Attacks. **Cryptography - Concepts and Techniques:** Introduction – Plain Text and Cipher Text – Substitution Techniques - Transposition Techniques: Encryption and Decryption.	15
Unit II	**Symmetric Key Algorithms**: Introduction – Algorithm Types – An Overview Of Symmetric Key Cryptography – **Data Encryption Standard (DES)**: How DES Works? **Asymmetric Key Algorithms, Digital Signature and RSA**: Introduction – The RSA Algorithm.	15
Unit III	**Digital Certificate and Public Key Infrastructure (PKI)**: Digital Certificates: Introduction – The Concept of Digital Certificate – Certificate Authority – Technical Details. The PKIX Model. **Internet Security Protocols:** Introduction –Secure Socket Layer – (SSL) – Secure Hyper Text Transfer Protocol (SHTTP).	15
Unit IV	**Email Security: PGP** – How PGP Works? - **S / MIME: Introduction** – Cryptographic Algorithms used in S/MIME – Security in GSM –Security in 3G.**User Authentication And Kerberos:** Introduction – Authentication Basics – **Passwords:** Introduction – Clear Text Passwords - Kerberos.	15
Unit V	**Cryptography in JAVA**: Introduction – Cryptographic Solution Using JAVA. **Network Security Firewalls and Virtual Private Networks** (VPN): Introduction – **Fire Walls**: Introduction – Types of Firewalls. Virtual Private Networks (VPN) – Intrusion.	15
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Atul Kahate	Cryptography and Network Security	McGraw Hill Education, 3 rd Edition	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Mark Rhodes-Ousley, Roberta Bragg, Keith Strassberg	Network Security: The Complete Reference	Tata McGraw-Hill , 1st Edition	2017
2	William Stallings	Cryptography and Network Security Principles and Practices	5th Edition,	2015
3	Brijendrasingh	Network Security and Management	PHI Publication , 3rd Edition	2014
4	Dr.Michael E. Whitman, Herbert J. Mattord	Principles and Practices of Information Security	Course Technology Cengage Learning, 4 th edition	2012

Web References

1. https://onlinecourses.swayam2.ac.in/nou21_cs01/preview
2. https://www.tutorialspoint.com/cryptography/index.htm
3. https://www.guru99.com/how-to-make-your-data-safe-using-cryptography.html
4. https://www.gatevidyalay.com/tag/cryptography-and-network-security-tutorial/
5. https://www.javatpoint.com/cyber-security-tutorial

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Atul Kahate	Cryptography and Network Security	McGraw Hill Education, 3 rd Edition	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Mark Rhodes-Ousley, Roberta Bragg, Keith Strassberg	Network Security: The Complete Reference	Tata McGraw-Hill , 1st Edition	2017
2	William Stallings	Cryptography and Network Security Principles and Practices	5th Edition,	2015
3	Brijendrasingh	Network Security and Management	PHI Publication , 3rd Edition	2014
4	Dr.Michael E. Whitman, Herbert J. Mattord	Principles and Practices of Information Security	Course Technology Cengage Learning, 4 th edition	2012

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1. https://onlinecourses.swayam2.ac.in/nou21_cs01/preview
2. https://www.tutorialspoint.com/cryptography/index.htm
3. https://www.guru99.com/how-to-make-your-data-safe-using-cryptography.html
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5. https://www.javatpoint.com/cyber-security-tutorial

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT5E1			Title	Batch:	2025 – 2028
				DSE I: Artificial Intelligence and Machine Learning	Semester:	III
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	06		Credits:	05

Course Objective

To embed a deep knowledge about search techniques, reasoning, game playing, expert systems.

To familiarize students with a broad cross-section of models and algorithms for machinelearning, and prepare students for research or industry application of machine learning techniques.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn about the artificial intelligence problem, the characteristics of the problem space, and the difference between continuous_class labels.	K1
CO2	Understand the problem solving using predicates and predict the continuous class variable using linear regression analysis.	K2
CO3	Apply the concepts of game playing techniques and predict the binary class variable using algorithms.	K3
CO4	Analyze AI problem to be solved and its application in business	K4
CO5	Apply the assessment method to find the better number of PCA and Clusters for the given data	K5/K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction – Artificial Intelligence – **Search and Problem Solving:** Problem Solving – Find the Goal and Formulate the goal – Design the problem and problem formulation – Search and Executions – Steps involved in Problem Solving – Real-time Examples for Problem solving.	18
Unit II	**Search and Problem Solving:** Greedy Best First Search Algorithm - A* Search Algorithm. **Local Search:** Introduction to Local Search – Hill Climbing Local Search Algorithm – Simulated Annealing – Genetic Algorithms.	18
Unit III	**An Introduction to Machine Learning:** Machine Learning – Types of Machine Learning – Visualization examples for types of Machine Learning – Training Validations and Testing Datasets. **Data workflow and Data Mining:** Definition of Data – Types of attributes – Characteristics of Data - Data Quality Problems – Data Pre-processing – Confusion Matrix – Performance Evaluation – Challenges of Machine Learning.	18
Unit IV	**Linear Regression Models:** Linear Regression - Other examples of Linear Regression. **Classification:** Classification Types – Logistics Regression – Binary Classification Vs Multi Classification – Cost Function – Cross-entropy.	18
Unit V	**Decision Tree:** Decision Tree - Decision Tree example – Instance Based Learning **Algorithms:** K-Nearest Neighbour Classifier – Steps Involved in KNN Algorithm Model. **Support Vector Machine:** Support Vector Machine Basics - Support Vector Machine Logic – Kernal Function.	18
	Total Contact Hrs	**90**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Manikandan Paneerselvam	An Introduction to Artificial Intelligence and Machine Learning	S. Chand Publishing, First Edition, ISBN-978-93-587-0395-5	2024

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Munesh Chandra Trivedi	A Classical Approach to Artificial Intelligence	2nd Edition, Khanna Book Publishing Co. Pvt. Ltd., ISBN: 978-81-90698-89-4	2022
2	Ethem Ipaydm	Introduction to Machine Learning	The MIT Press	2016

Web References

1. https://www.geeksforgeeks.org/machine-learning/
2. https://www.cs.cmu.edu/~tom1/tex/machine learning/notes.pdf
3. https://www.tutorialspoint.com/machine_learning/machine_learning_tutorial.pdf
4. https://u-aizu.ac.jp/~qf-zhao/TEACHING/ML/ML.html
5. https://www.javatpoint.com/machine-learning-techniques

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. C.T.			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT5E2			Title	Batch:	2025 - 2028
				DSE-I[5] :Cloud Computing	Semester:	V
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	2		Credits:	05

Course Objective

To impart the Basic Concepts of Cloud Computing and understand the Technologies and Architectures of Cloud Computing.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Tell about the fundamentals of cloud computing.	K1
CO2	Describe the scaling techniques in computer system and managing the cloud data.	K2
CO3	Discuss about tracing and exploring cloud services.	K2
CO4	Examine about cloud managing and security.	K3
CO5	Illustrate about managing desktops and devices in the cloud.	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	M	H	H	H	M	H	M
CO2	H	M	L	H	H	H	H	L	M	H	H	H
CO3	H	H	M	H	L	H	M	H	H	L	H	M
CO4	H	H	H	H	H	H	H	H	H	M	H	H
CO5	H	H	M	H	H	M	H	L	H	H	H	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Introduction to Cloud Computing:** Characteristics – Models – Services Examples – Services and Applications. **Cloud concepts and Technologies:** Virtualization – Load balancing – scalability and elasticity – Deployment – Replication – Monitoring – Software defined Networking – Network function virtualization – MapReduce – Identity and access management - Service level agreements – Billing.	18
Unit II	**Cloud services and Platforms:** Compute – Storage – Database – Application – Content Delivery – analytics – Deployment and Management – Identity and access Management – Open source Private Cloud Software. **Hadoop and MapReduce:** Apache Hadoop – MapReduce Job execution – Schedulers – Cluster setup.	18
Unit III	**Cloud Application Design:** Introduction – Design considerations – Reference Architectures – Design methodologies – Data storage approaches. **Cloud Application Benchmarking and Tuning**: Introduction – Workload Characteristics – Application Performance Metrics – Design Considerations – Benchmarking Tools – Deployment prototyping – Load Testing and Bottleneck Deduction – Hadoop Benchmarking.	18
Unit IV	**Cloud Security:** Introduction – CSA Cloud Security Architecture – Authentication – Authorization – Identity and Access Management – Data Security – Key Management – Auditing. **Cloud For Industry, Health Care and Education:** Health Care – Energy systems – Transportation systems – Manufacturing Industry – Education.	18
Unit V	**Python for Cloud:** Amazon web services – Google Platform – Windows Azure – MapReduce – Packages – Web Application Framework – Designing a RESTful Web API	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	ArshdeepBahga, Vijay Madisetti.	Cloud Computing – A Hands-on Approach.	Universities Press Pvt. Ltd.	2016

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Thomas Erl, ZaighamMahmood&Richardoputtini	Cloud Computing (Concepts, Technology & Architecture)	Prentice Hall Press.	2013
2	Judith Hurwitz,Robin Bloor Marcia Kaufman and Dr. Fernhalper	Cloud Computing For Dummies	Willey India Publication Edition	2010
3	Prasant Kumar Pattnaik	Fundamentals of Cloud Computing	Vikas Publishing House	2014
4	RajkumarBuyya.,et.al	Cloud Computing: Principles and Paradigms	Wiley publications	2013
5	Michael Miller	Cloud Computing: Web-Based Applications That Change the way you work and Collaborate Online	Macmillan Computer Publication,1stEdition	2008

Web References

1. https://www.motc.gov.qa/sites/default/files/cloud_computing_ebook.pdf
2. https://onlinecourses.nptel.ac.in/noc21_cs62/preview
3. https://data-flair.training/blogs/cloud-computing-tutorial/
4. https://www.javatpoint.com/cloud-computing-tutorial
5. https://www.guru99.com/cloud-computing-for-beginners.html

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. C.T			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT5E3			Title	Batch:	2025 - 2028
				DSE-I : Computer Vision	Semester:	V
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	2		Credits:	05

Course Objective

Emphasis on fundamentals of image processing and computer vision. Students will gain the knowledge of Image Formation, Image Enhancement and Segmentation. Students will also learn various feature extraction techniques. This subject has more emphasis on core vision tasks through Motion estimation and Object as well as pattern recognition.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Tell about the fundamentals of Fundamentals of Image Processing.	K1
CO2	Describe the image enhancement techniques includes point operations, Histogram Modeling.	K2
CO3	Discuss about Spatial Operations.	K2
CO4	Examine about Spatial Feature Extraction.	K3
CO5	Illustrate about Pattern Analysis to research in the field of computer vision.	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	M	H	H	H	M	H	M
CO2	H	M	L	H	H	H	H	L	M	H	H	H
CO3	H	H	M	H	L	H	M	H	H	L	H	M
CO4	H	H	H	H	H	H	H	H	H	M	H	H
CO5	H	H	M	H	H	M	H	L	H	H	H	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Introduction:** Digital Image Processing: Problems and Applications, Image Representation and Modeling - Image Enhancement - Image Restoration - Image Analysis - Image reconstruction from Projections - Image Data Compression.	18
Unit II	**Image Enhancement**: Introduction - **Point Operations:** Contrast Stretching - Clipping and Thresholding - Digital Negative. **Histogram Modeling – Spatial Operations:** Spatial Average and Spatial Low-pass Filtering - Directional Smoothing - Median Filtering.	18
Unit III	**Image Filtering and Restoration:** Introduction- Image Observation Models - Inverse and Wiener Filtering.	18
Unit IV	**Image Analysis and Computer Vision:** Introduction, Spatial Feature Extraction – Transform Features – Edge Detection.	18
Unit V	**Image Analysis and Computer Vision:** Boundary Representation – Image Segmentation – Classification Techniques.	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

25UCT5E3

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Anil K. Jain	Fundamentals of Digital Image Processing	Pearson Education, ISBN: 978 – 81 -203 – 0929 - 6	2010

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Refael C. Gonzalez and Richard E. Woods	Digital Image Processing	Wesley	2021
2	Richard Hartley and Andrew Zisserman	Multiple View Geometry in Computer Vision	Second Edition, Cambridge University Press	2013
3	Christopher M. Bishop;	Pattern Recognition and Machine Learning	Springer	2010

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT517			Title	Batch:	2025 - 2028
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Sem.	0	CC Lab VII: Open Source Technologies (PHP & MySQL) Lab	Semester:	V
					Credits:	2

Course Objective

To expose students to free open source software environment and introduce them to use open source packages.

To work with open source applications that deal with database and website development.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Write PHP scripts using operators to perform various functions	K6
CO2	Implement different types of PHP functions and the concepts of files and directories	K3
CO3	Write regular expressions including modifiers, operators, and meta characters	K6
CO4	Create PHP scripts using array	K6
CO5	Evaluate the database connectivity using PHP and SQLite and Develop dynamic web pages.	K5, K3

Mapping

PO / PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	H	H	H	H	H	H	H	H
CO2	H	H	M	H	L	H	H	M	L	M	H	H
CO3	H	M	H	M	H	M	H	H	H	L	M	H
CO4	H	H	M	H	L	H	M	L	M	H	H	M
CO5	H	H	M	H	H	H	M	H	H	H	H	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Develop a PHP Script using the concept of Control Structure &Loops. 2. Develop a PHP Script to illustrate the concept of Array. 3. Develop a PHP Script to illustrate the concept of Functions. 4. Develop a PHP Script to illustrate the concept of Constructor and Destructor. 5. Develop a PHP Script to illustrate the concept of Files and Directory. 6. Write a PHP Code to make PHP Data Base Connectivity with MYSQL. 7. Write a PHP Code to make MYSQL Data Base Operation. 8. Develop a PHP Script to make Data Base Operation using MySQLite. 9. Develop a PHP Script to illustrate the concept of Cookies 10. Develop a PHP Script to illustrate the concept of Sessions	75
Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT518			Title	Batch:	2025 - 2028
				CC Lab VIII: Web Designing Lab	Semester:	V
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs. /Sem.	0		Credits:	02

Course Objective

To create tables and frames, ordered and unordered lists within a web page and learn the language of HTML, DHTML, XML and JavaScript.

To develop dynamic web page using scripting languages and various XML, HTML5 where scripting codes are embedded into HTML document for interactive presentation effect.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Analyze a web page and identify its elements and attributes	K3
CO2	Create a HTML page with formatting text tags, tables and lists	K6
CO3	Create a HTML file with Frames	K6
CO4	Create web pages using DHTML and XML documents	K6
CO5	Build dynamic web pages using JavaScript (client side programming)	K3, K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	H	H	H	H	L	H	M	H	H	H	H
CO3	H	M	H	H	H	H	L	H	H	H	H	H
CO4	H	H	M	H	M	H	H	L	H	M	H	H
CO5	H	H	H	H	H	H	H	H	L	H	H	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Develop static webpages using HTML tags. 2. Prepare a webpage using OL & UL. 3. Prepare Frames which includes four html programs using frames. 4. Design and Develop webpage with the help of HTML and CSS. 5. Develop webpage using event handling in javascript 6. Embedding Javascript in HTML pages. 7. Create a home page using xml. 8. Writing XML web Documents which make use of XML Declaration, Element Declaration, Attribute Declaration 9. Usage of Internal DTD, External DTD, Entity Declaration. 10. Create a web page using image files, which switch between one another as the mouse Pointer moves over the images.	75
Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT5S1			Title	Batch:	2025 – 2028
				SEC III: Framework Technologies Lab	Semester:	V
Lecture Hrs./Week or Practical Hrs./Week	03	Tutorial Hrs./Sem.	0		Credits:	02

Course Objective

The student learns how to design, code, test and debug programs using VB.Net and ADO.Net.

To utilize .NET framework to build distributed enterprise applications.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Analyze and apply the VB.NET IDE Framework	K3
CO2	Develop, design and implement VB.Net program using various controls.	K4
CO3	To validate the concept of files and exception handling mechanism	K5
CO4	Implement ADO.Net connectivity	K4
CO5	Create their own applications with reports.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	L	H
CO2	L	M	H	M	H	M	H	L	H	M	H	M
CO3	H	M	H	M	H	M	H	M	H	M	H	L
CO4	M	H	M	L	M	H	M	H	M	H	M	H
CO5	H	M	H	M	H	M	H	M	H	L	H	M

* H-High; M-Medium; L-Low

Units	Content	Hrs
	Sample Programs **VB.NET – Console Application** 1. Create a Console Application for a simple stack operation in VB.Net 2. Create a Console Application for a simple queue operation in VB.Net 3. Develop an application which is similar to notepad using menus. **VB.NET – Windows Application** 1. Develop a Windows Form Application to generate the Bio-Data of a student 2. Develop a Windows Form Application to illustrate the concept of Tree-Node Control.	45
	Total Contact Hrs	**45**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT5S2			Title	Batch:	2025 – 2028
				SEC III: UI/UX Programming Lab	Semester:	V
Lecture Hrs./Week or Practical Hrs./Week	03	Tutorial Hrs./Sem.	0		Credits:	02

Course Objective

To provide students with the knowledge of user- centered design, user-centered methods in design, graphic design on screens, simulation and prototyping techniques and also usability testing methods, interface technologies and user centered design in corporate perspective..

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand iterative user-centered design of graphical user interfaces.	K1
CO2	Apply the user Interfaces to different devices and requirements.	K2
CO3	Create high quality professional documents and artifacts related to the design process. Design interactive elements and animations to improve user engagement.	K3
CO4	Implement Theme the visual look and feel of the user experiences and implement user interface applications	K4
CO5	Create effective and compelling screen based experiences.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	L	H
CO2	L	M	H	M	H	M	H	L	H	M	H	M
CO3	H	M	H	M	H	M	H	M	H	M	H	L
CO4	M	H	M	L	M	H	M	H	M	H	M	H
CO5	H	M	H	M	H	M	H	M	H	L	H	M

* H-High; M-Medium; L-Low

Units	Content	Hrs
	Sample Programs 1. Design an User Interface for Welcome screen. 2. Study and analysis of navigation design and its implementation 3. Design an User Interface Screen for Calculator 4. Design an User Interfaces for ATM Machine 5. Design an User Interface Screen for Online Examination 6. Create a working UI/UX prototype using prototyping tools 7. Study and analysis of sharing and exporting the UI/UX design 8. Study about implementation of information search module using UI/UX 9. Creating Social media advertisement using online tools and applications 10. Study about custom control and operational control their working and tools used	45
	Total Contact Hrs	45

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT5AL			Title	Batch:	2025 – 2028
				Advanced Learner Course(ALC) –I :Digital Marketing	Semester:	V
Lecture Hrs./Week or Practical Hrs./Week	SS	Tutorial Hrs./Sem.	SS		Credits:	02

Course Objective

This course provides an overall understanding of the various digital marketing platforms and tools available for creating an effective digital marketing strategy. It provides technical skills to design and develop an integrated digital marketing plan for an organization.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the role of digital marketing in marketing strategy	K2
CO2	Identify the key elements of a digital marketing strategy	K1
CO3	Analyze the role that social marketing plays in the digital marketing	K3
CO4	Demonstrate common digital marketing tools such as SEO and Social media	K4
CO5	Apply conceptual frame works of digital marketing	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	M	H	H	H
CO2	H	M	H	L	H	H	H	M	L	M	H	M
CO3	H	H	M	H	L	H	M	H	H	H	L	H
CO4	H	H	H	M	H	M	H	L	H	M	H	H
CO5	H	H	H	H	M	H	L	H	H	H	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction to Digital Marketing: Introduction - Original and Development of Digital Marketing - Internet Users: Penetration and Kind of Internet Use - Digital Marketing strategy – Digital Advertising Marketing Plan - Ethical and legal of framework of Digital Marketing - Skills Required in Digital Marketing	
Unit II	Search Engine Advertising: Introduction – Why pay for search advertising? – Understanding Ad Placement – Understanding Ad Ranks- Google Ads Account – E-Commerce Social Media Marketing: Introduction - Strategy – Implementation - Measure - Improve - Social Entertainment - Different forms of social entertainment	
Unit III	Face book Marketing : Introduction – Organic Marketing – Paid Marketing – Facebook Insights LinkedIn: Introduction - LinkedIn Strategy - Content Strategy - LinkedIn Native Videos - LinkedIn Analytics – Asset Copying - LinkedIn Sales Navigator - Adcampaign - Emerging Platforms: Instagram – Pinterest.	SS
Unit IV	Search Engine Optimization: Introduction – Search Engine – The Concept of SEO – SEO Phases –Website Audit – Content – On-Page Optimization – Off-Page Optimization – Social Media Reach – Maintenance – Local Search SEO – SEO Visual Search	
Unit V	Features – Mobile Analytics – Mobile APPS. Digital Analytics: Introduction – Data Collection – Key Metrics – Outcome Analysis – Experience Analysis.	
	(*SS – Self Study)Total Contact Hrs	**SS**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Seema Gupta	Digital Marketing McGraw Hill Education	Digital Marketing McGraw Hill Education2nd Edition,	2018

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Simon Kingsnorth	Digital Marketing Strategy: An Integrated Approach to Online Marketing 2nd Edition	Kogan Page, 2nd Edition,	2019
2	Dave Chaffey	Digital Marketing	Pearson, 7th Edition,	2019
3	Kevin Hartman	Digital Marketing Analytics: In Theory And In Practice	Ostmen Bennett Bridge Publishing Services, 2nd Edition,	2020

Web References

1. https://www.simplilearn.com/
2. https://www.michaelpage.ae/
3. https://digitalnow.undp.org/
4. https://www.facebook.com/business/small-business/advertise?
5. https://www.izito.co.in/

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. C. Keerthana Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: [illegible] Signature:

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SEMESTER- VI

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT619			Title	Batch:	2025 – 2028
				Core Course XI:	Semester:	VI
Lecture Hrs./Week or Practical Hrs./Week	05	Tutorial Hrs./Sem.	08	Mobile Application Development	Credits:	03

Course Objective

To provide in depth knowledge on Mobile Application Development and making them to develop apps using Android Programming.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the concept of android development platform, and applications.	K1 / K2
CO2	Understand the concept of configuring and creating android applications.	K3
CO3	Create an activity, intents, different event handling methods and menus	K3
CO4	Know working with views, view groups and content provider	K3/K4
CO5	Apply the concept of graphics and animation in developing android application	K4/K5

Mapping

PO /PSO CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	H	M	L	H	M
CO3	H	M	L	M	H	M	H	H	M	M	H	M
CO4	M	H	M	H	M	H	M	L	H	H	M	H
CO5	H	M	H	M	H	M	H	H	M	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introducing android (listing the version history of android platform - discussing android APIs - Describing the android architecture - application framework - exploring the features of android) - The Manifest file. Downloading and installing android (downloading and installing the android SDK - setting up android virtual device - setting up android physical device) Developing and executing the first android application (using eclipse IDE to create an application - running your application - exploring the application - using command line tools)	15
Unit II	Working with Activities: Creating an activity - Starting an activity - Managing the lifecycle of an activity - Applying themes and styles to an activity. Using intents: Exploring intent objects - Linking the activities using intent - Obtaining results from intent - Passing data using an intent object.	15
Unit III	Working with the user interface using Views and View Groups: Working with View Groups - The Linear Layout - the Relative Layout - The Scroll View layout - the Table Layout - the Frame Layout. Working with Views (Using the Text View - using Edit Text view - using the Button view - using the Radio Button view - using the Check Box view - using the Image Button view - using the Toggle Button view - using the Rating Bar view) Creating menus - the option menu - the context menu - The submenus.	15
Unit IV	Notifying the user:- Creating the Toast notification - Creating the status bar notification - creating the Dialog notification. Introducing the data storage options: Using Preference - using the internal storage: Exploring the methods used for internal storage- Using the SQLite database: Creating the database helper class.	15
Unit V	Working with content providers:- Exploring the android provider package - creating user-defined content provider - consuming user-defined content provider. Working with Animations:-The Property Animation - View Animation - Drawable Animation.	15
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Pradeep Kothari	Android application development (with KitKat Support)	Black Book, dreamtech press	2018

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	S. Sydhani begum	Mobile App Development - Android Programs Using Eclipse: Android Programs Using Eclipse Indigo	Notion Press	2019
2	Wallace Jackson	Android Applications for Absolutes Beginners	Apress, 3rd Edition	2014
3	W. Frank Ableson, RobiSen, Chris King	Android in Action	Manning Publications, 2nd Edition	2011

Web References

1. https://www.javatpoint.com/how-to-setup-android-for-eclipse-ide
2. https://info448-s17.github.io/lecture-notes/resources-and-layouts.html
3. https://www.tutorialspoint.com/android/index.htm
4. https://www.codeproject.com/Articles/825700/Beginners-Guide-to-Android-Animation-Graphics
5. https://www.geeksforgeeks.org/android-app-development-fundamentals-for-beginners/

25UCT619

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT6E4			Title	Batch:	2025 – 2028
				DSE: II	Semester:	VI
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	04	Data Analytics	Credits:	4

Course Objective

To Understand Business Intelligence Tools and Purpose of Business Intelligence and can able to discover the patterns , types and process of discovering patterns.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn about the fundamental concepts, importance, and applications of Data Analytics in various Industries.	K1
CO2	Understand how to collect, clean, and pre-processing raw data for analysis using appropriate techniques.	K2
CO3	Apply the statistical methods to summarize, visualize and interpret data sets.	K3
CO4	Analyze real word datasets and derive meaningful business insights to support decision making.	K4
CO5	Apply the data analytics tools to solve practical problems and case-studies.	K5/K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	M	H	H	M	M	H	M
CO3	H	L	H	M	H	M	H	H	M	M	L	M
CO4	M	H	M	H	M	H	M	M	H	H	M	H
CO5	H	M	H	M	L	M	H	H	M	M	H	M

* H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Wholeness of Data Analytics:** Introduction – Business Intelligence – pattern Recognition, Data Processing Chain. **Business Intelligence Concepts and Application:** Introduction – BI for Better Decisions – Decision Types – BI Tools – BI Skills – BI Applications.	18
Unit II	**Data Warehousing (DW):** Introduction – Design Considerations for DW – DW Development approaches – DW Architecture. **Data Mining:** Introduction – Gathering and Selecting and Data – Data Cleansing and Preparation – Output of Data Mining – Evaluating Data Mining Results - Data Mining Techniques.	18
Unit III	**Data Visualization:** Introduction – Excellence in Visualization – Types of Charts – Visualization Example. **Decision Tree:** Introduction – Decision Tree Problem - Decision Tree Construction - Decision Tree Algorithms.	18
Unit IV	**Artificial Neural Networks (ANN) :** Introduction – Business Applications of ANN – Design Principles of an ANN – Representation of a Neural Network – Architecting a Neural Network – Developing an ANN – Advantages and Disadvantages of using ANN. **Clustering Analysis:** Introduction – Applications of Cluster Analysis – Definition of Cluster – Clustering Techniques – Clustering Exercise – K-means Algorithm for Clustering – Advantages and Disadvantages of K-Means Algorithm.	18
Unit V	**Big Data:** Introduction – Defining Big Data – Big Data Landscape – Big Data Technologies - Management of Big Data. **Data Science Careers and Additional Case Studies:** Popular Skills – Case Studies.	18
	Total Contact Hrs	**90**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Anil Maheshwari	Data Analytics	8th Reprint, MCGraw Hill Publishing, ISBN: 93-5260-418-0	2020

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \EDITION	YEAR OF PUBLICATION
1	Andrew Park	Data Science for Beginners	Independently Published, ISBN - 13:978 – 1914167003	2020
2	Joel Grus	Data Science from Scratch	O'Reilly Media, Inc. ISBN: ISBN: 9781491901427	2015
3	Stuart Russell, PeterNorvig	Artificial Intelligence:A Modern Approach	Pearson Education, 3rd Edition.	2015
4	Er. Rajiv Chopra	Artificial Intelligence:A Practical Approach	S. Chand Publications, 1stEdition.	2016

Web References

1. https://towardsdatascience.com/data-preprocessing-concepts-fa946d11c825
2. https://developers.google.com/machine-learning/clustering/clustering-algorithms
3. https://towardsdatascience.com/your-guide-to-natural-language-processing-nlp-48ea2511f6e1
4. https://www.ibm.com/cloud/learn/natural-language-processing

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. A. Kalaivani Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT6E5			Title	Batch:	2025 – 2028
				DSE II: Software Project Management	Semester:	VI
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	04		Credits:	4

Course Objective

1. To provide the graduates to identify key areas of concern over Project Life Cycle (PLC) and use of project management principles across all the phases of PLC.
2. To understand the importance and necessity of project plan and how it is helpful to project manager in monitoring and controlling the various aspects of the project

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Identify the activities of Software Project Management	K2
CO2	Select appropriate approach for software project	K2/K3
CO3	Manage people in software environment	K3
CO4	Create a critical path and a precedence network for a project.	K4
CO5	Generate project schedule and can construct, design and develop network diagram for different type of Projects.	K4/K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	L	H
CO2	H	M	L	M	H	M	H	M	H	M	H	M
CO3	H	M	H	M	H	M	H	L	H	M	H	M
CO4	M	H	M	H	M	H	M	H	M	H	M	H
CO5	L	M	H	M	H	M	H	M	H	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction to Software Project Management, Why is software project management is important?, What is Project, Software Project vs other types of project, Activities covered by Software Project Management Plans, Methods and Methodologies, Categorizing software Projects, Stakeholder, Setting Objectives, Project success and Failure. What is Management? Management Control, Traditional and modern Project Management Practices.	18
Unit II	An overview of Project Planning: Step 0 to 10, Selecting of an Appropriate Project Approach: Choosing methodologies and Technologies, Software Processes and Software Models, The Waterfall Model, The Spiral Model, Software Prototyping, other ways of categorizing prototypes, Incremental Delivery, RAD and Agile Methods: Extreme programming, Scrum.	18
Unit III	Software Effort Estimation: Introduction, Where are Estimates Done? Software Effort Estimation Techniques, Bottom up Estimating, The Top Down Approach, Expert Judgement, Function Point Analysis, COCOMO Model, Activity Planning	18
Unit IV	Risk Management: Risk, Categories of Risk, A Framework for Dealing with Risk, Risk Identification, Risk Assessment, Risk Planning, Risk Management, Applying PERT Technique, Resource Allocation.	18
Unit V	Monitoring and Control, Managing People in Software environments.	18
	Total Contact Hrs	**90**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Bob Hughes, Mike Cotterell, Rajib Mall	Software Project Management	Tata McGraw Hill Publications, 6th Edition	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Roger S. Pressman	Software Engineering	Tata McGraw Hill Publications, 8th Edition	2019
2	John M. Nicholas and Herman Steyn	Project Management for Engineering, Business and Technology	Taylor&Francis, 5th Edition	2016
3	Er. Rishabh Anand	Principles of Software Project Management	S.K. Kataria & Sons, 1st Edition	2014
4	Walker Royce	Software Project Management-A Unified Framework	Pearson publication, 1st Edition	2015

Web Resources

1. https://nptel.ac.in/courses/106/105/106105218/
2. https://freevideolectures.com/course/4071/nptel-software-project-management
3. https://www.nptelvideos.com/video.php?id=918
4. https://www.classcentral.com/course/swayam-software-project-management-14294
5. https://www.w3schools.in/sdlc-tutorial/software-development-life-cycle-sdlc

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT6E6			Title	Batch:	2025 – 2028
				DSE II: GRID COMPUTING	Semester:	VI
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	04		Credits:	4

Course Objective

To provide a thorough knowledge about the technology application and tool kits for grid computing

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understanding the fundamentals of grid computing	K1
CO2	Discussing the basics of grid monitoring.	K2/K3
CO3	Dissect Grid Computing Systems and Architectures	K4
CO4	Analyze the importance of Grid Computing Standards	K4/K5
CO5	Examine the standards supporting Grid Computing services and Functionality	K5

Mapping

PO /PSO CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	L	H	H	H	H	H
CO2	H	M	H	M	H	M	H	M	H	M	H	M
CO3	H	M	H	L	H	M	H	M	H	M	H	M
CO4	L	H	M	H	M	H	M	H	M	H	M	H
CO5	H	M	H	M	H	M	H	M	H	L	H	M

* H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction: Grid Computing-Key Issues – Applications – Other Approaches – Grid Computing Standards – Pragmatic Course of Investigation.	18
Unit II	Grid Benefits & Status of Technology: Motivations – History of Computing, Communications and Grid Computing – Grid Computing Prime Time – Suppliers and Vendors –Economic Value – Challenges.	18
Unit III	Components of Grid Computing Systems and Architectures: Basic Constituent Elements-A Functional View – A Physical View – Service View.	18
Unit IV	Grid Computing Standards-OGSI: Standardization – Architectural Constructs –Practical View – OGSA/OGSI Service Elements and Layered Model – More Detailed View.	18
Unit V	Standards Supporting Grid Computing-OGSA: Functionality Requirements – OGSA Service Taxonomy – Service Relationships – OGSA Services – Security Considerations.	18
	Total Contact Hrs	**90**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Daniel Minoli	A Networking Approach to Grid Computing	John Wiley & Sons, Inc. 1st Edition	2018

Reference Books

25UCT6E6

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Joseph	Grid Computing	Pearson Education India	2014
2	Kai Hwang, Geoffery C. Fox and Jack J. Dongarra	Distributed and Cloud Computing: Clusters, Grids, Clouds and the Future of Internet	Morgan Kaufman Publisher,1st Edition	2012
3	Jorge G Barbosa , Ines Dutra	Grid Computing: Techniques & Future Prospects	Nova Science Publishers Inc, 1st Edition	2015

Web Resources

1. https://www.slideshare.net/poojadixit19/grid-computing-standards
2. http://www.cs.kent.edu/~farrell/grid06/lectures/grid08.pdf
3. https://www.geeksforgeeks.org/grid-computing/
4. http://www.cs.kent.edu/~farrell/grid06/lectures/grid01.pdf
5. https://pit.ac.in/pitnotes/uploads/CS6703_II.pdf

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT6E7			Title	Batch:	2025 – 2028
				DSE III: VIRTUAL REALITY	Semester:	VI
Lecture Hrs./Week	06	Tutorial Hrs./Sem.	04		Credits:	4

Course Objective

To help students understand the technology behind virtual reality and introduces input, output devices used for virtual reality. It also presents the techniques and applications used for augmented reality.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the design and implementation of the hardware that enables VR systems to be built.	K1/K2
CO2	Apply appropriate techniques and design augmented reality applications.	K2/K3
CO3	Analyze the techniques required for virtual reality environments	K3
CO4	Evaluate various interaction schemes common to AR experiences.	K4/K5
CO5	Design, create, and integrate audio, visual, and interactive elements into a comprehensive immersive experience.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	L	H	H	H	M	H	H	H	H
CO2	H	M	H	M	H	M	H	H	L	M	H	M
CO3	H	M	H	M	H	M	H	H	H	M	H	M
CO4	M	H	L	H	M	H	M	L	M	H	M	L
CO5	H	M	H	M	H	M	H	M	H	M	H	M

* H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Introduction**: The Three I's of Virtual Reality - A Short History of Early Virtual Reality – Early Commercial VR Technology - VR Becomes an Industry - The Five Classic Components of a VR System.	18
Unit II	**Input Devices**: Three – Dimensional Position trackers - Hybrid Inertial Trackers - Navigation and Manipulation Interfaces - Tracker-Based Navigation/Manipulation Interfaces – Three-Dimensional Probes - Gesture Interfaces - The Pinch Glove - The 5DT Data Glove - The Didjiglove - The CyberGlove.	18
Unit III	**Output Devices:** Graphics Displays: The Human Visual System -Personal Graphics Displays –Large Volume Displays - Sound Displays - The Human Auditory System - The Convolvotron– Speaker Based Three-Dimensional Sound.	18
Unit IV	**Getting started with Unity and Playmaker**: Downloading and Installing Unity – Buying and importing playmaker – Setting up your project. **Unity's and Playmaker's User Interface:** Interface overview and main menu – Hierarchy panel – Inspector panel – Project panel – Project panel – Views – Playmaker interface.	18
Unit V	**Components and State Machines**: Game objects, components and properties – Working with prefabs – Finite state machines, states and actions – Interaction between game objects.	18
	Total Contact Hrs	**90**

Pedagogy

Assessment Methods Direct Instruction, Flipped Class, Digital Presentation

Text Book Seminar, Quiz, Assignments, Group Task.

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Grigore C. Burdea, Philippe Coiffet	Virtual Reality Technology	2/e, Wiley Dream Tech India, ISBN: (hardback) , ISBN 9781119484653 (adobe pdf)	2024
2	Sergey Mohov	Practical Game Design with Unity and Playmaker	Olton : Packt Publishing, Limited, ISBN : 9781849698115	2013

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	William R. Sherman, Alan B. Craig	Understanding Virtual Reality: Interface, Application and Design	2nd edition, Morgan Kaufmann Publishers	2018
2	Jason Jerald	The VR Book: Human-Centered Design for Virtual Reality	ACM Books, ISBN: 978-1970001129	2015

Web Resources

1. https://msl.cs.uiuc.edu/vr/vrbook.pdf
2. https://www.lncc.br/~jauvane/papers/RelatorioTecnicoLNCC-0603.pdf
3. http://www.arise.mae.usp.br/wp-content/uploads/2018/03/Understanding-Virtual-Reality-Interface-Application-and-Design-The-Morgan-Kaufmann-Series-in-Computer-Graphics-.pdf
4. http://rguir.inflibnet.ac.in:8080/jspui/bitstream/123456789/16380/1/9781774693209.pdf
5. https://www.geeksforgeeks.org/virtual-reality-introduction/

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT6E8			Title	Batch:	2025 – 2028
Lecture Hrs./Week	06	Tutorial Hrs./Sem.	04	DSE III-Internet of Things	Semester:	VI
					Credits:	4

Course Objective

To imparts a sound understanding of the basic electronics, microcontroller architectures, sensors, IoT architecture and communication protocols.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the scope of the IoT system, architectures, components and supporting technologies.	K2
CO2	Analyzing existing business processes to understand and build technical strategy to develop need aligned technical solutions.	K3
CO3	Apply decision and repetition structures in program design.	K3
CO4	Implement architecture of its networks, devices, programming, data and security.	K4
CO5	Evaluate the data received through sensors in IOT and Design smart city in IOT.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	H
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	L
CO5	H	L	H	M	H	H	M	H	M	H	L	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Introduction:** Definition and characteristics of IoT – IoT enabling Technologies. IoT Levels – **Domain Specific IoTs**: Home Automation – Cities – Environment – Energy – Agriculture – Health and Life Style.	18
Unit II	**IoT and M2M:** Introduction - M2M – Difference between IoT and M2M – Need for IoT system management.	18
Unit III	**IoT Platform Design Methodology:** Introduction -IoT Design Methodology. **IoT Physical devices and End points:** What is an IoT Device? – Basic building blocks of an IoT device – Exemplary device: Raspberry Pi – About the Board.	18
Unit IV	**IoT Physical Servers and Cloud Offerings:** Introduction to Cloud Storage Models and Communication APIs – WAMP – Xively Cloud for IoT – Amazon Web Services for IoT.	18
Unit V	**Case Studies Illustrating IoT Design:** Introdution – **Home Automation**: Smart Lighting - Home Intrusion Detection – **Agriculture:** Smart Irrigation.	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Vijay Madisetti and Arshdeep Bahga	Internet of Things (A Hands-on-Approach)	1st Edition, VPT	2017

References Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Francis da Costa	Rethinking the Internet of Things: A Scalable Approach to Connecting Everything	1st Edition, A press Publications.	2015

Web References

1. https://electronics-project-hub.com/send-data-to-thingspeak-using-esp8266/
2. https://www.instructables.com/id/ESP8266-to-IFTTT-Using-Arduino-IDE/
3. https://virtronics.com.au/Simulator-for-Arduino.html
4. https://www.slideshare.net/MohanKumarG/internetofthings-iot-aseminar-ppt-by-mohankumarg
5. https://blog.infodiagram.com/2019/07/explain-internet-of-things-powerpoint.html

Course Designed by	Verified by HOD	Checked by	Approved by
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Name: Ms. K. S. Leelavathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT6E9			Title	Batch:	2025 – 2028
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	4	DSE III: MOBILE COMPUTING	Semester:	VI
					Credits:	4

Course Objective

2. Understand the various concepts and techniques of WAP, GSM, CDMA, 2G, and 3G.
3. Gain knowledge about different mobile platforms and application development.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand various networks, standards, communication medium, Spread spectrum technology	K1/K2
CO2	Analyze the basic concepts of wireless networks.	K2/K3
CO3	Deploy the mobile applications to the devices.	K3
CO4	Demonstrate basic skills for cellular networks design.	K4/K5
CO5	Examine to design and develop mobile computing solutions using various components of mobile computing	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	L	H	M	H	M	H	H	M	M	L	M
CO3	H	M	H	M	H	M	H	H	M	M	H	M
CO4	M	H	M	H	M	H	M	L	H	H	M	H
CO5	H	M	H	M	L	M	H	H	M	M	H	M

* H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction: Mobility of Bits and Bytes –Wireless the Beginning – Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Application and services - Security in mobile computing – Standards _ Why is it necessary – Standard bodies. Mobile Computing Architecture: Architecture for mobile computing – Three-tier architecture – Mobile computing through Internet – Making existing applications mobile enabled.	18
Unit II	Mobile Computing Through Telephony: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application –Voice XML – TAPI. Emerging Technologies: Blue Tooth – RFID – WiMAX – Mobile IP – IPv6 – Java Card.	18
Unit III	GSM: Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM Frequency allocations – Authentications and Security. SMS: Strengths – Architecture – SM MT – SM MO – VAS through SMS	18
Unit IV	GPRS: GPRS and packet data network – Architecture – Network Operations – Data services – Applications - Limitations – Billing and Charging. WAP: WAE – User agent & UAProf – WML – WSP – WTP – WDP – Gateway. MMS: Architecture – Transaction Flows	18
Unit V	CDMA and 3G: Spread spectrum technology. IS 95: Speech and Channel Coding – Architecture – Channel Structure. CDMA vs. GSM – Wireless Data. 3G: IMT & CDMA 2000 – Applications on 3G. Wireless LAN: Advantages – IEEE 802.11 standards – Types – 802.11 Architecture – Mobility – Deploying – Mobile Ad Hoc networks and sensor networks – Security – Wi-Fi vs. 3G	18
	Total Contact Hrs	**90**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Asoke K Talukder, Hasan Ahmed, Roopa R Yavagal	Mobile Computing: Technology, Applications and Service Creation	TMH, 2nd Edition	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Jochen Schiller	Mobile Communication	Pearson Education Asia, 2nd Edition	2017
2	Christoffer Andersson	GPRS and 3G Wireless Applications	John Wiley and son's	2012
3	Raj Kamal	Mobile Computing	Oxford University Press, 3rd Edition	2019

Web Resources

1. https://nptel.ac.in/courses/106/106/106106147/
2. https://www.tutorialspoint.com/mobile_computing/index.htm
3. https://minigranth.in/mobile-computing-tutorial/bluetooth-technology-mobile-computing
4. https://www.educba.com/gprs-architecture/
5. https://www.javatpoint.com/wireless-lan-introduction

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr.K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc			Programme Title:	Computer Technology	
Course Code:	25UCT620			Title	Batch:	2025 – 2028
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Sem.	-	CC LAB IX: Mobile Application Development Lab	Semester :	VI
					Credits:	2

Course Objective

To learn and create the Activities and various user interfaces such as textbox, labels, List Box, Combo Box, Checkbox and Radio Button with Toast messages.
To create simple android application for arithmetic calculations

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the basic concepts of Android Programming	K3
CO2	know how to create various user interfaces with Toast messages and simple applications	K4
CO3	Develop programs using API controls	K3
CO4	Learn the basic concepts of Android Programming	K4
CO5	Knows working with SQLite database	K4

Mapping

PO / PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Write the steps for installation and configuration of android in Windows OS. 2. Write a program to demonstrate usage of two textbox (Edit Text), Label(Text view) and Button widgets in android and perform addition of two numbers. 3. Write a program and demonstrate the graphical layout orientation. 4. Write a program to demonstrate usage of List Box with Toast (Message Box). 5. Write a program to demonstrate usage of Combo Box with Toast (Message Box). 6. Write a program to demonstrate usage of Snippers with Toast (Message Box). 7. Write a program to demonstrate usage of Text Area, with Toast 8. Write a program to demonstrate usage of Checkbox with Toast, 9. Write a program to demonstrate usage of Radio Button with Toast 10. Write a program and calculate the simple interest and compound interest using its API controls.	75
Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc.			Programme Title:	Computer Technology	
Course Code:	25UCT621			Title	Batch:	2025 – 2028
					Semester:	VI
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Sem.	-	CC LAB X: Cloud Workspace Lab	Credits:	2

Course Objective

To reinforce human connections is even more important when people are working remotely and interacting with their customers digitally.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To illustrate the concept of quickly schedule meetings and events and get reminders about upcoming activities using calendar	K3
CO2	Understand and integrate skills such as creating, editing, sharing, and customizing documents using documents.	K4
CO3	Validate the idea of creating and presenting professional presentations for sales, projects, training modules, and much more using Slides	K3
CO4	Develop data visualization options in Google Sheets, as well as how to use Google Forms	K4
CO5	Illustrate the concept of GMail and drives	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Calendar: Create and manage events 2. Docs: Create and manage comments and action items, set preferences tosuit your work style, and use the Google Docs Explore tool. 3. Drive: Organize, protect, and share files. 4. Gmail : Compose, send, and reply to messages. 5. Meet & Chat : Manage video meetings and collaborate using instant messages 6. Sheets: Create and edit spreadsheets directly in your browser—no othersoftware is required. 7. Sheets Advanced Topic: Apply themes and conditional formatting, anduse advanced formulas and functions 8. Slides: Create and collaborate on professional presentations for proposals, sales, marketing, or training 9. Form: To create online forms and surveys with multiple question types	75
Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. Rajaniesh Signature:

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Programme Code:	B.Sc.			Programme Title:	Computer Technology	
Course Code:	25UCT622			Title	Batch:	2025 – 2028
				Project	Semester:	VI
Lecture Hrs./Week or Practical Hrs./Week	-	Tutorial Hrs./Sem.	-		Credits:	2

Course Objective

1. To understand and select the task based on their core skills.
2. To get the knowledge about analytical skill for solving the selected task.
3. To get confidence for implementing the task and solving the real time problems.
4. Express technical and behavioral ideas and thought in oral settings.
5. Prepare and conduct oral presentations

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To recollect the programming language concepts to think objectively, analytically, critically in developing industry oriented applications	K3
CO2	To comprehend about the data base connectivity using front end and back end tools	K4
CO3	To validate the application software by various types of testing and its implementation in real environment	K5
CO4	Design engineering solutions to complex problems utilizing a systems approach.	K4
CO5	Demonstrate the knowledge, skills and attitudes of a professional engineer.	K5/K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	H	H	M	H	M
CO3	H	M	H	M	H	M	H	H	H	M	H	M
CO4	M	H	M	H	M	H	M	H	H	H	M	H
CO5	H	M	H	M	H	M	H	H	H	M	H	M

* H-High; M-Medium; L-Low

COMPUTER SCIENCE PROJECT and VIVA VOCE

Guidelines

Introduction

The title of the project work and the organization will be finalized at the end of fifth Semester. Each student will be assigned with a Faculty for guidance. The Project work and coding will be carried by using the facility of computer science lab as well as in the organization. Periodical review will be conducted to monitor the progress of the project work. Project report will be prepared and submitted at the end of the semester. External examiner appointed by the Controller of Examination will conduct the viva voce examination along with respective guide.

Area of Work

- Web Based Development
- Mobile app development
- Website development
- IoT Projects
- Big Data and Data Mining Projects
- Cloud Computing Projects
- Networking Projects
- Artificial Intelligence and Machine learning Projects
- Data Analytics Projects using Python, R, Tableau etc.
- System Software
- Web Security Projects
- Image Processing

Methodology

Arrangement of Contents

The sequence in which the project report material should be arranged and bound as follows:

1. Cover Page & Title Page
2. Bonafide Certificates
3. Declaration
4. Acknowledgement
5. Synopsis
6. Table of Contents
7. Chapters
8. Appendix
9. References

Format of Table of Contents

TABLE OF CONTENTS

Chapter No.	Title	Page No.
i	**Certificates**	
ii	**Declaration**	
iii	**Acknowledgement**	
iv	**Synopsis**	
1.	**Introduction**	
	Introduction	
	Objective of the Project	
	Company Profile	
	System Specification	
	Hardware Specification	
	Software Specification	

2 **System Study**

Existing System

2.1.2 Drawbacks

Proposed System

Planning and Scheduling

3 **System Design**

3.2 Overview of the Project

Modules of the Project

Input Design Format

Output Design

Table Design

Supporting Diagrams (ER/DFD/Use Case)

4 **Implementation and Testing**

Coding Methods

Testing Approach

Implementation and Maintenance

5 **Project Evaluation**

Project Outcome

Limitation of the Project

Further Scope of the Project

6 **Conclusion**

7 **Appendix**

Source Code

Screenshots and Reports

8 **References**

Size of the Project

The Project Report contents should be maximum of not exceeding 70 pages.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT6S1			Title	Batch:	2025 - 2028
				SEC IV – Naan Mudhalvan: MERN Stack Development Lab	Semester:	VI
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0		Credits:	02

Course Objective

To educate the basic techniques for extracting information from large datasets such as the web and large document repositories.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To keep in mind about the data analysis using Excel.	K3
CO2	To realize about sorting, cost benefit analysis, calculating mean and standard deviation	K4
CO3	To validate the use of analysis tools to conduct regression and forecasting and calculate descriptive statistics	K5
CO4	Visualize the data using basic graphs and plots	K4
CO5	Dissect the outliers if any in the data set and adapt techniques for handling multi-dimensional data	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	M	H	H	H	H	M	H	H	H	H
CO2	H	H	H	H	H	H	H	H	L	H	H	M
CO3	H	H	H	M	H	L	H	H	H	M	H	H
CO4	L	H	L	H	L	H	M	M	L	H	M	H
CO5	H	H	H	H	M	H	H	H	H	M	H	L

* H-High; M-Medium; L-Low

25UCT681

Units	Content	Hrs
Unit I	**Sample Programs** 1. Create a Program Simple Calculator application using React JS 2. Create a Voting application Using React JS 3. Create a Simple Login form Using React JS 4. Write a Node .js Program to replace string using regular expression 5. Write a node .js Program to get file or directories of a directory in JSON format. 6. Create HTTP server and Interacting with client using Node JS 7. Create new Recode in Mongo DB with all Operations 8. Create a REST backend API with Express 9. Configure the Controllers with Mongo DB 10. Build Migration of Data into Mongo DB 11. Develop an application to store , Maintain data using Node JS 12. Build a full stack app with React, Redux, Node, Express and Mongo DB.	30
	Total Contact Hrs	**30**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
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Name: Dr. R. Jayaprakash Signature:	Name: Dr. R. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	25UCT6S2			Title	Batch:	2025 - 2028
				SEC II – Naan Mudhalvan : Animation Lab	Semester:	VI
Practical Hrs./Week	2	Tutorial Hrs./Sem	0		Credits:	02

Course Objective

To focus on using Photoshop and Flash to become expertise in life-drawing and related techniques.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Gained basic concepts and understanding of tools related to 3D production	K2
CO2	To familiarize with various approaches, methods and techniques of Animation Technology.	K3
CO3	Emphasis will be on conceptualization, creativity, and visual aesthetics	K4
CO4	Developing concepts, storyboarding and production of several 2 dimensional animations will be accomplished.	K5
CO5	Takes through various aspects of animation using a variety of 2 dimensional software.	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	M	H	H	H	H	M	H	H	M	H
CO2	H	M	H	L	H	H	H	H	L	H	H	M
CO3	H	H	H	M	H	L	H	H	H	M	H	H
CO4	M	H	L	H	L	H	M	H	H	H	H	H
CO5	H	H	H	H	M	H	H	H	H	M	L	H

* H-High; M-Medium; L-Low

Units	Content	Hrs
Sample Programs	Using Photoshop and Animation, • Volcano Eruption • Drawing and Creating Text with Effects • Rotating Globe • Fog Effect • Lightning Effect • Animated Effect • Raining Effect • Cropping an Object	30
	Total Contact Hrs	**30**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. K. S. Leelavathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	25UCT6AL			Title	Batch:	2025 – 2028
Lecture Hrs./Week or Practical Hrs./Week	SS	Tutorial Hrs./Sem.	SS	Advanced Learner Course (ALC) –II Data Mining and Warehousing	Semester:	VI
					Credits:	02

Course Objective

To give a better understanding of various concepts of Data mining includes KDD, Association rules, Classification, Clustering, different types of mining and also about big data analytics.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To keep in mind the various concepts of data mining	K2
CO2	To understand the types of data mining and analytics	K1
CO3	To execute data mining algorithms for finding hidden interesting patterns in data	K3
CO4	To evaluate various data mining algorithms and analysis of big data.	K4
CO5	Apply conceptual frame works of data mining	K5

Mapping

PO / PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	M	H	H	H
CO2	H	M	H	L	H	H	H	M	L	M	H	M
CO3	H	H	M	H	L	H	M	H	H	H	L	H
CO4	H	H	H	M	H	M	H	L	H	M	H	H
CO5	H	H	H	H	M	H	L	H	H	H	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	**Data mining and the data warehouse**: Introduction - Data mining -Kinds of data- functionalities- classification-Task primitives-Integration with database or warehouse-Major issues. **Mining frequent patterns, association and correlations:** Basic concepts. **Efficient and scalable frequent item set mining methods:** Aprior Algorithm-Generating association rules.	
Unit II	**Classification and prediction:** Definition – Issues - **classification by Decision tree* Induction – Bayesian classification-rule based classification - classification by back propagation - support vector machine.	
Unit III	**Cluster analysis:** Definition - types of data in cluster analysis - categorization of major clustering methods - partitioning methods - hierarchical methods.	SS
Unit IV	Spatial data mining - multimedia data mining - text mining - mining the www - **data mining Applications.*	
Unit V	**Data warehousing :** Data warehousing Components – Building a Data warehouse – Mapping the Data Warehouse to a Multiprocessor Architecture – DBMS Schemas for Decision Support – Data Extraction, Cleanup, and Transformation Tools – Metadata.	
	(*SS – Self Study)Total Contact Hrs	**SS**

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Jiawei Han and Micheline Kamber	Data Mining concepts and techniques	Elsevier publication.	2005

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Dr. Aravind Sathi	Big Data Analytics:Disruptive Technologies for Changing the Game	MC Press publication, first edition	2012
2	Margaret H. Dunham	Data Mining Introductory and Advanced Topics	Pearson Education Publications	2009
3	Alex Berson and Stephen J.Smith	Data Warehousing, Data Mining and OLAP	Tata McGraw – Hill Publications.	2008

Web References

1. https://www.javatpoint.com/data-mining
2. https://www.ibm.com/topics/data-mining
3. https://bootcamp.rutgers.edu/blog/what-is-data-mining/
4. https://www.geeksforgeeks.org/data-mining/
5. https://www.simplilearn.com/what-is-data-mining-article

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Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. C. Keerthana Signature:	Name: Dr. M. Rajasenathipathi Signature	Name: Mr. K. Srinivasan Signature:	Name: Signature:

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