

Nallamuthu Gounder Mahalingam College

Department of Information Technology

Vision

The Vision of our Department is to assist the student in becoming proficient in using latest Technologies, and critical thinking being prepared for the next level of education and successfully attaining the skills and proficiencies required of today's work force.

Mission

The Information Technology department is committed to providing the highest quality technology services and support, thereby enhancing the operation, and educational capabilities among the students.

Program Educational Objectives:

PEO1	Prepare the students to engage in independent learning for developing the Applications based on industry and social needs.
PEO2	To train students to a level where they can readily compete for the higher educational programs.
PEO3	To make students as computer professionals, who can be directly employed or start their own work as Programmer, Web Designer, Database User, Testing professional, Designer of a System and Network administrator or implementer.
PEO4	To familiar with the contemporary issues, latest trends in technological development and there by innovate new ideas and solutions to existing problems.
PEO5	To participate effectively as a member of a development team and undertake leadership roles in appropriate arena.

Program Outcomes:

PO1	Problem Solving and Communication Skill: Ability to apply knowledge of mathematical fundamentals and programming ability to solve complex problems in the field of Information Technology.
PO2	Disciplinary Knowledge: Exhibit the knowledge of emerging technologies and tools to create need-based, customized applications for industrial automation.
PO3	Entrepreneurship skills: Ability to become an entrepreneur by acquiring skills related to their domain and addressing industry and social needs with environmental considerations.
PO4	Research Related Skills: Ability to cultivate research-based knowledge for innovating new ideas and solutions to contemporary issues by linking knowledge of computer science with other domains.
PO5	Moral and Ethical Awareness/ Reasoning: Exhibit professional ethics in the usage of digital data.
PO6	Life Long Learning: Knack to pursue higher studies of specialization courses by clearing entrance exams in top institutions.
PO7	Critical Thinking: Aptitudes to analyze, design, and implement tools and applications to solve real-world hitches.
PO8	Information / Digital Literacy: Ability to handle different types of networks, hardware, and other resources on a large-scale platform for Industry 4.0.
PO9	Data Analytic Skills: Capability of presenting and securing voluminous data with emerging tools and techniques.
PO10	Emerging Technologies: Skill enrichment to provide web-based solutions using emerging technologies and tools.

Program Specific Outcomes:

PSO1	Embracing the Cutting Edge: To identify and utilize the latest updates on recent technologies by applying knowledge on Artificial Intelligence, Internet of Things, and Mobile computing.
PSO2	Strategic Fusion: To develop the ability to integrate Information technology with business applications and to impart knowledge on the fundamentals of research.

Traceability Matrix of Generic Program Learning Outcomes with Generic Program Education Objectives

	PEO1	PEO2	PEO3	PEO4	PEO5
PO1: Problem solving and Communication Skill	M	L	M	H	M
PO2: Disciplinary knowledge	H	M	M	H	M
PO3: Entrepreneurship skills	L	L	H	M	H
PO4: Research-related skills	L	H	M	M	M
PO5: Moral and ethical awareness/reasoning	L	M	H	L	H
PO6: Life Long learning	M	H	L	L	L
PO7: Critical thinking	H	M	H	H	M
PO8: Information/digital literacy	H	L	H	H	L
PO9: Data analytic skills:	L	L	H	H	L
PO10: Emerging Technologies	H	L	M	H	M

Mapping (POs and PSOs with COs): H - High, M - Medium, L – Low

NGM College - Department of Information Technology
Scheme of Examination For 2025 - 2028
Choice Based Credit System & OBES

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	25UIT101	CC - I : Programming in 'C'	4	-	4	3	25	75	100	4
	25UIT102	CC - II : Computer System Architecture	5	-	-	3	25	75	100	4
	25UIT1A1/ 25UIT1A2	GE I - Allied : Mathematics - I (Vedic & Statistics) / Numerical Methods	4	-	5	3	25	75	100	4
	25UIT103	CC Lab - I : Programming in 'C'	-	4	-	3	20	30	50	2
IV	25UIT1S1	SS Lab. – I : Web Designing (HTML) Self study	-	-	-	2	-	50	50	2
	25EVS101	AECC I: Environmental Studies	2	-	-	2	-	50	50	2
	25HEC101	Human Excellence - Personal Values & Indian Yoga Practice - I	1	-	-	2	20	30	50	1
V		Extension Activities – Annexure I	-	-	-	-	-	-	-	-
EC		Online Course (Optional) (MOOC / NPTEL / SWAYAM)	-	-	-	-	-	-		Grade
Total			26	4	9				700	25

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	Tamil Paper - 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	25UIT204	CC - III : Object Oriented Programming with Java	4	-	-	3	25	75	100	4
	25UIT205	CC - IV : Data Structures	5	-	-	3	25	75	100	4
	25UIT2A1 /25UIT2A2	GE II - Allied : Mathematics II (Discrete Mathematics) / Operations Research	4	-	10	3	25	75	100	4
	25UIT206	CC Lab - II : Programming in Java with Data Structures	-	4	-	3	20	30	50	2
IV	25UIT2S1/ 25UEL2S2	SEC I: Naan Mudhalvan: Web Programming Lab. (CSS with Javascript)/ Professional Skills	-	2	-	2	-	50	50	2
	25HEC202	Human Excellence - Family Values & Indian Yoga Practice – II	1	-	-	2	20	30	50	1
EC	25CMM201	IKS: Manaiyiyal Mahathuvam - I	15Hrs./ Sem	-	-	2	-	50	50	Grade
	25CUB201	IKS: Uzhavu Bharatham – I	15Hrs./ Sem	-	-	2	-	50	50	Grade
		Online Course (Optional) (MOOC / NPTEL / SWAYAM)	-	-	-	-	-	-	-	Grade
Total			24	6	10				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.

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	Tamil Paper - 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	25UIT307	CC - V : Operating Systems	5	-	-	3	25	75	100	4
	25UIT308	CC - VI : Relational Database Management System	4	-	-	3	25	75	100	4
	25UIT3A1/ 25UIT3A2	GE III - Allied : Microprocessor / Embedded Systems	4	-	-	3	25	75	100	4
	25UIT309	CC Lab. - III : RDBMS	-	4	-	3	20	30	50	2
	25UIT310	CC Lab. – IV: Excel Lab.	-	4	-	3	20	30	50	2
IV	25UIT3N1/ 25UIT3N2	Non Major Elective - I : Social Networks / Non Major Elective - I : Hardware & Networking	2	-	-	2	-	50	50	2
	25HEC303	Human Excellence - Professional Values & Ethics – Indian Yoga Practice - III	1	-	-	2	20	30	50	1
	25UHW301	Health and Wellness	2 *	-	-	-	100 Reduce To 25	-	25	1
EC	25CMM302	IKS: Manaiyiyal Mahathuvam - II	15 Hrs. /Sem		-	2	-	50	50	Grade
	25CUB302	IKS: Uzhavu Bharatham – II	15Hrs . /Sem		-	2	-	50	50	Grade
	25UIT3VA	VAC I : Workplace Digitization	30 Hrs.		-	3	30	70	100	2*
			22	8	-	-	-	-	700	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;

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	Tamil Paper - 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	25UIT411	CC - VII : Data Communication and Networks	5	-	-	3	25	75	100	4
	25UIT412	CC - VIII : Advanced Java Programming	4	-	5	3	25	75	100	4
	25UIT4A1/ 25UIT4A2	GE IV - Allied : Software Engineering/Software Project Management	5	-	-	3	25	75	100	4
	25UIT413	CC Lab.- V : Programming in Advanced Java	-	5	-	3	20	30	50	2
IV	25UIT4S1/ 25UIT4S2	SEC II: Naan Mudhalvan: PHP. / Quantitative Aptitude	-	2	-	2	-	50	50	1
	25UIT4N1 / 25UIT4N2	Non Major Elective - II : Data Analytics / Non Major Elective - II : Cyber Security	2	-	-	2	-	50	50	2
	25HEC404	Human Excellence - Social Values & Indian Yoga Practice – IV	1	-	-	2	20	30	50	1
V		Extension Activities - Annexure I	-	-	-	-	50 Reduce To 25	-	25	1
EC	25CMM403	IKS: Manaiyiyal Mahathuvam - III	15 Hrs./Sem			2	-	50	50	Grade
	25CUB403	IKS: Uzhavu Bharatham - III	15 Hrs./Sem		-	2	-	50	50	Grade
	25UIT4VA	VAC II: Data Visualization	30 Hrs.		-	3	30	70	100	2*
	Total		23	7					750	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; *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	25UIT514	CC -IX : Python Programming	5	-	-	3	25	75	100	4
	25UIT515	CC - X : Visual Programming	5	-	5	3	25	75	100	4
	25UIT5E1/ 25UIT5E2/ 25UIT5E3	DSE -I: #	5	-	-	3	25	75	100	4
	25UIT516	CC Lab - VI : Visual Programming	-	5	-	3	20	30	50	2
	25UIT517	CC Lab - VII : Python Programming	-	5	-	3	20	30	50	2
	25UIT5S1/ 25UIT5S2	SEC III: Digital Content Development Lab. (Scribus / Canva)	-	4	-	-	-	50	50	2
IV	25HEC505	Human Excellence - National Values & Indian Yoga Practice - V	1	-	-	2	20	30	50	1
EC	25CSD501	Soft Skills Development - I	-		-	-	-	-	-	Grade
	25GKL501	General Knowledge (Self Study)	SS		-	2	-	50	50	Grade
	25UIT5AL	ALC – I Cyber Law (Optional) – self study	SS		-	-	-	100	100	2**
Total			16	14	5				500	19
Discipline Specific Elective (DSE) – I # 25UIT5E1: Data Mining 25UIT5E2: Cloud Computing 25UIT5E3: Wireless Networks										

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	25UIT618	CC - XI : Information Security	6	-	-	3	25	75	100	4
	25UIT6E4/ 25UIT6E5/ 25UIT6E6	DSE – II : ##	5	-	-	3	25	75	100	4
	25UIT6E7/ 25UIT6E8/ 25UIT6E9	DSE – III : ###	6	-	-	3	25	75	100	4
	25UIT619	CC Lab - VIII : Software Testing & Data Visualization Tools	-	5	-	3	20	30	50	2
	25UIT620	CC Lab IX: Open Source Methodologies	-	5	-	-	20	30	50	2
	25UIT621	Project	-	-	-	-	25	75	100	3
IV	25UIT6S1/ 25UIT6S2	SEC IV : Naan Mudhalvan: Generative AI Web development Lab (Wix / Framer)	-	2	-	2	-	50	50	2
	25HEC606	Human Excellence - Global Values & Indian Yoga Practice - VI	1	-	-	2	20	30	50	1
EC	25CSD602	Soft Skills Development - II	-	-	-	-	-	-	-	Grade
	25UIT6AL	ALC - II Digital Forensics (Optional) – Self Study	SS -		-	-	-	100	100	2**
Total			18	12					600	22
Grand Total									3900	140+8*
Discipline Specific Elective (DSE) – II ##					Discipline Specific Elective (DSE) – III ###					
25UIT6E4: Machine Learning 25UIT6E5: Internet of Things 25UIT6E6: Digital Marketing					25UIT6E7 : Big Data Analytics 25UIT6E8 : Artificial Intelligence 25UIT6E9 : Block Chain Technology					

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

IKS - Indian Knowledge System

AL-Advanced Learner Course (Optional); VA-Department Specific Value Added Course;

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

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

Grand Total = 3900; Total Credits = 140

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)

(i) 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. 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

3. Project:

Paper	Maximum Marks	Marks for		
		CIA	CEE	
			Evaluation	Viva-voce
Project	100	25	50	25

* 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.

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		

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 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, Use case 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	

Components for CEE: 75 Marks

Components for CEE	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		

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	At ease; answered all questions but failed to elaborate & Material sufficient for clear understanding AND effectively presented.	At ease 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 not 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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT101			Title	Batch:	2025 - 2028
Lecture Hrs./Week	4	Tutorial Hrs./Sem.	4	CC I: Programming in 'C'	Semester:	I
					Credits:	4

Course Objective

To cultivate programming ability on logic development, clear view on control structures, pointers (memory management), file handling, 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 C programming.	K1
CO2	To understand the concepts of problem solving techniques.	K2
CO3	To apply concepts and techniques for implementation.	K3
CO4	To analyze the level of logical thinking in program development	K4
CO5	To evaluate the program output.	K5

Mapping

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

Units	Content	Hrs. L+T
Unit I	Programming development methodologies - Programming style – Problem solving techniques: Algorithm, Flowchart, Pseudo code. Structure of a C program – C character set - Delimiters – Keywords – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring and initializing variables – Type conversion. Operators and Expressions.	13
Unit II	Formatted and Unformatted I/O functions. Decision statements: If, If...Else, Nested If. Else, Break, Continue, Go to, Switch, Nested switch...case, switch...case and nested ifs statements. Loop control statements: For, Nested for, While, Do...while and with while loops.	12+ 1
Unit III	Arrays: Initialization, definition, characteristics, One dimensional, predefined streams, two dimensional, three or multi-dimensional arrays – scanf (), printf (). Strings: Declaration and initialization, displaying, standard functions and applications. Pointers: Futures, Declarations, arithmetic operations, pointers and arrays, two dimensional arrays, array of pointers, pointers to pointers, pointers and strings, void pointers.	10+1
Unit IV	Functions: Definition, declaration, return statements, types, call by value and reference, returning more multiple values, function as an argument, function with arrays and pointers. Structure and Union: Features of structure, Declaration and initialization of structure, Structure within structure, Array of structure, Pointer to structure, structure and functions, typedef, Bit fields, Enumerated data types, Union, union of structures.	11+1
Unit V	Files: Streams and file types, Steps for file operation, File I/O, Structures read and write, Other file functions, searching errors in reading or writing files, low level disk I/O, Command line arguments, I/O redirection. Preprocessor directives: #define, #include, #ifndef, #error, #line, #pragma, and Predefined macros.	10+1
Total Contact Hrs.		60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

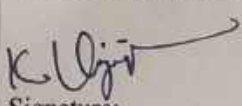
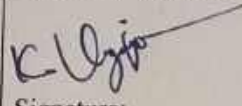
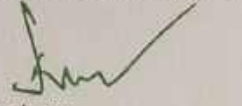
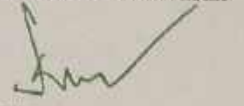
- ❖ Ashok .N. Kamthane. (2009). *PROGRAMMING AND DATA STRUCTURES*. First Indian Print. Pearson Education: ISBN 978-81-317-2423-4.

Reference Books

- ❖ Balagurusamy. E. (2008). *Programming in ANSI C*. Tata McGraw-Hill.
- ❖ PradipDey, ManasGhosh. (2008). *Computer Fundamentals and Programming in C*. Oxford.

Web Reference

- ❖ <https://www.tutorialspoint.com/cprogramming/index.htm>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: K. Vijayakumar  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT	Programme Title:	Information Technology	
Course Code:	25UIT102	Title	Batch:	2025 - 2028
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-	Semester: I
		CC- II : Computer System Architecture	Credits:	4

Course Objective

To obtain the basic knowledge of computer organization, input, output and memory organization.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember basic building block of digital computer system	K1
CO2	To understand the execution sequence of instruction through the processor	K2
CO3	To apply interfacing of various peripheral devices used with the system	K3
CO4	To analyze functioning of various parts of the computer from hardware point of view	K4
CO5	To judge the pros and cons of various types of memory organizations	K5

Mapping

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

Units	Content	Hrs.
Unit I	Binary Systems: Numbers – Conversions – Complements – Codes – Logic. Canonical & Standard Forms. Digital Logic Gates. Simplification of Boolean Functions: Map method – Two & Three Variable Map – Four Variable Map.	16
Unit II	Basic Computer Organization and Design: Instruction Codes - Computer Registers – Computer Instructions – Instruction Cycle – Memory Reference Instructions – InputOutput and Interrupt.	15
Unit III	Central Processing Unit (CPU): General Register Organization – Stack Organization - Instruction Formats – Addressing Modes – Data Transfer and Manipulation – Program Control.	15
Unit IV	Input – Output Organization: Peripheral Devices- Input – Output Interface – Asynchronous Data Transfer - Direct Memory Access (DMA) - CPU-IOP Communication.	14
Unit V	Memory Organization: Memory Hierarchy – Main Memory - Auxiliary Memory - Cache Memory – Associative Memory - Virtual Memory.	15
	Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(Roll Play)

Text Book

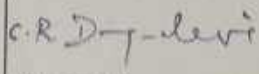
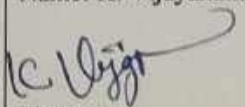
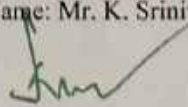
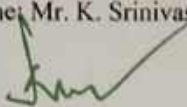
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Reference Books

- ❖ M. Carter. (2001). Computer Architecture. Schaum's outline series, TMH Pub.
- ❖ William Stallings. (2006), Computer System and Architecture, 8th Edition, Pearson Publication.

Web References

- ❖ <https://www.youtube.com/watch?v=aWp8ILQgudI>
- ❖ <https://www.youtube.com/watch?v=OwC4JN64QYY>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title :	Information Technology	
Course Code:	25UIT1A1			Title:	Batch :	2025 - 2028
Lecture Hrs/Week:	4	Tutorial Hrs./ Sem.	5	GE I – Allied : Mathematics – I (Vedic & Statistics)	Semester :	I
					Credits :	4

Course Objective

Learning various Vedic mathematical operations like addition, subtraction, multiplication, division, square, square root etc., also statistical methods like central tendency, dispersion, and probability.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the shortcut notations of addition, subtraction, multiplication, division, square, square root.	K1
CO2	To understand the concepts Central tendency, Range, Dispersion, and Probability.	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	M	M	M	H	H	M	L	-	-	L	-	-
CO2	M	M	H	H	H	H	-	-	-	L	-	M
CO3	H	-	L	H	H	M	M	-	-	-	-	M
CO4	M	M	M	H	H	L	-	-	-	-	-	H
CO5	L	L	M	H	H	M	-	-	-	-	-	M

Units	Content	Hrs. L+T
Unit I	Addition: Introduction, Vedic sutras for addition – Purna puranabhyam, Sankalan Vyavkalanabhyam and Ekadhikena Purvena. Meaning of Vedic Sutras and their applications. Subtraction: Introduction, Vedic Sutra for subtraction – Nikhilam Navatascaramam Dastatah and Vinculum. Meaning and application, Digit Separator Method for subtraction. Multiplication: Introduction, Vedic sutras:- Antyayor dasakepi, Nikhilam Navatascaramam Dastatah, Anurupyena, Ekanyuena Purvena , Antyayoshatakepi, Vamanlvavoh Dasake api, Vamanlyayoh Dasake Gunijah Api and Urdhva- Tiryak, their meanings and applications.	12+1
Unit II	Division: Introduction, Vedic sutra- Nikhilam, Paravartya Yojayet, Urdhva Tiryag and Dhvajanka method – their meanings and applications. Square: Introduction, Vedic Method for squaring: Ekadhikena Purvena, Yavadunam Tavduni kritya Vargena Yojayet, Duplex method and Urdhva Tiryagbhyam, its meaning and applications. Square Root: Introduction, Vilokanam and Duplex Vedic Method of finding square root.	12+1
Unit III	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.	11+1
Unit IV	Dispersion: Range - Mean deviation - Standard deviation - Coefficient of Variation – Quartile Deviation.	9+1
Unit V	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.	11+1
	Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

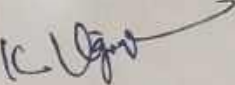
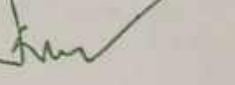
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- ❖ Pillai R. S. N. Bagavathi V. (2019). *Statistical Methods*. 8th Edition, Sultan Chandand Sons & Company Ltd. New Delhi. (Units III ,IV & V)

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- ❖ Gupta. S.C. Kapoor. V.K. (Reprint 2014). *Fundamentals of Mathematical Statistics*. 11th edition. S. Chand and Sons.

Web Reference

- ❖ <https://www.rljdmcdavpselibrary.com/books/vedicmaths.pdf>
- ❖ <https://www.tutorialspoint.com/statistics/index.htm>
- ❖ <https://www.google.com/amp/s/www.edureka.co/blog/statistics-and-probability/amp/>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: K. Vijayakumar  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT		Programme Title :	Information Technology	
Course Code:	25UIT1A2		Title:	Batch :	2025 - 2028
Lecture Hrs/Week:	4	Tutorial Hrs./ Sem.	5	Semester :	I
			GE I –Allied ; Mathematics – I (Numerical Methods)	Credits :	4

Course Objective

To have an in-depth knowledge of various advanced methods in numerical analysis and to use numerical techniques to get numerical solutions of equations like transcendental and non-linear differential equations when ordinary analytical methods fail.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember numerical analysis techniques	K1
CO2	To understand the solution to problems of algebraic and transcendental equations, simultaneous linear equations.	K2
CO3	To solve the problems using Newton forward and backward interpolation	K3
CO4	To analyze the differential equations	K4
CO5	To evaluate the ordinary differential equations	K5

Mapping

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

Units	Content	Hrs. L+T
Unit I	The solution of Numerical Algebraic and Transcendental Equations: Introduction - The Bisection method - The iteration method - The method of false position (Regula - Falsi Method) - Newton Raphson method. Simultaneous Linear Algebraic Equations: Introduction - Gauss Elimination Method - Gauss Jordan Method - Computation of the inverse of a Matrix using Gauss's Elimination Method.	13+1
Unit II	Simultaneous Linear Algebraic Equations: Iterative Methods - Gauss-Jacobi Method - Gauss-Seidal Method - Comparison of Gauss elimination and Gauss-Seidal Iteration methods.	9+1
Unit III	Interpolation: Introduction - Linear interpolation - Gregory Newton Forward and Backward interpolation Formula - Equidistant terms with one or more missing values.	9+1
Unit IV	Numerical Differentiation: Introduction - Newton's forward difference formula to compute the derivatives - Newton's backward difference formula to compute the derivatives. Numerical Integration: The Trapezoidal rule - Simpson's one third rule - three fourth rule.	12+1
Unit V	Numerical Solution of Ordinary Differential Equations: Solution by Taylor Series - Taylor Series method for higher order differential equations- Euler's method - Improved Euler's method - Modified Euler method - Runge Kutta method - Second order Runge Kutta Method	12+1
	Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book:

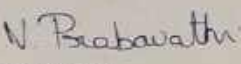
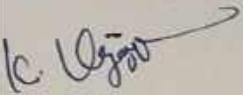
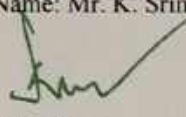
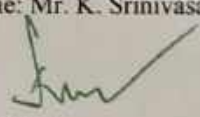
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- ❖ Venkataraman M. K, Numerical Methods in Science and Engineering, The National Publishing Company, Madras, 2009.

Web Reference

- ❖ <https://nptel.ac.in/courses/111107105>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B. Sc. - IT			Programme Title:	Information Technology		
Course Code:	25UIT103			Title	Batch:	2025 - 2028	
Practical Hrs./Week:	4	Tutorial Hrs./Sem.	-	CC Lab. - I Programming in 'C'	Semester:	I	
					Credits:	2	

Course Objective

To understand, learn and apply the various programming concepts of 'C' and improving the programming skills in 'C'.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To apply appropriate mathematical and scientific program logic	K3
CO2	To apply appropriate pointers, structure, and files	K3
CO3	To apply appropriate data structure concepts	K3
CO4	To analyze a problem in different logic	K4
CO5	To verify the solutions of various problems with input and output data	K5
CO6	To create a program using preprocessor directives.	K6

Mapping

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

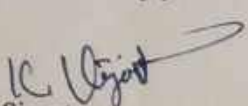
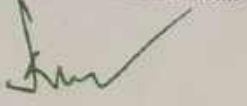
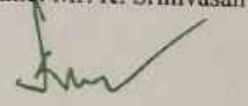
Content	Hrs.
SAMPLE PROGRAM LIST	
Test I 1. Execute a C program to implement basic operators. 2. Execute a C program to implement if, if-else, nested if. 3. Develop a C program to implement switch case. 4. Develop a C program to implement while loop. 5. Create a C program to implement do-while loop. 6. Develop a C program to implement for loop. 7. Create a C program to implement one dimensional array. 8. Execute a C program to implement multi-dimensional array. 9. Create a C program to implement strings. 10. Execute a C program to implement basic pointer operations.	60
Test II 11. Develop a C program to implement array of pointers. 12. Create a C program to implement functions using call by value. 13. Execute a C program to implement functions using call by reference. 14. Create a C program to implement structure and array of structure. 15. Develop a C program to implement union. 16. Execute a file to perform read and write operations using file accessing modes. 17. Create a C program to implement preprocessor directives.	
Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Assignments, Group Discussion

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: K. Vijayakumar	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
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Programme Code:	B.Sc. - IT		Programme Title:	Information Technology	
Course Code:	25UIT1S1		Title	Batch:	2025 - 2028
Practical Hrs./Week	SS	Tutorial Hrs./Sem.	SS Lab. - I : Web Designing (HTML)	Semester:	I
		-		Credits:	2

Course Objective

To know the Basic and Advanced Tags of HTML.

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

CO	CO Statement	Knowledge
CO1	To develop webpage using various HTML tags	K3
CO2	To analyze various HTML formats for web pages	K4
CO3	To assess the various tags in HTML for creating applications	K5
CO4	To verify the usage of HTML in applications	K5
CO5	To create applications using Advanced Tags of HTML	K6

Mapping

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

Content	Hrs.
SAMPLE PROGRAM LIST HTML 1. Experiment with Webpage creation using basic tags. 2. Apply Ordered List and Un-Ordered List in web pages 3. Apply Table Tags in web pages 4. Experiment with Frame creation. 5. Apply Font Attributes in web pages 6. Apply advanced HTML tags in web pages	SS

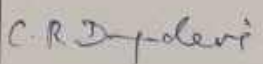
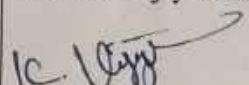
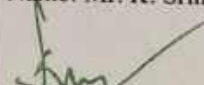
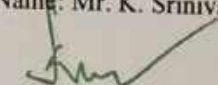
Pedagogy:

Direct Instruction, Digital Presentation
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Assessment Methods:

Test, Assignments, Group Task(GD)

WEB REFERENCES:❖ <https://www.w3schools.com/>❖ <https://www.tutorialspoint.com/html/index.htm>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc.- IT			Programme Title:	Information Technology	
Course Code:	25UIT204			Title	Batch:	2025 - 2028
Lecture Hrs./Week	4	Tutorial Hrs./Sem.	-	CC - III: Object Oriented Programming with Java	Semester:	II
					Credits:	4

Course Objective

to provide knowledge about basic concepts of OOPs, methods, interfaces, multithreads, packages

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 basic concepts of OOPs	K1
CO2	To apprehend a knowledge about how to use java for internet applications	K2
CO3	To implement file, applet, thread concepts for web applications	K3
CO4	To review the usage of packages, exceptions and string concept for developing stand - alone java programs	K4
CO5	To assess the various types of stream classes and file handling	K5

Mapping

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

Units	Content	Hrs.
Unit I	Fundamentals of Object Oriented Programming: Introduction – Paradigm - Basics – Benefits – Applications. Java Evolution: History – Features – Difference from C/C++ – Web browsers – Hardware and software requirements – Support systems –Environment. Overview of Java language - Constants, Variables and Data types.	12
Unit II	Classes, Objects and Methods: Introduction – Defining – Field, Method Declaration – Creating Objects – Accessing class members – Constructors – Method Overloading - Static Members – Nesting of Methods – Inheritance – Overriding – Final Variables, Methods and Classes. Finalizer Methods – Abstract methods and classes – Methods with Varargs – Visibility control. Arrays, Strings and Vectors: Introduction – One dimensional – Creation – Two-dimensional – Strings - Vectors – Wrapper classes – Enumerated types – Annotations.	13
Unit III	Interfaces: Multiple Inheritance – Introduction – Defining – Extending - Implementing Interface – Accessing Interface Variables. Packages: Putting classes together: Introduction – API packages – System packages – Naming Conventions – Creation – Accessing – Using – Adding a Class to a package – Hiding classes – Static import.	12
Unit IV	Multithreaded Programming : Introduction – Creation – Extending – Stopping and blocking – Life cycle – Using thread methods – Exceptions – Priorities – Synchronization – Implementing the Runnable interface – Inter-thread communication. Managing Errors and Exceptions – Introduction – Types of Errors- Exceptions – Syntax of Exception Handling- Multiple catch statements- Using Finally statement-Throwing our own Exceptions-Improved Exception Handling-Using Exceptions for Debugging	12
Unit V	Managing Input / Output Files: Introduction – Streams – Stream Classes – Byte Stream – Character Stream – Using Stream – Useful I/O Classes – File Classes – I/O Exceptions – File Creation – Reading Writing Characters and Bytes – Primitive Data Types – Concatenating and Buffering - Random Access File – Interactive I/O – Other Stream Classes.	11
Total Contact Hrs.		60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD)

Text Book

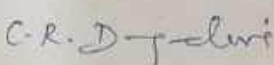
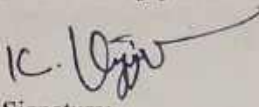
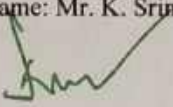
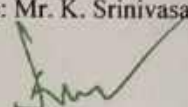
- ❖ E. Balagurusamy. (2019). "Programming with JAVA – A Primer", Tata McGraw-Hill Publishing Company Limited, 6th Edition.

Reference Books

- ❖ Herbert Schild, (2002). Java Complete Reference, 5th Edition, Tata McGraw Hill Pub
- ❖ Y. Daniel Liang (2018) Intro to Java Programming (Comprehensive Version), 10th Edition Pearson Publication.

Web Reference

- ❖ https://youtu.be/uWYPVz_i7W4
- ❖ <https://youtu.be/7s3xDfdqfDw>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B. Sc. - IT		Programme Title:	Information Technology	
Course Code:	25UIT205		Title	Batch:	2025 - 2028
Lecture Hrs/Week:	5	Tutorial Hrs./Sem.	- CC- IV: Data Structures	Semester:	II
				Credits:	4

Course Objective

To have adequate knowledge about linear data structures, queues, linked list, trees, searching, sorting and hashing.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect basic concepts of data handle.	K1
CO2	To comprehend data structures like stack, queue, linked list and trees..	K2
CO3	To implement data structure techniques in problem solving	K3
CO4	To analyze space and time complexity of algorithms and to evaluate various data structures.	K4
CO5	To evaluate different algorithm results through the program outputs	K5

Mapping

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

Units	Content	Hrs.
Unit I	Arrays: Introduction to Linear and Non Linear Data Structures - Arrays in C – Single Dimensional Arrays - Array Operations. Linked List: Introduction to List and Linked Lists - Dynamic Memory Allocation - Basic Linked List Operations-Doubly Linked List - Circular Linked List - Atomic Node Linked List - Linked List in Arrays - Linked List versus Arrays.	16
Unit II	Stacks: Introduction to Stacks - Stack as an Abstract Data Type - Representation of Stacks Through Arrays - Representation of Stacks Through Linked List - Applications of Stacks - Stacks and Recursion.	14
Unit III	Queues: Introduction - Queue as an Abstract Data Type - Representation of Queues - Circular Queues - Double Ended Queues - Dequeue - Priority Queues - Application of Queues.	14
Unit IV	Binary Trees: Introduction to nonlinear Data Structure - Introduction to Binary Trees - Types of Trees - Definitions - Properties - Representation - Operations – Traversal - Reconstruction - Counting Number - Applications. Searching: An Introduction - Binary Search-Indexed Sequential search.	16
Unit V	Graph: Traversal – Spanning trees. Sorting: Sorting - An Introduction - Efficiency of sorting Algorithms - Bubble sort - Selection sort - Quick sort - Insertion sort - Merge sort - Binary Tree Sort - Radix sort - Shell sort – Heap sort. Hashing: An Introduction - Hash functions.	15
	Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

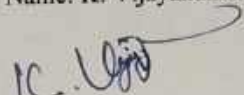
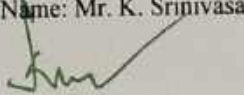
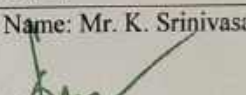
- ❖ ISRD group. (2010). Data structure using C. Seventh Reprint. Tata McGraw-Hill.

Reference Books

- ❖ Aaron .M. Tanenbaum, YedidyeLangsam, Moshe .J. Augenstein. (2007). *Data Structure using C*. 3rd Edition. PHI Pub.
- ❖ Ashok. N. Kamthane. (2004). *Programming And Data Structures*. First Indian Print. Pearson Education. ISBN 81-297-0327-0.

Web Reference

- ❖ https://www.tutorialspoint.com/data_structures_algorithms/index.htm
- ❖ <https://www.javatpoint.com/data-structure-tutorial>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: K. Vijayakumar  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT2A1			Title	Batch:	2025 – 2028
				GE II – Allied : Mathematics II (Discrete Mathematics)	Semester:	II
Lecture Hrs./Week	4	Tutorial Hrs./Sem.	10		Credits:	4

Course Objective

On successful completion of this subject the students should know Set theory, Mathematical logic, Relations, Graph theory, Languages and Grammars

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the basic concepts of set theory, mathematical logic, relations and graph theory.	K1
CO2	To infer the basic terminology of discrete mathematics	K2
CO3	To construct discrete notations in the programs	K3
CO4	To analyze discrete concepts through programs	K4
CO5	To determine languages and grammars for programming	K5

Mapping

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

Units	Content	Hrs. L+T
Unit I	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 - min sets - Algebra of sets and Duality – Inclusion and Exclusion principle	10+2
Unit II	Mathematical Logic: Introduction - Propositional Logic –Introduction, Proofs –Basic logical operations – Tautologies – Contradiction - Predicate calculus.	10+2
Unit III	Relations: Binary Relations – Set operation on relations -Types of Relations – Partial order relation – Equivalence relation – Composition of relations. Functions: Types of functions – Invertible functions – Composition of functions.	10+2
Unit IV	Graph Theory: Basic terminology – paths, cycle & Connectivity – Sub graphs – Types of graphs – Representation of graphs in computer memory - Trees - Properties of trees – Binary trees – Computer Representation of general trees.	10+2
Unit V	Number Theory: Introduction – properties of integer – Greatest Common Divisor – Euclidean algorithm – Least Common Multiple – testing for Prime number. Language and Grammar: Introduction –The set theory of strings – Languages – Regular expressions and Regular languages – Grammar – Finite state machine.	10+2
	Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Assignments

Text Book

- ❖ Sharma, J.K. (2005). *Discrete Mathematics*, 2nd Edition, Macmillan India Ltd.

Reference Books

- ❖ Kenneth H. Rosen. (2003). *Discrete Mathematics and Its Applications*, 5th Edition, McGraw Hill Pub.
- ❖ Dr. Venkataraman, M. K. Dr. Sridharan, N, Chandarasekaran, N. (2000). *Discrete Mathematics*. The National publishing Company Chennai.

Web Reference

- ❖ <https://www.youtube.com/watch?v=itrXYg41-V0>
- ❖ <https://www.youtube.com/watch?v=tyDKR4FG3Yw>
- ❖ <https://www.youtube.com/watch?v=HmQR8Xy9DeM>
- ❖ https://www.youtube.com/watch?v=19SW3P_PRHQ

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT2A2			Title	Batch:	2025 – 2028
Lecture Hrs./Week	4	Tutorial Hrs./Sem.	10	GE II – Allied : Mathematics – II (Operations Research)	Semester:	II
					Credits:	4

Course Objective

To enable the students to understand and to apply the resource management techniques available in OR including linear programming transportation assignment problem, inventory control, queuing theory and network problems.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the concepts of linear programming methods	K1
CO2	To understand the concepts of transportation, networking, replacement, etc.,	K2
CO3	To solve the problems optimization techniques to solve the computer based business problems	K3
CO4	To analyze the ability of critical thinking, to find shortest time duration	K4
CO5	To evaluate the Economic order quantity	K5

Mapping

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

Units	Content	Hrs. L+T
Unit I	Origin and development of OR – Applications of OR – Linear programming problem – Mathematical formulation of the problem – Graphical Method – Simplex Method – Big-M Method -Two Phase Simplex Method	10+2
Unit II	Transportation Problem: Balanced Transportation problem and Un-Balanced Transportation problem-Row Minimum-Column Minimum-North-West Corner Matrix Minima Method-Vogel's Approximation Methods-MODI Method (U-V Method for OBFS). Assignment Problem: Balanced and Un-Balanced Assignment problem– Hungarian method – Routing problem	10+2
Unit III	Network Scheduling: Network and Basic components – Logical sequencing: Formation of a loop, Dangling, Redundancy-Network Construction- Rules of Network construction – Time calculation in Network-Numbering the events– Critical Path Method (CPM)– PERT: PERT Tabulation and Calculations.	10+2
Unit IV	Replacement Problem and System Reliability: Model 1: Value of Money does not change with time. Model 2: Value of Money change with time. Game and Strategies: Introduction-Two-Person Zero-Sum games-Pure Strategies: Maximin-Minimax Principles-Saddle Point and Value of the Game-Rule for determining a Saddle Point- Mixed Strategies: Games without Saddle Points- 2x2 Rectangular Games.	10+2
Unit V	Sequencing problem: Problems with n jobs and 2 machines – Problems with 'n' jobs and 'k' machines. Inventory control – Types of inventory-Economic Order Quantity: Model 1: EOQ problem with no shortages Model 2: EOQ problem with no shortages and several production runs of unequal length Model 3: EOQ problem with shortages. EOQ Problem with Price Breaks: Model 1: EOQ Problem with one price breaks.	10+2
	Total Contact Hrs.	60

Pedagogy:

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Assignments

Text Book

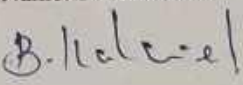
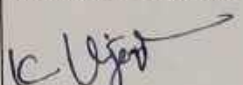
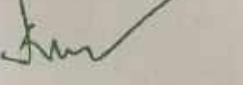
- ❖ KantiSwarup, PK Gupta, Man Mohan. (2020). *Operations Research*. Sultan Chand and Sons & Company Ltd. New Delhi.

Reference Books

- ❖ S. DharaniVenkatakrishnan. (2015), *Operations Research*. Keerthi Publishing P.Ltd.
- ❖ G. Srinivasan. (2017), *Operations Research: principles and Applications* 2nd Edition.

Web Reference

- ❖ <https://rb.gy/6m3df>
- ❖ <https://rb.gy/mq3k4>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT206			Title	Batch:	2025 - 2028
Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	CC Lab.-II: Programming in Java with Data Structures	Semester:	II
					Credits:	2

Course Objective

To apply various concepts of java like inheritance, multithreading, exception handling, package for improving the programming skills in Java.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply basic object oriented programming concepts in Java	K3
CO2	To analyze the usage of packages in program development	K4
CO3	To prove the need of exceptions and data structures	K5
CO4	To verify the usage of multithreads	K5
CO5	To create files using different streams	K6

Mapping

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

Content	Hrs.
Test I SAMPLE PROGRAM LIST 1. Develop a class using constructor. 2. Develop a Program using method overloading. 3. Develop a Program using method overriding. 4. Apply single and multi-dimensional array in assessing students performance 5. Apply multiple inheritance using interfaces. 6. Develop a Program using packages and sub packages. 7. Create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the stack to 0. Write a member function POP () to delete an element. Check for overflow and underflow conditions. 8. Create a class ARITH which consists of a FLOAT and an integer Variable. Write member ADD () , SUB () , MUL () , DIV () , MOD () to perform addition, multiplication ,division and modulus Respectively . Write member functions to get and display values. 9. Create a class MAT has a 2-d matrix and R&C represents the rows and columns of the matrix. Overload the operators +,-,* to add subtract and multiply two matrices. Write member functions to get and display MAT object values. 10. Create a class STRING. Write member function to initialize, get and display strings. Overload the operator + to concatenate two strings, == to compare two strings and a member function to find the length of the string. 11. Create a class which consists of EMPLOYEE detail like eno, ename, dept, basic-salary, and grade. Write member functions to get and display them. Derive a class PAY from the above class and write a member function to calculate da, hra, pf depending on the grade and Display the Payslip in a neat format using console I/O.	60
Test II 12. Develop a Program using threads. 13. Test for inter-thread communication in program 14. Test for Exception Handling in program 15. Develop a Program to generate files. 16. Create a class SHAPE which consist of two VIRTUAL FUNCTIONS Cal_Area() and Cal_PERI to calculate AREA and PERIMETER of various figures. Derive three Classes SQUARE, RECTANGLE and TRIANGLE from the class SHAPE and calculate AREA and PERIMETER of each class separately and Display the result. 17. Create two classes which consist of two private variables, one float and one integer variables in each class. Write member functions to get and display them. Write FRIEND	

function common to arguments And the integer and float values of both the objects separately and Display the result.

18. Write a user defined function USERFUN () which has the formatting commands like setw(), showpoint , showpos precision (). Write a program which prints a multiplication table and uses USERFUN() for formatting.

19. Write a program to perform Insertion, Deletion and Updation using files.

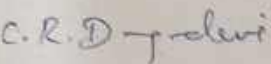
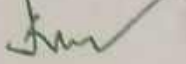
20. Write a program which takes a file as argument and copies in to another file with line numbers using Command Line Arguments.

Pedagogy:

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Assignments, Group task (Group Discussion)

Course Designed by	Verified by HOD	Checked by	Approved by
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Name: C.R. Durga devi  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT	Programme Title:	Information Technology	
Course Code:	25UIT2S1	Title	Batch:	2025 - 2028
Practical Hrs./Week	2	Tutorial Hrs./Sem.	--	Semester: II
		SEC - I :Naan Mudhalvan : Web Designing (CSS & JavaScript)		Credits: 2

Course Objective

To know the various scripting programming concepts of HTML tags, Style sheets and JavaScript.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To motivate the students to create dynamic website using CSS	K4
CO2	To test the various tags in the application.	K5
CO3	To create website using javascript.	K6
CO4	To construct forms and validate user input in javascript	K6
CO5	To develop javascript programs in client side scripting	K6

Mapping

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

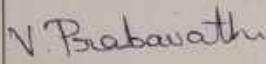
Content	Hrs.
SAMPLE PROGRAM LIST	
CSS & JavaScript	
1. Webpage creation using CSS.	
2. Ordered List and Un-Ordered List.	
3. Table Tags.	
4. Frame creation.	
5. Font Attributes.	
6. Style sheets	
7. Program to Display Digital clock.	
8. onClick and onChange Event.	
9. onFocus Event and onSubmit Event.	
10. onMouseOver and onMouseOut example	
11. Displaying Date and Time.	
12. createElement and createTextNode example.	
13. Redirection using location object.	
Total Contact Hrs.	30

Pedagogy:

Direct Instruction, Digital Presentation
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Assessment Methods:

Test, Assignments, Group Discussion

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
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Programme Code:	B.Sc. - IT			Programme Title :	Information Technology		
Course Code:	25UIT307			Title:	Batch :	2025 - 2028	
Lecture Hrs/Week:	5	Tutorial Hrs./Sem.	-	CC -V: Operating Systems	Semester :	III	
					Credits :	4	

Course Objective

On successful completion of this subject the students should know the basic concepts of operating system, memory management, process management, information management, deadlocks, parallel processing, distributed processing and Windows NT, XP, & 7.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect fundamentals of operating system concepts.	K1
CO2	To understand basic principles and advanced concepts of the operating system.	K2
CO3	To apply the different mathematical foundations, algorithmic principles with approaches in computer based systems.	K3
CO4	To analyze the various architectural components involved in OS and its applications.	K4
CO5	To evaluate different operating system configurations.	K5

Mapping

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

Units	Content	Hrs.
Unit I	Operating System-Functions and Structure: Operating System Definition- Different services of Operating System- Uses of System Calls- Issue of Portability-Operating System Structure- Virtual machine- Booting. Information Management: Introduction - The File System- Introduction - Block and Block numbering scheme - Relationship between OS and DMS - File Directory entry - Open/Close Operations. Device Driver (DD): The Basics, I/O Procedure, I/O Scheduler.	15
Unit II	Process Management: Introduction – States – Transitions – Operations on a Process – Process Scheduling – Multithreading. Inter Process Communication -The Producer Consumer Problem. Solutions to the Producer Consumer problems: Interrupt Disabling/Enabling - Lock-flag – Primitive for mutual exclusion - Alternating Policy – Semaphores - Classical IPC Problems.	15
Unit III	Deadlocks: Introduction - Graphical Representation of Deadlock - Deadlock Prerequisites - Deadlock Strategies. Memory Management: Introduction - Single Contiguous Memory Management - Fixed Partition Memory Management - Variable Partitions - Non Contiguous Allocation General Concepts: Paging, Segmentation. Virtual Memory Management System: Jargon – Page Replacement Policies.	15
Unit IV	Parallel Processing: Introduction - Difference between Distributed and Parallel Processing - Advantages of Parallel Processing - Machine Architectures supporting Parallel Processing - Operating System for Parallel Processing. Distributed Processing: Introduction - Distributed Processing - Process Migration – RPC - Distributed Processes - Distributed File Management - Cache Management.	15
Unit V	Windows NT/2000: History – Programming: Native NT API – Win32 API – Registry, Structure – Booting – Processes and Threads – Memory Management – NTFS – Security. Windows XP & 7: Introduction – Design principles - Architecture.	15
	Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

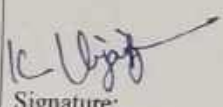
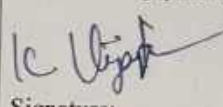
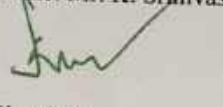
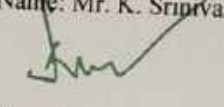
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- ❖ H. M Deitel. (2003). *Operating Systems*, 2nd Edition, Pearson Education Publication.
- ❖ Abraham Silberschatz, Peter B. Galvin, Greg Gagne (2018), *Operating System Concepts*, 10th edition, Abridged Print Companion.

Web References:

- ❖ https://www.tutorialspoint.com/operating_system/index.htm (Unit V)
- ❖ <https://www.os-book.com/OSE1/slide-dir/PDF-dir/ch16.pdf>
- ❖ <http://cc.ee.ntu.edu.tw/~farn/courses/OS/slides/ch25.pdf>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: K. Vijayakumar	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT308			Title	Batch:	2025 - 2028
Lecture Hrs./Week	4	Tutorial Hrs./Sem.	-	CC- VI : Relational Database Management System	Semester:	III
					Credits:	4

Course Objective

To provide better understanding of various concepts of DBMS, Oracle, Normalization, Data Management and retrieval, PL/SQL Commands, Operations and Security.

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 basic concepts of database	K1
CO2	To get the idea of a database from SQL statements	K2
CO3	To execute different forms of queries using SQL and PL/SQL statements	K3
CO4	To analyze various data models which describe the structure of database	K4
CO5	To interpret PL/SQL commands in programming	K5

Mapping

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

Units	Content	Hrs.
Unit I	Database Concepts: A Relational approach: Database – Relationships – DBMS– Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams - Demoralization – Another Example of Normalization. DFD: Definition – example – Rules- Decomposition.	12
Unit II	Oracle9i: Overview: Introduction. SQL *Plus: Environment – SQL – Commands – Errors & Help – Alternate Text Editors - Worksheet - iSQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.	12
Unit III	Working with Table: DML – adding a new Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions – Grouping Data.	12
Unit IV	Multiple Tables: Joins and Set operations: Join – Set operators. Sub queries: Sub query - Correlated Sub query. PL/SQL: Introduction – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements.	12
Unit V	PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions. PL/SQL: Composite Data Types: Records – Tables – V arrays. Named Blocks: Procedures – Functions – Packages –Triggers –Data Dictionary Views.	12
	Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD)

Text Book

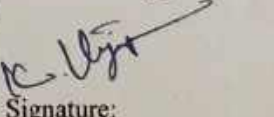
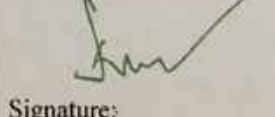
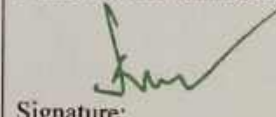
- ❖ Nilesh Shah. (2009), *Database Systems Using Oracle*, 2nd edition, PHI.

Reference Books

- ❖ Ivan Bayross (2017), *SQL, PL/SQL the Programming Language of ORACLE*, 4th Edition, BPB Publications.
- ❖ ArunMajumdar&Pritimoy Bhattacharya. (2001). *Database Management Systems*, TMH.
- ❖ Jeffrey A. Hoffer, Joey F. George, Joseph S. Valacich, (2009). *Modern Systems Analysis and Design*. 2nd Edition. 5th Edition. Pearson Education Pub's.
- ❖ Gerald V. Post. (2005). *Database Management Systems*, 3rd Edition, TMH.

Web References

- ❖ <https://intellipaat.com/blog/tutorial/sql-tutorial/rdbms/>
- ❖ <https://www.youtube.com/watch?v=J5wjlf4gdq4>
- ❖ <https://www.youtube.com/watch?v=DEwgEFHn0M>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology		
Course Code:	25UIT3A1			Title	Batch:	2025 – 2028	
Lecture Hrs./Week	4	Tutorial Hrs./Sem.	-	GE III – Allied : Microprocessor	Semester:	III	
					Credits:	4	

Course Objective

Understand the evolution of microprocessor, Addressing modes, pin diagrams of various processors, Other Microprocessors, Advanced Microprocessor, Mobile Processors, Interfacing A/D converter and Applications.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To Recall in mind the various microprocessor and microcontrollers manufacturer name, year, versions, bit-size, etc	K1
CO2	To Understand the basic concepts of 16 bit and 32 bit microprocessors.	K2
CO3	To apply the instructions in the Assembly Language Programs.	K3
CO4	To analyze the various products of processors and controllers.	K4
CO5	To Conclude the various products of processors and controllers.	K5

Mapping

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

Units	Content	Hrs.
Unit I	Introduction to Microprocessors: Evolution of microprocessors – Single- chip Microcomputer – Embedded Microprocessors – Bit - Slice processors – Microprogramming – RISC and CISC Processors – Scalar and Superscalar Processors – Vector Processors – Array Processors – Symbolic Processors – Digital Signal Processors Intel 8086 – Pin Description of Intel 8086 – Operating modes of 8086 – Register organization of 8086 – BIU and EU – Interrupts – 8086 based computer system – Addressing Modes of 8086.	13
Unit II	8086 Instruction Set – Instruction Groups – Addressing Mode Byte – Segment Register Selection – Segment Override – 8086 Instructions. Intel 386 and 486 Microprocessors: Intel 386 and 486 Microprocessor – 486DX Architecture – Register Organization of 486 Microprocessor – Memory Organization .	12
Unit III	Intel 386 and 486 Microprocessors: Operating Modes of Intel 486 – Virtual Memory – Memory Management Unit – Gates – Interrupts and Exceptions – Addressing Modes of 80486 – Pin Configuration - Input devices – Output devices.	11
Unit IV	Other Microprocessors: Pentium – Pentium Pro – PentiumII, III, IV - Alpha – Cyrix – MIPS – AMD Processors. Advanced Core Processors: Dual Core - Core2 Duo - i3 - i5 - i7 – i9 - Quad – Octa - Penta – Comparison.	13
Unit V	Mobile Processors: Introduction – Models – Architecture. Interfacing of A/D Converter and Applications: Introduction – Interfacing of ADC 0808 or ADC 0809 to Intel 8086 – Bipolar to Unipolar Converter – Sample and Hold Circuit, LF 398 – Microprocessor-based Measurement and Control of Physical Quantities	11
	Total Contact Hrs.	60

Pedagogy:

Digital Presentation, Chalk and talk, Flipped class

Assessment Methods:

Seminar, Quiz, Assignment, Group task.

Text Book

- ❖ Badri Ram, (2007), *Advanced Microprocessors and Interfacing*. Tata McGraw-Hill Publishing Company Limited, Fourteenth reprint.

Reference Books

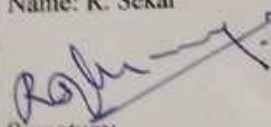
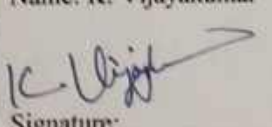
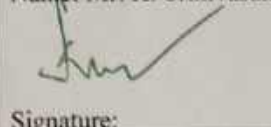
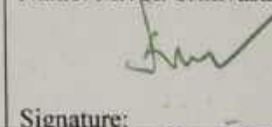
- ❖ A.K. Ray, K.M. Bhurchandi, (2007), *Advanced Microprocessors and Peripherals*. Tata McGraw-Hill Publishing Company Limited, 2nd Edition.
- ❖ Ramesh S. Gaonkar, (1997), *Microprocessor Architecture, Programming, and Applications with the 8085*. 3rd Edition. PHI India.

Web References:

- ❖ <https://www.geeksforgeeks.org/introduction-of-microprocessor>
- ❖ <https://www.slideshare.net/shehrevard/advanced-microprocessor>
- ❖ https://www.tutorialspoint.com/microprocessor/microprocessor_io_interfacing_overview.htm#:~:text=The%20interfacing%20process%20includes%20some,the%20signals%20of%20the%20microprocessor.

(Unit IV)

- ❖ https://en.wikipedia.org/wiki/List_of_Intel_Core_i9_microprocessors
- ❖ <https://images-eu.ssl-images-amazon.com/images/I/C1lp5bIG39S.pdf>
- ❖ <https://www.intel.com/content/dam/www/public/us/en/documents/datasheets/8th-gen-core-family-datasheet-vol-1.pdf>
- ❖ <https://timestech.in/all-about-mobile-phone-processors>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology		
Course Code:	25UIT3A2			Title	Batch:	2025 – 2028	
Lecture Hrs./Week	4	Tutorial Hrs./Sem.	-	GE III – Allied : Embedded Systems	Semester:	III	
					Credits:	4	

Course Objective

Understand the concepts of embedded systems, device drivers, interrupt servicing mechanism and embedded programming in C and C++.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To Recall in mind the various units of the processors	K1
CO2	To Understand the basic concepts of device drivers and interrupt servicing mechanism.	K2
CO3	To apply the instructions in C and C++ Programs.	K3
CO4	To analyze the various real time operating systems.	K4
CO5	To conclude the performance of various operating systems.	K5

Mapping

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

Units	Content	Hrs.
Unit I	Introduction to Embedded System: An Embedded System – Processor in the System – Other Hardware units – Software embedded into a system – Exemplary embedded system – Embedded system on chip and in VLSI circuit.	11
Unit II	Processor and Memory organization: Structural units in a processor – Processor selection – Memory devices – Memory selection – Allocation of memory – DMA – Interfacing processor, memories and I/O devices. Devices and buses for device networks: I/O devices – Timer and counting devices – Serial communication – Host system.	13
Unit III	Device drivers and Interrupts servicing mechanism: Device drivers – Parallel port device drivers – Serial port device drivers – Device drivers for IPTD – Interrupt servicing mechanism – Context and the periods for context-switching, dead-line and interrupt latency.	12
Unit IV	Programming concepts and embedded programming in C and C++: Software programming in ALP and C – C program elements – Header and source files and processor directives – Macros and functions – Data types – Data structures – Modifiers – Statements – Loops and pointers – Embedded programming in C++ – Java – C program compiler and cross compiler – Source code for engineering tools for embedded C / C++ – Optimization of memory needs	12
Unit V	Inter - process communication and synchronization of processes, Tasks and threads: Multiple processor – Problem of sharing data by multiple tasks and routines – Inter process communication. Real time operating systems: Operating system services – I/O subsystem – Network operating systems – Real time and embedded operating systems – Interrupt routine in RTOS environment – RTOS task scheduling – Performance metric in scheduling.	12
	Total Contact Hrs.	60

Pedagogy:

Digital Presentation, Chalk and talk, Flipped class

Assessment Methods:

Seminar, Quiz, Assignment, Group task.

Text Book

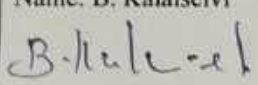
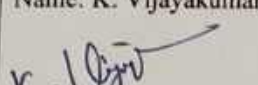
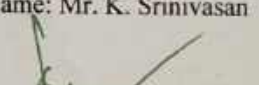
- ❖ Raj Kamal, (2007) "Embedded Systems – Architecture, Programming and Design", TMH.

Reference Books

- ❖ Daniel w. Lewis, (2007) "Fundamentals of Embedded Software", PHI Education Publications, ISBN, 81-7808-604-2.

Web References:

- ❖ https://www.tutorialspoint.com/embedded_systems/es_overview.htm
- ❖ <https://www.youtube.com/watch?v=uFhDGagZzjs>
- ❖ <https://www.youtube.com/watch?v=JO4AEkOVF2M>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT309			Title	Batch:	2025 - 2028
Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	CC Lab.- III : RDBMS	Semester:	III
					Credits:	2

Course Objective

To understand, learn and apply the various programming concepts in RDBMS (Basic commands, Trigger, Functions, etc.)

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply appropriate queries in SQL	K3
CO2	To apply various commands in SQL and PL/SQL and tags and concepts in the application.	K3
CO3	To analyze various database applications.	K4
CO4	To verify different forms of queries using SQL and PL/SQL statements	K5
CO5	To create various data models which describe the structure of database	K6

Mapping

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

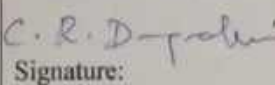
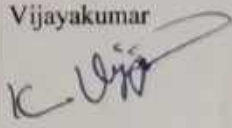
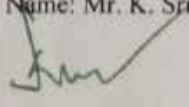
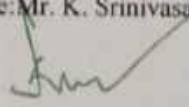
Content	Hrs.
SAMPLE PROGRAM LIST	
Test I	
1. Experiment with DDL commands. 2. Make use of Constraints 3. Experiment with DML commands. 4. Make use of Arithmetic operations on tables. 5. Determine where clause usage 6. Experiment with Case structures 7. Make use of Built-in functions 8. Determine Group functions usage 9. Make use of Joins and set operations 10. Test for Sub queries usage.	60
Test II PL/SQL Block structure	
1. Test for Control Structures in PL/SQL. 2. Make use of Embedded SQL 3. Test for Cursors usage 4. Make use of Exceptions 5. Experiment with PL/SQL Records and Tables. 6. Make use of Procedures and Functions 7. Experiment with Packages and Triggers. 8. Experiment Java as Front end and connect the tables.	

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Assignments, Group Task.(GD)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT310			Title	Batch:	2025 - 2028
				CC Lab. – IV: Excel Lab.	Semester:	III
Practical Hrs./Week	4	Tutorial Hrs./Sem.	-		Credits:	2

Course Objective

To use functions and productivity tools to assist in developing worksheets and to manipulate data lists using various functions.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply different features of excel	K3
CO2	To apply concept of different formulas used in excel	K4
CO3	To verify Formatting techniques and presentation styles.	K5
CO4	To verify Manipulation of data using data names and ranges, filters and sort, and validation lists	K5
CO5	To create clip art to enhance ideas and information in Excel worksheets.	K6

Mapping

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

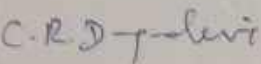
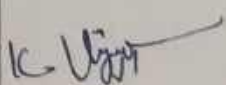
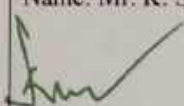
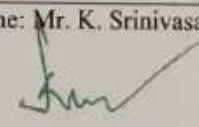
Content	Hrs.
SAMPLE PROGRAM LIST	
Test I 1. Merge or Split Cells 2. Create a Formula with Function 3. Create a Chart 4. Automatically Fill Data 5. Apply Cell Borders	60
Test II 6. Create filters and sort, and validation lists of student data 7. Create clip art to enhance ideas 8. Create different Excel templates 9. Organizing and displaying large amounts and complex data in graph	

Pedagogy:

Direct Instruction, Digital Presentation
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Assessment Methods:

Test, Assignments, Group Task(GD)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
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 POLLACHI - 642 001.

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT3N1			Title	Batch:	2025 - 2028
Lecture Hrs./Week	2	Tutorial Hrs./Sem.	-	Non-Major Elective - I : Social Networks	Semester:	III
					Credits:	2

Course Objective

To provide the overall view of various concepts of Social Networks such as history, classification of social media, services, pros and cons.

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 basics of Social Networks	K1
CO2	To understand the classification of Social Media	K2
CO3	To deploy various data privacy feature in social media platforms	K3
CO4	To analyze the security aspects in social media.	K4
CO5	To judge the pros and cons of various types of social media platforms	K5

Mapping

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

Units	Content	Hrs.
Unit I	Social Networks: Introduction – Definition - History	6
Unit II	Impact of social media - Privacy and Identity : Data Sharing and Safety	6
Unit III	Types of services – Platforms - Building and Strengthening of social media.	8
Unit IV	Spamming in social networks – social aspects- Design Issues	6
Unit V	Growing Constituency through Social Media – A glance at social media Do's and Don'ts.	4
	Total Contact Hrs	30

Pedagogy

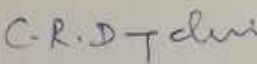
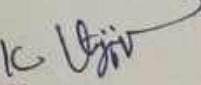
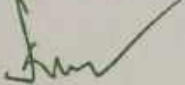
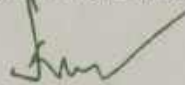
Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(Roll Play)

Web Reference

- ❖ <https://www.usaid.gov/sites/default/files/documents/1866/SMGuide4CSO.pdf>
- ❖ https://www.symantec.com/content/en/us/.../the_risks_of_social_networking.pdf

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT	Programme Title:	Information Technology	
Course Code:	25UIT3N2	Title	Batch:	2025 - 2028
Lecture Hrs./Week	2	Tutorial Hrs./Sem.	Semester:	III
		Non-Major Elective -I : Hardware & Networking	Credits:	2

Course Objective

To make understand various concepts of processors, input / output hardware, communication channels, networks with their types etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect the basics of I/O hardware.	K1
CO2	To understand about working of processors.	K2
CO3	To implement a network operating system.	K3
CO4	To analyze different types of networks and topologies.	K4
CO5	To Determine the concepts of Hardware and Networks.	K5

Mapping

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

Units	Content	Hrs.
Unit I	Processors: Microchips, Miniaturization and Mobility - CPU and Main Memory - Microcomputer System Unit.	4
Unit II	Input and Output Hardware: Input Hardware - Keyboard Input- Pointing Devices - Output Hardware - Display Screens	6
Unit III	Communication Channels: Electromagnetic Spectrum -Twisted Pair - Coaxial Cable - Fiber Optic Cable – Microwave and Satellite Systems - Wireless Communications - Next Generation Wireless Communications.	8
Unit IV	Communication Networks: Types of Networks - Network Operating System - Host and Node - Servers and Clients – Advantages of Networks.	6
Unit V	Local Networks: N/W Types - Types of LAN's – Components – Topology - Impact of LAN.	6
	Total Contact Hrs.	30

Pedagogy:

Digital Presentation, Chalk and talk, Flipped class

Assessment Methods:

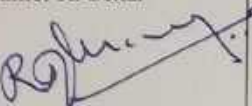
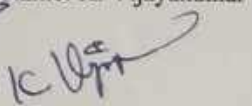
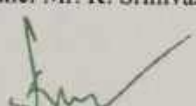
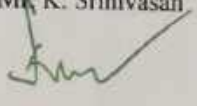
Seminar Quiz, Assignments

Text Book

- ❖ Williams, Sawyer and Hutchinson, (2001), *Using Information Technology - A Practical Introduction to Computers & Communications*. 3rd Edition. Tata McGraw Hill.

Web Reference

- ❖ <https://www.usaid.gov/sites/default/files/documents/1866/SMGuide4CSO.pdf>
- ❖ https://www.symantec.com/content/en/us/.../the_risks_of_social_networking.pdf

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT3VA			Title	Batch:	2025-2028
Lecture Hrs./Week	30 Hrs.	Tutorial Hrs./Sem.	-	VAC I:	Semester:	111
				Workplace Digitization	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

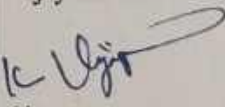
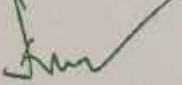
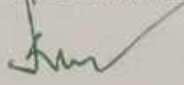
On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To keep in mind the fundamentals of workplace digitization techniques	K1
CO2	To understand the types of digitization tools.	K2
CO3	To apply and identify various cloud based applications in office automation	K3
CO4	To analyze efficiency and usefulness of digitization	K4
CO5	To assess the features available in cloud based digitization tools.	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

Contents	Hrs.
1. Form: Collecting data through customizable online surveys, quizzes, and feedback forms. 2. Sheets: Collaboratively creating, analyzing, and managing spreadsheets for various data-driven tasks. 3. Slides: Creating visually engaging presentations for proposals, sales pitches, marketing materials, or training sessions. 4. Meet and Chat: Facilitating video meetings and real-time collaboration through instant messaging for remote teamwork. 5. Gmail: Efficiently managing email communication, scheduling, and organizing messages for professional correspondence. 6. Drive: Organizing, storing, and sharing files securely, facilitating collaborative work and easy access to documents from any device. 7. Docs: Collaboratively creating, editing, and sharing documents in real-time for efficient team collaboration and document management. 10. Calendar: Managing schedules, events, and appointments, facilitating efficient time management and coordination among individuals or teams. 11. Translate: Facilitating instant translation of text between languages for communication and comprehension across diverse linguistic contexts. 12. Google News: Aggregating and presenting news articles from various sources, allowing users to stay informed about current events and topics of interest.	30

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K.Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT		Programme Title:	Information Technology	
Course Code:	25UIT411		Title	Batch:	2025 - 2028
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-	Semester:	IV
			CC -VII : Data Communication and Networks	Credits:	4

Course Objective

To provide basic concepts of networking like data transmission, topology, OSI model, TCP/IP, transmission media, X.25 protocol, frame relay, ATM and accessing the internet.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recall basics of data communication and networking	K1
CO2	To demonstrate various types of networks and topologies	K2
CO3	To make use of routing algorithms	K3
CO4	To categorize different ways of accessing the internet	K4
CO5	To Compare various types of protocols(X.25,Frame relay, ISDN, ATM)	K4

Mapping

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

Units	Content	Hrs.
Unit I	Introduction to Data Communications and Networking – Information Encoding - Analog and Digital Transmission Methods – Modes of Data Transmission and Multiplexing.	14
Unit II	Transmission Errors: Detection and Correction – Transmission Media: Guided Media, Unguided Media. Network Topologies: Mesh, Star, Tree, Ring, Bus topology. Switching- Circuit, Message, Packet switching. Routers and Routing – Factors affecting Routing Algorithms – Routing Algorithms – Approaches to Routing.	15
Unit III	Network Protocols and OSI Model – TCP/IP - Local Area Networks (LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN) – Integrated Services Digital Network (ISDN).	15
Unit IV	X.25 Protocol: Working principle-Characteristics – Packet format – operations. Frame Relay: Need – Working principle – Frame format-congestion & traffic control – FRAD & Features. Asynchronous Transfer Mode: Introduction- Packet size- Virtual circuits – Cells- Switching, Layers.	16
Unit V	Internetworking Concepts, Devices, Internet Basics, History and Architecture. Ways of Accessing the Internet: Introduction- Dial- up access- Leased lines- DSL- Cable modems.	15
	Total Contact Hrs.	75

Pedagogy:

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task(GD/ Roll Play /APS)

Text Book

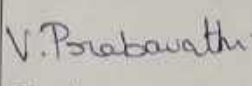
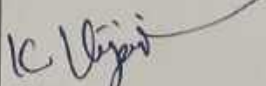
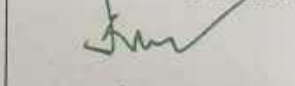
- ❖ Achyut S. Godbole. (2007). *Data Communications and Networks*. Tata McGraw-Hill Publishing Company Limited, Ninth reprint

Reference Books

- ❖ Behrouz A. Forouzan. (2007). *Data Communications and Networking*, 2nd Edition Update. Tata McGraw-Hill Publishing Company Limited, Nineteenth reprint.
- ❖ Andrew S. Tanenbaum. (2000). *Computer Networks*, 3rd Edition, Prentice Hall of India.

Web References:

- ❖ https://www.cisco.com/c/en_in/solutions/small-business/resource-center/networking/networking-basics.html
- ❖ <https://www.techopedia.com/definition/7776/internet-access>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V. Prabavathi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology		
Course Code:	25UIT412			Title	Batch:	2025 - 2028	
Lecture Hrs./Week	4	Tutorial Hrs./Sem.	5	CC - VIII: Advanced Java Programming	Semester:	IV	
					Credits:	4	

Course Objective

On successful completion of this subject the students can understand various concepts of JavaFX, JDBC, Servlet, JSP, JSTL, AJAX etc.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect the knowledge of GUI based applications, Web based applications and Database applications.	K1
CO2	To understand development of the Internet programming through JavaFX programming.	K2
CO3	To apply different powerful GUI components from existing applications to create new web pages.	K3
CO4	To analysis different applications for solving the real time problems in Industry.	K4
CO5	To Prove the various concepts using problems.	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	H	M	H	H	M	H	H	M	H	H	H
CO4	M	H	H	H	H	M	H	H	H	M	H	H
CO5	H	H	H	H	H	H	H	H	H	H	H	H

Units	Content	Hrs. L+T
Unit I	Java FX overview: JavaFX Applications-Availability -Key Features -Build with JavaFX -Run a Sample Application-Run a Sample in an IDE- Create a JavaFX Application. Understanding the JavaFX Architecture: Scene Graph -Java Public APIs for JavaFX Features - Graphics System-Glass Windowing Toolkit -Threads-Pulse -Media and Images -Web Component -CSS-UI Controls -Layout -2-D and 3-D Transformations-Visual Effects. Hello World, JavaFX Style: Construct the Application- Run the Application.	12+1
Unit II	Creating a Form in JavaFX: Create the Project-Create a Grid Pane -Layout-Add Text, Labels, and Text Fields-Add a Button and Text -Add Code to Handle an Event -Run the Application. Fancy Forms with JavaFX CSS: Create the Project-Create the CSS File-Add a Background Image -Style the Labels-Style Text -Style the Button. Using FXML to Create a User Interface: Set Up the Project Load the FXML Source File -Modify the Import Statements Create a Grid Pane Layout-Add Text and Password Fields-Add a Button and Text -Add Code to Handle an Event -Use a Scripting Language to Handle Events -Style the Application with CSS.	11+1
Unit III	JDBC: Architecture - JDBC-ODBC Relationship - Types of Drivers - Components - Interfaces and classes - Steps for Querying the Database with JDBC - Creating an ODBC Data source - Querying and updating Database Tables - passing parameters to a statement. Servlets: Introduction-Architecture - Designing - Servlet generating Plain Text, HTML - Handling GET Request.	10+1
Unit IV	Cookies: Overview of cookies - Servlet cookie API - Read, Use, Send cookies in a Servlet, Get client's address in a Servlet - Hit counterexample. JSP: Introduction - Scripting elements - life cycle.	10+1
Unit V	JSTL Tags: Overview - EL Support - i18n support - Database Support (SQL Tags) - XML support. AJAX: Introduction - working concepts - Benefits - Role of Ajax in enhancing the user experience on the web - Rich internet application - Benefits of using Ajax - Impact of Ajax on user experience - on mobile - Traditional means of web application development - Web application development - Data exchange - Advantages and disadvantages - Web framework XML HTTP request object - Examples (First Program and Login Form).	12+1
	Total Contact Hrs.	60

Pedagogy :

Digital Presentation, Chalk and talk, Flipped class.

Assessment Methods:

Seminar, Test, Assignment, Group task.

Text Books:

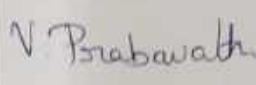
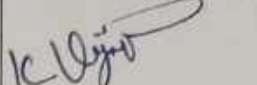
- ❖ Jasper Potts, Nancy Hildebrandt, Joni Gordon, Cindy Castillo, (2014), JavaFX Getting Started with JavaFX, Release 8 E50607-02. (Units I, II).
- ❖ (ISRD) Group. 2001. "Introduction to Object Oriented Programming through Java", Tata McGraw-Hill Publishing Company Limited, New Delhi. (Unit III).
- ❖ S. Padma Priya, (2011), *Web Technology*, Scitech Pub (Units IV, V).

Reference Book:

- ❖ Rashim Mogha, V.V. Preetham, (2010), *Java Web Services Programming*, Willy India Pub.

Web References:

- ❖ <https://www.javatpoint.com/servlet-tutorial/>
- ❖ <https://www.softwaretestinghelp.com/java-components-java-platform-jdk/>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V. Prabavathi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT4A1			Title	Batch:	2025 - 2028
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-	GE IV – Allied : Software Engineering	Semester:	IV
					Credits:	4

Course Objective

Understand the software development life cycle, process models, requirements analysis, design concepts, software quality and testing techniques

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect the various process models, requirements, Designs, Quality, Testing.	K1
CO2	To Understand the software development phases.	K2
CO3	To apply concepts into the testing lab.	K3
CO4	To evaluate the expected result with testing output.	K4
CO5	To justify the concepts of software development and testing phase.	K5

Mapping

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

Units	Content	Hrs.
Unit I	Software and Software Engineering: The Nature of software-The Unique Nature of WebApps-Software Engineering-The software process-Software Engineering practice- Software Myths. Process Models: A Generic process model-Process Assessment and Improvement-Perspective process model-Specialized process models-The Unified process- Personal and team process models-process Technology-Product and Process. AGILE Development: Agility – Cost of change - Process - Extreme programming: Values – Process – Industry – Debate.	16
Unit II	Requirement analysis-Scenario based modeling-UML Models-Data modeling concepts-Class based modeling. Requirements Modeling: Flow (DFD, Activity, ER), Behavior, Patterns - and WebApps.	14
Unit III	Design concepts: The design process-Design concepts-Design model. User Interface Design: The golden rule-User Interface Analysis and Design-Interface Analysis-Interface Design Steps-WebApp Interface Design-Design evaluation.	15
Unit IV	Quality Concepts: Software Quality-Dilemma-Achieving Software Quality. Software Quality Assurance: Elements – Tasks, Goals and metrics – Statistical SQA – Software reliability – SQA plan.	15
Unit V	Software Testing strategies: Strategic Approach to Software Testing-Strategic Issues-Unit Testing-Integration Testing-Validation Testing-System Testing. Testing conventional Applications: Software Testing Fundamentals-Internal and External view of Testing-White Box Testing-Basis Path Testing - Control Structure Testing-Black Box Testing. Case study: Draft an ER & DFD for a unique problem.	15
	Total Contact Hrs.	75

Pedagogy:

Digital Presentation, Chalk and talk, Flipped class

Assessment Methods:

Seminar, Quiz, Assignment, Group task.
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Text Books

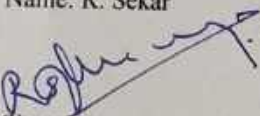
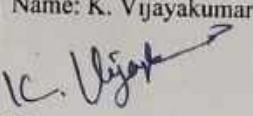
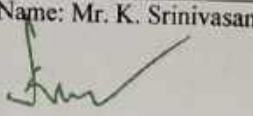
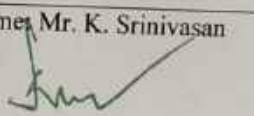
- ❖ Roger S. Pressman, (2019), *Software Engineering-A Practitioner's Approach*, 8th Edition, McGraw-Hill International Pub.
- ❖ Jeffrey A. Hoffer, Joey F. Georgr, Joseph S. Valacich, (2000), "*Modern Systems Analysis and Design*", 2nd Edition, Pearson Education publications. (Unit II – DFD, ER).

Reference Books

- ❖ Richard Fairley, (2010), *Software Engineering Concepts*, 33rd Reprint, Tata McGraw-Hill Publishing Company Limited.
- ❖ PankajJalote, (2001), *An Integrated Approach to Software Engineering*, 3rd Edition Narosa Publication.

Web Reference:

- ❖ <https://www.roberthalf.com.au/blog/employers/6-basic-sdlc-methodologies-which-one-best>
- ❖ https://www.tutorialspoint.com/software_engineering/software_testing_overview.htm#:~:text=Software%20Testing%20is%20evaluation%20of,comprises%20of%20Validation%20and%20Verification.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT4A2			Title	Batch:	2025 - 2028
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-	GE IV – Allied : Software Project Management	Semester:	IV
					Credits:	4

Course Objective

To Understand the Project Management and project evaluation, Effort estimation, Resource allocation, contract management and software quality.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect the various activities of Software Project Management.	K1
CO2	To Understand the Activity plan and Risk Management.	K2
CO3	To apply concepts of Resource Allocation.	K3
CO4	To evaluate the Management contracts and Organizing Terms.	K4
CO5	To justify the Quality of the software development.	K5

Mapping

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

Units	Content	Hrs.
Unit I	Introduction to Software Project management: Introduction –Importance – Meaning of a Project – Software project versus other types of project – Contract Management and technical project management – Activities covered – plans, methods, and methodologies – some ways of categorizing software projects. Stepwise: an overview of project planning. Programme Management and Project Evaluation: Programme Management – Managing the Allocation of resources within programmes – strategic programme management – creating a programme – aids to programme management – Benefits Management – Evaluation of Individual projects – technical assessment – cost-benefit analysis - cash flow forecasting – cost-benefit evaluation techniques – risk evaluation.	16
Unit II	Software Effort Estimation: Estimation – Problem with over and Under-estimates – basis for software estimating – software effort estimation techniques – Expert judgment – estimating by analogy. Activity Planning: The objectives – planning – Project schedules – project and activities – sequencing and scheduling activities – Network: Planning models – formulating a network model – adding time dimension – forward pass – backward pass. Risk Management: Risk – Categories – Dealing with risk – Risk identification, assessment, planning and management – Evaluating risk to schedule.	14
Unit III	Resource Allocation: Introduction - Nature of resources – identifying the resource requirements – scheduling resources – creating critical path – counting the cost – being specific – publishing the resource schedule – cost schedules – scheduling the sequence. Monitoring and Control: Creating framework – collecting the data – visualizing progress – cost monitoring – earned value analysis – prioritizing monitoring – getting the project back to target – change control.	15
Unit IV	Managing Contracts: ISO 12207 approach – supply process – types of contract – stages in contract placement, management – acceptance. Managing People and Organizing Teams: understanding behavior – organizational behavior – selecting the right person for the job – instruction in the best methods – Motivation – Working in groups – becoming a team – decision making – Leadership – organizational structures – dispersed and virtual teams - influence of culture – stress – health and safety.	15
Unit V	Software Quality: The place of software quality in project planning – importance of software quality – defining software quality – ISO 9126 - practical software quality measures – product vs process quality management – external standards – techniques to help enhance software quality- quality plans. Small Projects: Introduction – Some problems with student projects – content of a project plan – conclusion.	15
	Total Contact Hrs.	75

Pedagogy:

Digital Presentation, Chalk and talk, Flipped class

Assessment Methods:

Seminar, Quiz, Assignment, Group task.

Text Books

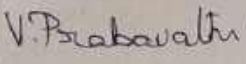
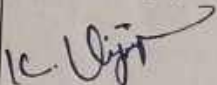
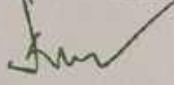
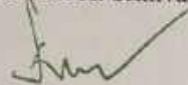
- ❖ Bob Hughes & Mike Cotterell, (2005). *SOFTWARE PROJECT MANAGEMENT*, 4th Edition, PHI Publications.

Reference Books

- ❖ Pankaj Jalote, (2002), *SOFTWARE PROJECT MANAGEMENT IN PRACTICE*, Pearson Education Asia.
- ❖ 2. Kieron Conway, (2000). *SOFTWARE PROJECT MANAGEMENT FROM CONCEPT TO DEPLOYMENT*, Dream Tech Press.

Web Reference:

- ❖ <https://www.javatpoint.com/software-project-management>
- ❖ https://en.wikipedia.org/wiki/Software_project_management

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V. Prabavathi  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT413			Title	Batch:	2025 - 2028
Practical Hrs./Week	5	Tutorial Hrs./Sem.	-	CC Lab. – V: Programming in Advanced Java	Semester:	IV
					Credits:	2

Course Objective

Understand the practical experience in various concepts of JavaFX,, JDBC, Servlet, JSP, JSTL, AJAX, etc...

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply the different components of JavaFX programming.	K3
CO2	To analysis the concepts to enhance in the application level.	K4
CO3	To validate the user friendliness and desire performance implied for given input.	K5
CO4	To test the different components of Advanced Java using programs.	K6
CO5	To create connectivity using database.	K6

Mapping

PO/ PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO10	PSO 1	PSO2
CO1	H	H	M	L	M	H	H	L	L	L	M	M
CO2	H	M	H	M	H	M	M	L	H	M	L	L
CO3	H	H	M	L	L	L	H	L	M	H	L	M
CO4	H	H	H	M	M	M	M	L	M	M	L	L
CO5	H	H	M	L	L	L	H	L	M	H	H	M

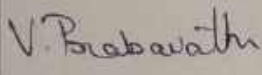
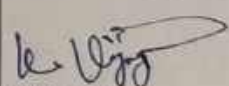
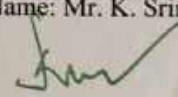
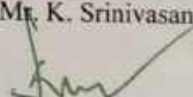
Contents	Hrs.
Test I 1. Create a JavaFX application with a button. When clicked, it displays a message in a label. 2. Construct an application where a user can enter their name in a TextField. When the user clicks a button, the app displays a greeting message with the entered name. 3. Design an application that uses a ComboBox to select a fruit. Based on the selection, display a corresponding message in a label. 4. Create a JavaFX application with RadioButton options to choose a favorite color. Display the chosen color in a label. 5. Design a simple calculator with buttons for digits and basic operations like addition and subtraction. 6. Create a simple timer application that starts counting from 0 when a button is clicked. Test II 7. Construct an image viewer that can load and display an image from a file path. You can add a TextField to specify the image path. 8. Develop a Generic Servlet. 9. Implement JDBC using Servlet. 10. Create a progress bar that fills up when a button is clicked. 11. Design a login form with TextField for the username, PasswordField for the password, and a Button to submit. Display a message based on whether the login is successful. 12. Create a JavaFX application that opens a file dialog to choose a text file, reads its content, and displays the content in a TextArea.	75

Pedagogy:

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Quiz, Group task(GD/Role play/abs).

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
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Programme Code:	B.Sc. - IT	Programme Title:	Information Technology	
Course Code:	25UIT4S1	Title	Batch:	2025 - 2028
Practical Hrs./Week	2	Tutorial Hrs./Sem.	--	Semester: IV
		SEC - II :Naan Mudhalvan : PHP Lab.	Credits:	1

Course Objective

To know the various programming concepts of database, string functions, date & time functions, content navigation and creating web page.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To motivate the students to create dynamic website	K4
CO2	To test the various tags in the application.	K5
CO3	To create files in the website using database.	K6
CO4	To construct and upload a file to the server and create directory	K6
CO5	To choose and add the products that are selected from a web page	K6

Mapping

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

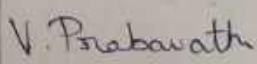
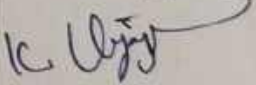
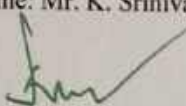
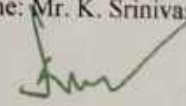
Content	Hrs.
SAMPLE PROGRAM LIST 1. Execute a PHP Program to print an array. 2. Execute a PHP Program to sort elements in an array in ascending and descending order. 3. Develop a PHP program to split a string as array elements based on delimiter. 4. Execute a PHP Program to combine the array elements into a string with given delimiter. 5. Develop a PHP Program to Program to create a Simple Calculator. 6. Develop a PHP Programs to create simple Login and Logout using sessions. 7. Develop a PHP Program to upload a file to the Server. 8. Create a PHP Program to create a New Database. 9. Create a PHP Program to connect to the server and selecting database. 10. Create a PHP Program to insert records to the table in Database. 11. Create a PHP Program to fetch records from the table in Database. 12. Create a PHP Program to Store an image in Database. 13. Create a PHP Program to Read image from Database. 14. Create a PHP Program to create a simple Registration form. 15. Create a PHP program for Contact form.	30
Total Contact Hrs.	30

Pedagogy:

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Assignments, Group Discussion

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V. Prabavathi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
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Programme Code:	B.Sc. - IT		Programme Title:	Information Technology	
Course Code:	25UIT4N1		Title	Batch:	2025 - 2028
Lecture Hrs./Week	2	Tutorial Hrs./Sem.	-	Semester:	IV
				Credits:	2

Course Objective

To bestow an understanding of various concepts of data analytics, tools, applications and career opportunities in the field of 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 basic understanding of fundamentals of data analytics	K1
CO2	To understand the types of data analytics	K2
CO3	To apply the tools in various domain	K3
CO4	To identify career opportunities	K4
CO5	To interpret technical skill of data scientist	K5

Mapping

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

Units	Content	Hrs.
Unit I	Data analytics: Introduction – Importance - Types of analytics	6
Unit II	Common Terminologies - Tools and basic prerequisites	6
Unit III	Advanced Tools – Workflow	6
Unit IV	Applications: Industries – Business Functions	6
Unit V	Career in analytics: Data scientist - Life of a data scientist - Become a data scientist - Technical skills - Career path in analytics.	6
Total Contact Hrs.		30

Pedagogy

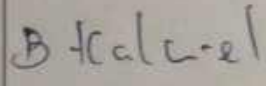
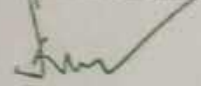
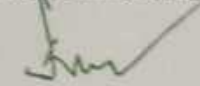
Direct Instruction, Digital Presentation

Assessment Methods:

Test, Seminar, Quiz, Assignments

Web References:

- ❖ <https://data36.com/data-analytics-basics-intro/>
- ❖ <https://blog.k2datascience.com/the-basics-of-data-analytics-77e5cc7ea741>
- ❖ https://www.jigsawacademy.com/em/Beginners_Guide_to_Analytics.pdf

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT4N2			Title	Batch:	2025 - 2028
				Non Major Elective - II : Cyber Security	Semester:	IV
Lecture Hrs./Week	2	Tutorial Hrs./Sem.	--		Credits:	2

Course Objective

On successful completion of this subject the students can understand various concepts of Cybercrime, security tips for email and smartphones 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 cyber security & crimes	K1
CO2	To understand the types of security mechanisms	K2
CO3	To apply and identify security measures, and various types of malwares and viruses	K3
CO4	To analyze security, privacy, and efficiency of a email	K4
CO5	To Assess the concepts of Antivirus and safety mechanisms.	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

Units	Content	Hrs.
Unit I	Introduction to cybercrime: classification – reasons. Malware and its types: Adware – Spyware – Browser hijacking software – Virus- Worms – Trojan Horse – Scareware.	6
Unit II	Kinds of cybercrime – Authentication – Encryption. Digital Signature – Anti-virus – Firewall – Steganography – Computer Forensics.	6
Unit III	Reporting Cybercrime – Recent Cybercrime incidents – Cyber security initiatives in India.	6
Unit IV	Generating secure password – Using password manager – Enabling two-step verification – Free Antivirus.	6
Unit V	Safe browsing – Safe browsing guidelines for social networking sites. Email security tips – Smartphone security guidelines	6
	Total Contact Hrs.	30

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

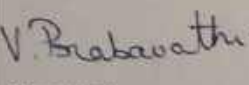
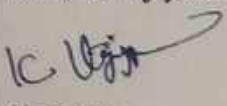
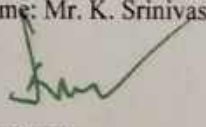
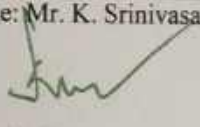
- ❖ Dr. JeetendraPande, "Introduction to Cyber Security", Uttarakhand Open University, Haldwani, ISBN: 978-93-84813-96-3.

Reference Books

- ❖ ATUL KAHATE. (2013). *CRYPTOGRAPHY and NETWORK SECURITY*. 3rd Edition, McGraw-Hill Education Pvt Ltd.

Web References

- ❖ <https://www.geeksforgeeks.org/cyber-security-tutorial/>
- ❖ <https://www.simplilearn.com/tutorials/cyber-security-tutorial>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT4VA			Title	Batch:	2025-2028
				VAC II:	Semester:	IV
Lecture Hrs./Week	30 Hrs.	Tutorial Hrs./Sem.	-	Data Visualization	Credits:	2*

Course Objective

On successful completion of this subject the students can understand various concepts of Data Visualization

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 visualization	K1
CO2	To understand the types of charts	K2
CO3	To apply and identify various types of Libraries for data visualization	K3
CO4	To analyze the data in different aspects	K4
CO5	To Assess the concepts of Data visualization	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

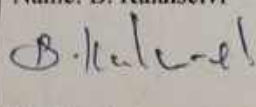
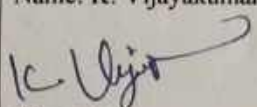
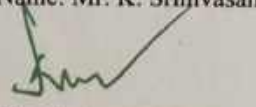
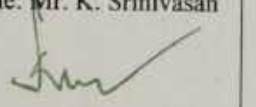
Content	Hrs.
1. Introduction to various Data Visualization tools 2. Introduction to Tableau and Installation 3. Connecting to Data and preparing data for visualization 4. Perform Data Aggregation 5. Apply Data Visualization using Pie and bar chart 6. Create Basic Dashboards 7. Basic Visualization charts using scatter plot 8. Create a Histogram and Line chart 9. Perform Statistical functions 10. Apply Data Visualization using Bubble chart	30 Hrs
Total Contact Hrs.	30

Pedagogy:

Direct Instruction, Digital Presentation
--

Assessment Methods:

Test, Assignments, Group Discussion

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
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Programme Code:	B.Sc. - IT	Programme Title:	Information Technology
Course Code:	25UIT514	Title	Batch: 2025 - 2028
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-
		CC - IX : Python Programming	Semester: V
			Credits: 4

Course Objective

To understand various concepts of Python and expertise in Python programming knowledge

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect basic programming concepts	K1
CO2	To understand and familiar with the basic coding in python	K2
CO3	To apply python terminologies for developing applications in small scale	K3
CO4	To figure out advanced concepts in python for developing web based applications	K4
CO5	To assess the data analysis tools usage in python.	K5

Mapping

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

Units	Content	Hrs.
Unit I	Python Basics – I: Introduction –Basic Concepts . Python Basics – II: Introduction – Data types – Mutable Vs Immutable-Input to python-Modular Programming and python Modules.	14
Unit II	Operators in python- Functions: Introduction-Need-Basics-Defining functions- Passing Variables- Function Arguments-Additional note on Modules-Special functions.	14
Unit III	Flow control – Strings: Creation, Initialization and Accessing elements-Traversing – String Operations-Difference between function, method and Attributes – Lists: Introduction-Basic concepts-Creating, Traversing and slicing Lists- List Functions and Methods- Nested list and using them as matrix.	16
Unit IV	Dictionaries: Introduction- Basics- Concepts-Functions and Methods-Dictionary Methods-View Objects. Tuples: Introduction-Basic concepts-Additional topics- Regular Expression: Basic concepts- Special characters, Groups of characters and Anchors-Understanding Re Module- Match object-Important Methods.	16
Unit V	File Operations: Introduction – Basics –Reading and Writing- Advanced concepts. Pandas: Open Source Data Analysis and Manipulation Tool: Introduction- Basics- Using Pandas for files.	15
	Total Contact Hrs.	75

Pedagogy:

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments

Text Book:

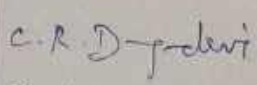
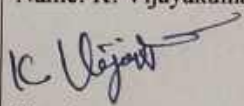
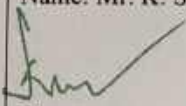
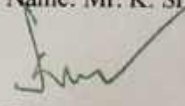
- ❖ Anurag Gupta, G. P. Biswas, (2020), Python Programming – Problem Solving, Packages And Libraries, McGraw Hill Publications.

Reference Books:

- ❖ SheetalTaneja and Naveen Kumar, (2018) “Python programming A Modular Approach with Database, Mobile, and Web Applications“ Pearson India Education Services.
- ❖ Chris Meyers Allen Downey, Jeffrey Elkner. (2015). Learning with Python DreamTech Press, Kindle Edition.

Web References:

- ❖ <https://www.youtube.com/watch?v=ApMSoHn1cM4>
- ❖ <https://www.youtube.com/watch?v=eaXiOpnRYDE>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology		
Course Code:	25UIT515			Title	Batch:	2025 - 2028	
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	5	CC – X : Visual Programming	Semester:	V	
					Credits:	4	

Course Objective

To understand the various concepts of C#.Net and MVC Controllers

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recall various statements, structure of C#.Net , data types, Methods, properties, Indexes, Overloading, Inheritance and polymorphism etc.	K1
CO2	To Understand the basic Namespaces and Components, Delegates, Events and Attributes. I/O Streams	K2
CO3	To make use of the various controls of OOPs, Windows Applications and Web Services.	K3
CO4	To analyze MVC Controllers and concepts.	K4
CO5	To prove the concepts into the Lab. Programs using C#.net and MVC Controllers.	K5

Mapping

PO/PSO CO	PO1	PO2	PO 3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	M	-	-	M	M	-	-	M	-	-
CO2	M	H	M	-	-	M	M	-	-	M	-	H
CO3	H	H	H	H	-	M	H	M	H	H	-	-
CO4	H	H	M	-	M	M	M	-	-	H	-	H
CO5	H	H	H	H	M	M	H	M	H	H	-	H

Units	Content	Hrs. L+T
Unit I	Visual C#.Net: Introduction - Features - Data types and console I/O. Methods: (value, ref, out, params). Properties, Indexes and Operator Overloading: Introduction - Properties - Indexes - Operator overloading - Conversion operators. Inheritance and Polymorphism: Virtual methods - Abstract Classes and Abstract Methods - Sealed classes.	14+1
Unit II	Namespaces and Components - Namespaces - Components - Components and Namespaces - Access modifiers. Delegates, Events and Attributes. I/O Streams: Introduction - Streams - Binary Data files - Text files - Data files - File and Directory Operations.	14+1
Unit III	Windows applications - I. Windows applications-II. Database connectivity. Basic Web controls. Validation and list web controls: Introduction - validation - list. User and Custom web controls: Introduction - User controls - controls and custom properties, controls. Web services: Introduction - concepts - creation - Creating a web service that use data source.	14+1
Unit IV	Model-View-Controller: Overview-Pattern-Environment- Getting Starting-Life Cycle-Routing-Controllers-Actions-Filters-Selectors-Views-Data Model-Model Building-Database-Validation-System Requirements.	14+1
Unit V	Case Study: MVC controller handling a request to fetch a Book detail MVC controller handling a request to Car Rental System MVC controller handling a request to Health Care Management System MVC controller handling a request to Financial Services Applications MVC controller handling a request to Employee Payroll System MVC controller handling a Basic CRUD (Create, Read, Update, Delete) application	14+1
Total Contact Hrs.		70+5

Pedagogy:

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book:

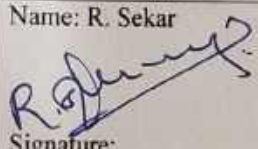
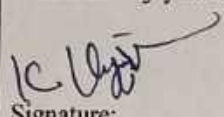
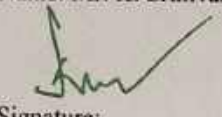
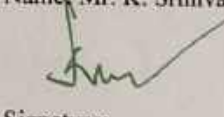
- ❖ Muthu C. (2008). *Visual C#.Net*. First Reprint. Tata Mc-Graw Hill Pub.

Reference Books:

- ❖ Kogent learning solutions (2011) *ASP.NET 4.0 in Simple Steps* - Dream Tech Press Publication.
- ❖ Padmapriya .S (2011) *Web Technology* - Scitech Publications.

Web References:

- ❖ <https://learn.microsoft.com/en-us/aspnet/mvc/overview/getting-started/introduction/getting-started>
- ❖ https://www.tutorialspoint.com/asp.net_mvc/index.htm
- ❖ <https://help.syncfusion.com/aspnetmvc/system-requirements>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology		
Course Code:	25UIT5E1			Title	Batch:	2025 - 2028	
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-	DSE- I : Data Mining	Semester:	V	
					Credits:	4	

Course Objective

To give a better understanding of various concepts of Data mining includes KDD, Association rules, Classification, Clustering, different types of mining, 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 various basic concepts of data mining	K1
CO2	To understand different types of data mining to be applied in various domain areas	K2
CO3	To execute data mining algorithms for finding hidden interesting patterns in data.	K3
CO4	To evaluate various data mining algorithms to solve real world problems	K5
CO5	To judge the pros and cons in handling Mining types.	K5

Mapping

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

Units	Content	Hrs
Unit I	Data mining and the data warehouse: Introduction- Data warehouse – Needs - Designing decision support system-integration with data mining-client server and data warehousing-multi processing machines-cost justification-KDD Process-setting up of KDD Environment-ten golden rules. Data mining: Introduction – Motivations.	15
Unit II	Mining frequent patterns, association and correlations: Basic concepts-market basket analysis-frequent itemset-closed item set and association rules -frequent pattern mining-Efficient and scalable mining methods-Apriori algorithm-generating association rule from frequent item set-improving efficiency of Apriori - mining frequent itemset without candidate generation –using vertical data format-mining closed frequent itemset.	16
Unit III	Classification and prediction: Definition –Issues-classification by Decision tree Induction –Bayesian classification-rule based classification-classification by back propagation- support vector machine.	15
Unit IV	Cluster analysis: Definition -types of data in cluster analysis-categorization of major clustering methods-partitioning methods-hierarchical methods-density based methods.	15
Unit V	Spatial data mining-multimedia data mining-text mining-mining the www- data mining Applications.	14
	Total Contact Hrs	75

Pedagogy:

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

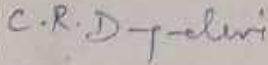
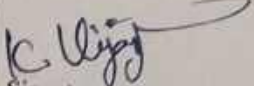
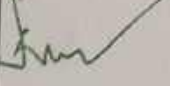
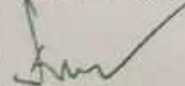
- ❖ Jiawei Han and Micheline Kamber (2005) Data Mining concepts and techniques, Elsevier publication.

Reference Books

- ❖ Vikram Pudi, P.Radha Krishna (2009), *Data Mining*, Oxford University Press, 1st Edition.
- ❖ Anand Rajaraman and Jeffry David Ullman (2012), "Mining of Massive Datasets", Cambridge University Press.

Web References

- ❖ <https://youtu.be/m5c27rQtD2E>
- ❖ <https://youtu.be/6FWIez4lP68>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT		Programme Title:	Information Technology	
Course Code:	25UIT5E2		Title	Batch:	2025 - 2028
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	DSE - I : Cloud Computing	Semester:	V
		-		Credits:	4

Course Objective

To understand various concepts of cloud computing and learn types of cloud services, usage of cloud etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect cloud networking concepts	K1
CO2	To understand and familiar with the basic concepts of cloud computing and python	K2
CO3	To apply the terminologies in designing cloud based applications	K3
CO4	To figure out security issues in cloud computing	K4
CO5	To judge the pros and cons of various types of cloud providers	K5

Mapping

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

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.	16
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.	14
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.	16
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.	15
Unit V	Python Basics: Introduction – Installation – Data types and Data structures –Control flow – Functions – Modules – Packages – File handling – Date/Time – Operations – Classes. Python for Cloud: Amazon web services – Google Platform – Windows Azure – MapReduce – Packages – Web Application Framework – Designing a RESTful Web API.	14
Total Contact Hrs.		75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(Roll Play)

Text Book

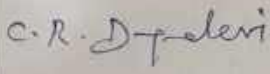
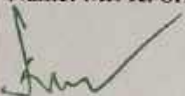
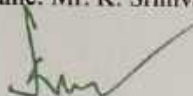
- ❖ ArshdeepBahga, Vijay Madiseti. (2016). Cloud Computing – A Hands-on Approach. Universities Press Pvt. Ltd.

Reference Books

- ❖ Anthony T.Velte, Toby J.Velte, Robert Elsenpeter. (2013). Cloud Computing - A Practical Approach. McGraw Hill Publications. Fourteenth reprint.
- ❖ Michael Miller. (2009). Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing.

Web Reference

- ❖ <https://www.youtube.com/watch?v=RziNWUIBPPM>
- ❖ <https://www.youtube.com/watch?v=rjY59WLMK2o>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT5E3			Title	Batch:	2025 - 2028
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-	DSE - I: Wireless Networks	Semester:	V
					Credits:	4

Course Objective

To understand various concepts transmission techniques, adhoc networks and wireless sensor networks

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect analog and digital transmission	K1
CO2	To understand and familiar in wireless LAN and WPAN	K2
CO3	To apply sensor network in various scenarios	K3
CO4	To figure out challenges in wireless networks	K4
CO5	To judge design principles of wireless networks	K5

Mapping

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

Units	Content	Hrs.
Unit I	Evolution of wireless networks – Challenges - Transmission fundamentals: Analog and digital data transmission - Transmission media - Modulation techniques for wireless systems - Multiple access for wireless systems - Performance increasing techniques for wireless networks.	16
Unit II	Introduction to Wireless LANs – WLAN Equipment, Topologies, Technologies, IEEE 802.11 WLAN – Architecture and Services - Physical Layer - MAC Sub Layer –MAC Management Sub Layer, Other IEEE 802.11 Standards.	14
Unit III	Introduction – Bluetooth: Architecture - Protocol Stack - Physical Connection – Mac mechanism – Frame format – Connection management –Low Rate and High Rate WPAN, ZigBee Technology IEEE 802.15.4: Components – Network topologies – PHY – MAC.	16
Unit IV	Introduction- Characteristics of Adhoc Networks - Classifications of MAC Protocols: Connection Based protocols, Reservation Mechanism - Table driven Routing protocols: DSDV, WRP - On Demand routing protocols: DSR,AODV,TORA –Routing Protocol with Efficient Flooding Mechanism: OLSR - Hierarchical routing protocols – CBRP, FSR.	15
Unit V	Introduction - Challenges for wireless sensor networks - Comparison of sensor network with ad-hoc network - Single node architecture: Hardware components - Energy consumption of sensor nodes - Network architecture: Sensor network scenarios - Design principles – Operating systems.	14
Total Contact Hrs.		75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(Role Play)

Text Book

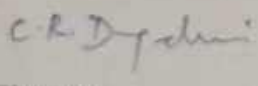
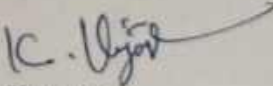
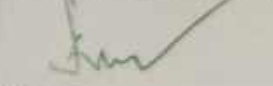
- ❖ Nicopolitidis P. (2010). Wireless Networks. John Wiley and Sons, New York.
- ❖ Vijay K Garg. (2010). Wireless Communication and Networking, Morgan Kaufmann Publishers.
- ❖ Siva Ram Murthy C, Manoj B S. (2012). Ad Hoc Wireless Networks: Architectures and Protocols, Prentice Hall.

Reference Books

- ❖ Holger Karl and Andreas Willig. (2011) Protocol and Architecture for Wireless Sensor Networks, John Wiley Publication.
- ❖ Kaveh Pahlavan. (2013). Principles of wireless networks. Prentice-Hall of India.

Web Reference

- ❖ <https://www.youtube.com/watch?v=HjAxGPd0Oto>
- ❖ https://www.youtube.com/watch?v=pH_ip22R6xE

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Name: C.R. Durga devi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT516			Title	Batch:	2025 - 2028
Practical Hrs./Week	5	Tutorial Hrs./Sem.	-	CC Lab - VI : Visual Programming	Semester:	V
					Credits:	2

Course Objective

To understand the practical experience in various concepts of C#.Net and MVC Controllers

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To experiment the concepts of C#.net	K3
CO2	To motivate to create a program for basic manipulations	K4
CO3	To create applications using Controls	K6
CO4	To Test the Controls using MVC Controller	K6
CO5	To design the MVC Controller for applications	K6

Mapping

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

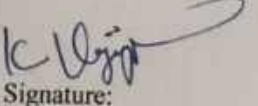
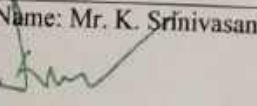
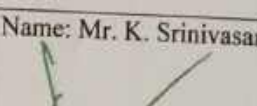
Content	Hrs.
Sample Program List	
TEST I (C#.NET)	
1. Execute Switch Statement Display the employ details.	
2. Create method overloading.	
3. Create constructor overloading	
4. Create student mark list using inheritance	
5. Create User-Defined exception.	
6. Create an application using button controls (check box, radio).	
7. Generate Month calendar.	
8. Create applications using controls (trackbar,panel,treeview),	
9. Create applications using controls (splitter, menu dialog boxes).	
TEST II	
10. Create MVC controller handling a request to fetch a Book detail	
11. Create MVC controller handling a request to Car Rental System	
12. Create MVC controller handling a request to Health Care Management System	
13. Create MVC controller handling a request to Financial Services Applications	
14. Create MVC controller handling a request to Employee Payroll System	
15. Create MVC controller handling a Basic CRUD (Create, Read, Update, Delete) application	
Total Contact Hrs.	75

Pedagogy:

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Assignments, Group task (Group Discussion)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology		
Course Code:	25UIT517			Title	Batch:	2025 - 2028	
Practical Hrs./Week	5	Tutorial Hrs./Sem.	-	CC Lab. - VII: Python Programming	Semester:	V	
					Credits:	2	

Course Objective

To apply various concepts like string handling, mathematical functions, control structure and files in Python language.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To deploy the list and tuple using control structures	K3
CO2	To examine need of files and its related functions	K4
CO3	To choose various packages suitable for the application	K5
CO4	To verify the usage of various in built functions and packages	K5
CO5	To create an application using python as a developing tool	K6

Mapping

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

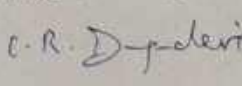
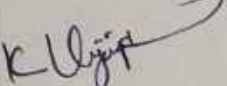
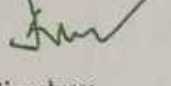
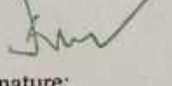
Content	Hrs.
SAMPLE PROGRAM LIST 1. Develop a program to read a number n and print an inverted star pattern of the desired size. 2. Develop a program to search the number of times a particular number occurs in a list. 3. Develop a program to read a list of words and return the length of the longest one 4. Develop a program to take a string and replace every blank space with a hyphen 5. Develop a program to check if a given key exists in a dictionary or not 6. Create a program to check common letters in the two input strings 7. Apply recursion to reverse a string 8. Develop a program to read the contents of a file. 9. Assess the area of a rectangle using classes. 10. Test for reading a string from the user and appends it into a file.	75
Total Contact Hrs.	75

Pedagogy:

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Assignments, Group Task(GD)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT5S1			Title	Batch:	2025 - 2028
Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	SEC III :	Semester:	V
				Digital Content Development Lab. (Scribus)	Credits:	2

Course Objective

To Learn, Apply and create various editing techniques of Scribus.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To deploy basic tools for designing photos.	K3
CO2	To examine various editing tools.	K4
CO3	To choose manipulation of text with photos.	K5
CO4	To verify filters and layers	K5
CO5	To create pdf document	K6

Mapping

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

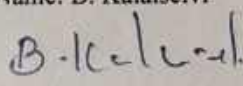
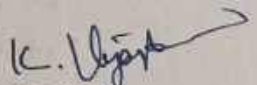
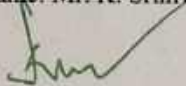
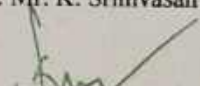
Content	Hrs.
SAMPLE PROGRAM LIST 1. Perform Scanning and simple image editing. 2. Apply Color change, image extraction and merging of images. 3. Create Smoothening of sharp edges. 4. Draw and Paint with Colors. 5. Placing a Photo inside Text. 6. Remove red eyes from a photo. 7. Apply Filters and layers. 8. Create a PDF-document from MS-Office-programs.	60

Pedagogy:

Direct Instruction, Digital Presentation
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Assessment Methods:

Test, Assignments ,Group Task (GD)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT5S2			Title	Batch:	2025 - 2028
Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	SEC III :	Semester:	V
				Digital Content Development Lab. (Canva)	Credits:	2

Course Objective

To learn, apply and create various editing techniques of Canva.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To deploy basic tools for designing photos.	K3
CO2	To examine various editing tools.	K4
CO3	To choose manipulation of text with photos.	K5
CO4	To verify filters and layers	K5
CO5	To create PDF document	K6

Mapping

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

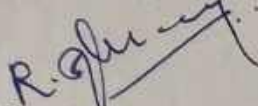
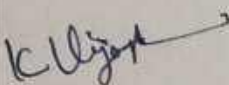
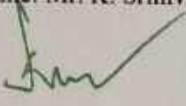
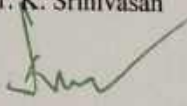
Content	Hrs.
SAMPLE PROGRAM LIST 1. Perform Scanning and simple image editing. 2. Apply Color change, image extraction and merging of images. 3. Create Smoothing of sharp edges. 4. Draw and Paint with Colors. 5. Placing a Photo inside Text. 6. Remove red eyes from a photo. 7. Apply Filters and layers. 8. Create a PDF-document from MS-Office-programs..	60
Total Contact Hrs.	60

Pedagogy:

Direct Instruction, Digital Presentation
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Assessment Methods:

Test, Assignments ,Group Task (GD)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT5AL			Title	Batch:	2025 - 2028
Lecture Hrs./Week	SS	Tutorial Hrs./Sem.	-	ALC - I Cyber Law (Optional) – Self Study	Semester:	V
					Credits:	2**

Course Objective

To cultivate knowledge on Technical aspects of Cyber Security and Evidence Aspects and to acquire knowledge on Information Technology Act and EDI

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the concepts of cyber law and cyber space	K1
CO2	To understand cyber security technical aspects	K2
CO3	To apply different types of technical evidence aspects	K3
CO4	To evaluate the electronic data interchange scenario	K4
CO5	To determine information technology act	K5

Mapping

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

Units	Content
Unit I	Cyber Law: Introduction- Concept of Cyberspace-E-Commerce in India-Privacy factors in E - Commerce-cyber law in E-Commerce-Contract Aspects.
Unit II	Security Aspects: Introduction-Technical aspects of Encryption-Digital Signature-Data Security. Intellectual Property Aspects: WIPO-GII-ECMS-Indian Copy rights act on soft propriety works Indian Patents act on soft propriety works.
Unit III	Evidence Aspects: Evidence as part of the law of procedures –Applicability of the law of Evidence on Electronic Records-The Indian Evidence Act 1872.Criminal aspect: Computer Crime-Factors influencing Computer Crime- Strategy for prevention of computer crime Amendments to Indian Penal code 1860.
Unit IV	Global Trends- Legal frame work for Electronic Data Interchange: EDI Mechanism-Electronic Data Interchange Scenario in India
Unit V	The Information Technology Act 2000-Definitions-Authentication Of Electronic Records Electronic Governance-Digital Signature Certificates.

Assessment Methods:

Test, Quiz, Assignments

Text Books:

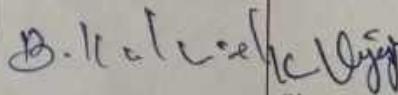
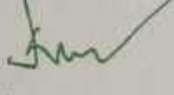
- ❖ Suresh T.Viswanathan, (2022), "The Indian Cyber Law", 3rd Edition: Bharat Law House, New Delhi.

Reference Books:

- ❖ Cory Altheide and Harlan Carvey, (2011) "Digital Forensics with Open Source Tools", Elsevier.
- ❖ Bill Nelson, Amelia Philips, Chris Steuart (2015) "Guide to Computer Forensics and Investigations", 5th Edition, CENGAGE Learning.

Web References:

- ❖ <https://www.youtube.com/watch?v=KtuCsBIJXk8>
- ❖ <https://www.youtube.com/watch?v=6srnawS4PLQ&list=PLX0Im12KwTwlm-jOWtFqeJg8go7JBj72J>
- ❖ <https://www.youtube.com/watch?v=SCgc55vtd6M>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT618			Title	Batch:	2025 - 2028
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	-	CC – XI : Information Security	Semester:	VI
					Credits:	4

Course Objective

To endow with better knowledge on various concepts of Security, Symmetric and Asymmetric algorithms, Digital certificates, E-mail, WWW, 2G, 3G etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To Recollect basic concepts of network security	K1
CO2	To Understand basic knowledge of cryptography	K2
CO3	To Apply diverse security mechanisms	K3
CO4	To Evaluate various security algorithms	K4
CO5	To Interpret different types of protocols	K5

Mapping

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

Units	Content	Hrs.
Unit I	Security: Introduction – Need – Approaches – Principles – <i>*Types of attacks</i> . Cryptography: Introduction – Plain text and Cipher text – Substitution & Transposition techniques – Encryption and Decryption – Symmetric and Asymmetric key Cryptography – Steganography – Key range and Key size – Possible types of attacks.	17
Unit II	Symmetric Key Algorithms: Introduction – <i>*Algorithm Types and modes</i> – Overview – DES– IDEA– RC4 & 5 – Blowfish – AES.	18
Unit III	Asymmetric Key Algorithms: Introduction – History – Overview – RSA algorithm – <i>*Symmetric and asymmetric cryptography</i> . Digital Signatures: Introduction – Message Digests – MD5 – Secure Hash Algorithm. Knapsack algorithm – Other algorithms.	18
Unit IV	Digital Certificates: Introduction – Concepts – <i>*Certification Authority</i> – Technical details – Creation – Cross certification – Revocations. Private key management – PKIX model – PKCS.	18
Unit V	Internet Security Protocols: Introduction – Concepts. Secure Socket Layer (SSL): Transport Layer Security (TLS) – Secure Hyper Text Transfer Protocol (SHTTP) – Time Stamping Protocol (TSP). Secure Electronic Transaction (SET): Introduction – Participants – Process – Internals. SSL Versus SET – 3-D secure Protocol. Electronic Money: Introduction – Security mechanisms – Types. Email security: Introduction – Privacy Enhanced Mail – Pretty Good Privacy. WAP Security – Security in GSM – Security in 3G.	19
	Total Contact Hrs.	90

Pedagogy :

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD)

Text Book

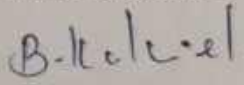
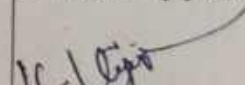
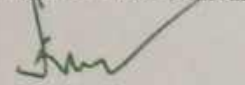
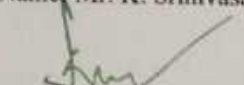
- ❖ ATUL KAHATE. (2013). *CRYPTOGRAPHY and NETWORK SECURITY*. 3rd Edition, McGraw-Hill Education Pvt Ltd.

Reference Books

- ❖ William Stallings. (2006). *Cryptography and Network Security Principles and Practices*. 4th Edition. PHI Education Asia.
- ❖ Behrouz A. Forouzan. (2007). *CRYPTOGRAPHY and NETWORK SECURITY*. Tata McGraw Hill Pub.

Web References

- ❖ <https://www.youtube.com/watch?v=edQUvaUhHg>
- ❖ <https://www.youtube.com/watch?v=9OjK9NNIXYY>
- ❖ <https://www.youtube.com/watch?v=NK5Z6Oj0YkM>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT6E4			Title	Batch:	2025 - 2028
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-	DSE – II : Machine Learning	Semester:	VI
					Credits:	4

Course Objective

To give a better understanding of various concepts of Data machine learning, evaluation models generated from data a build machine learning algorithms, prepare data, and use different techniques using Python

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 Machine learning techniques and mathematical concepts in ML	K1
CO2	Understand a wide variety of learning algorithms.	K2
CO3	Understand how to evaluate models generated from data	K3
CO4	Provide a way to evaluate performance of machine learning	K5
CO5	Apply the algorithms to a real-world problem and optimize the models learned.	K5

Mapping

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

Units	Content	Hrs
Unit I	Introduction: Machine Learning Foundations – Overview – Design of a Learning System – Types of Machine Learning – Supervised Learning and Unsupervised Learning – Applications of Machine Learning - Overview of Tools for ML.	15
Unit II	Supervised Learning – I: Simple Linear Regression – Multiple Linear Regression – Polynomial Regression – Ridge Regression – Lasso Regression – Evaluating Regression Models – Model Selection – Bagging – Ensemble Methods.	16
Unit III	Supervised Learning – II: Classification – Logistic Regression – Decision Tree Regression and Classification – Random Forest Regression and Classification – Support Vector Machine Regression and Classification – Evaluating Classification Models.	15
Unit IV	Unsupervised Learning: Clustering – K-Means Clustering – Density-Based Clustering – Dimensionality Reduction – Collaborative Filtering.	15
Unit V	Association Rule Learning: Association Rule Learning – Concepts related to ARL – ARL Algorithms – Apriori – Eclat – Concepts and Algorithms.	14
	Total Contact Hrs	75

Pedagogy:

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Role Play /APS)

Text Book

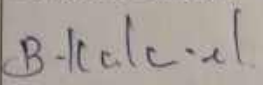
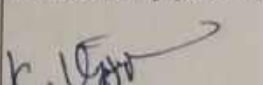
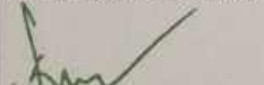
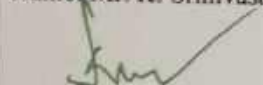
- ❖ Kevin P.Murphy (2012) Machine Learning: A Probabilistic Perspective, MIT Press

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- ❖ Ethem Alpaydin (2014), Introduction to Machine Learning, MIT Press, Third Edition
- ❖ Sebastian Raschka, Vahid Mirjalili (2018), Python Machine Learning and deep learning, kindle book, 2nd edition

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- ❖ <https://www.youtube.com/watch?v=bk12t0Xz5FM>
- ❖ <https://www.youtube.com/watch?v=iLwzRVP7bg>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology		
Course Code:	25UIT6E5			Title	Batch:	2025 - 2028	
Lecture Hrs./Week:	5	Tutorial Hrs./Sem.:	-	DSE – II : Internet of Things	Semester:	VI	
					Credits:	4	

Course Objective

Understand about the definition and usage of Internet of things and the key components of IoT system

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the various concepts of IoT.	K1
CO2	To Understand the basic concepts of M2M and sensors	K2
CO3	To apply the concepts into the embedded devices	K3
CO4	To analyze the various privacy issues.	K4
CO5	To evaluate software design for IoT applications	K5

Mapping

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

Units	Content	Hrs.
Unit I	IoT: Overview – Introduction – Conceptual Framework – Architectural View – Technology Behind – Sources – M2M Communication – Examples.	14
Unit II	Design Principles for Connected Devices: Introduction – IoT/M2M Systems Layers and Design Standardization – Communication Technologies – Data Enrichment, Consolidation and Device Management at Gateway – Designing and Affordability.	14
Unit III	Data Acquiring, Organizing, Processing and Analytics: Introduction – Data Acquiring and Storage – Organizing the data – Transactions, Business Processes, Integration and Enterprise Systems – Analytics – Knowledge Acquiring, Managing and Storing Processes.	15
Unit IV	Sensors, Participatory Sensing, RFIDs, and Wireless Sensor Networks: Introduction – Sensor Technology – Participatory Sensing, Industrial and Automotive IoT – Actuator – Sensor Data Communication Protocols – RF Identification Technology – Wireless Sensor Network Technology.	16
Unit V	Prototyping and Designing the Software for IoT Applications: Introduction – Prototyping Embedded Device Software – Devices, Gateways, Internet and Web/Cloud Services Software Development – Prototyping Online Component APIs and Web APIs. IoT Privacy, Security and Vulnerabilities Solutions: Introduction – Vulnerabilities, Security Requirements and Threat Analysis – IoT Security Tomography and Layered Attacker Model – Security Models, Profiles and Protocols.	16
	Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD)

Text Book

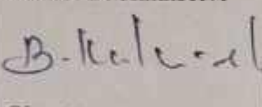
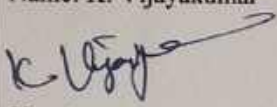
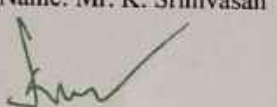
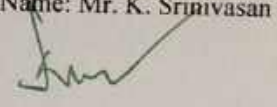
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Reference Books

- ❖ Vijay Madiseti and ArshdeepBahga, (2014), *Internet of Things (A Hands-on-Approach)*, 1st Edition, VPT
- ❖ Margolis, Michael (2011) *Arduino Cookbook: Receipestobegin, Expand and Enhance Your Projects*. O'Reilly Media Inc.
- ❖ Monk, Simon. Raspberry Pi (2016) *Cookbook: Software and hardware problems and Solutions*. O'Reilly Media Inc.

Web Reference

- ❖ https://onlinecourses.swayam2.ac.in/aic20_sp06/preview
- ❖ https://onlinecourses.swayam2.ac.in/arp19_ap79/preview

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT6E6			Title	Batch:	2025 - 2028
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	--	DSE – II : Digital Marketing	Semester:	VI
					Credits:	4

Course Objective

To learn E-Business revenue models, E-marketing, E-security, CRM, online payment systems and sales.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember basic concepts of Digital Marketing	K1
CO2	To understand the role of E-marketing, E-security, E-payment systems in current scenario	K2
CO3	To apply mobile payments.	K3
CO4	To analyze various portals associated with e-commerce	K4
CO5	To justify legal and ethical issues in digital economy and phishing	K5

Mapping

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

Units	Content	Hrs.
Unit I	e-Commerce: Introduction- Early Business information interchange efforts – Emergence of the internet – Milestones – <i>*Advantages – Disadvantages</i> – Online extension of BAM model – Transition to e-commerce in India – E-transition challenges for Indian corporate. Business Models: Introduction – E-Business models based on the relationship of transaction parties and transaction types.	15
Unit II	E-Marketing: Traditional Marketing – Identifying web presence goals – Online marketing – E-Advertising – Internet marketing trends – Target Markets – Marketing strategies.	14
Unit III	E-Security: Information system security – <i>*Security on the internet</i> . E-Payment Systems: Internet Banking – Digital payment requirements – Digital token based e-payment systems – Classification of new payment systems – Electronic cash – Risk and e-Payment system – Online financial services in India – Online stock trading.	15
Unit IV	E-customer Relationship Management: CRM – Typical Business Touch Points. E-supply Chain Management: CISCO – supply chain. Information Systems for Mobile Commerce: Introduction – Mobile payments – Mobile Commerce in India.	15
Unit V	Portals for E-Business: <i>*Portals</i> – Requirements of intelligent websites – portals for mass collaborations – portals for Enterprise Resource Planning – ERP – Intranet Portals – HRM – Various HRIS modules. Legal and Ethical Issues: Ethical issues in Digital economy – cyber stalking – Phishing – Application fraud – Skimming – Copyright – Internet Gambling – Threats to children – Special Nature of Computer Ethics.	16
	Total Contact Hrs.	75

Pedagogy:

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Role Play /APS)

Text Book

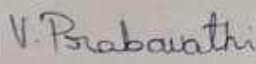
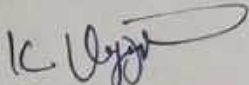
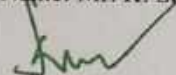
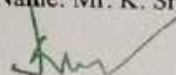
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- ❖ Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, (2011), *E-commerce Fundamentals and Applications*, 1st Edition, Wiley India Pvt Ltd.
- ❖ Gary P Schneider, (2012), *E-Commerce Strategy, Technology And Implementation*, 9th Edition, Engage Learning Pub.

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- ❖ <https://www.slideshare.net/sajidkhetani/digital-payments-india-perspective>
- ❖ <https://www.sampletemplates.com/marketing-templates/digital-marketing-presentation.html>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT6E7			Title	Batch:	2025 - 2028
				DSE - III: Big Data Analytics	Semester:	VI
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	-		Credits:	4

Course Objective

To cultivate knowledge about big data analytics, technologies and to transform the business using Analytics.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the fundamentals of Big Data.	K1
CO2	To understand the concepts of Hadoop	K2
CO3	To apply different types of Analytics	K3
CO4	To evaluate the results and transform the business	K4
CO5	To improve business through social media analysis	K5

Mapping

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

Units	Content	Hrs.
Unit I	Types Of Digital Data: classification of digital data. Introduction to Big Data: Characteristics– Evolution – Definition – Challenges – Big Data Definition – Other Characteristics – Need of Big Data – Traditional Business Intelligence Versus Big Data – Data Warehouse Environment – Hadoop Environment – Big Data Today – Changing Realms Of Big Data. Big Data Analytics: Big Data Analytics – Classification Of Analytics – Greatest Challenges – Top Challenges – Importance – Kind Of Technologies to Meet The Challenges – Data Science – Data Scientist – Terminologies used in Big Data – BASE – Analytics Tools	19
Unit II	The Big Data Technology Landscape: NoSQL – Hadoop. Introduction to Hadoop: Introduction – Need- RDBMS Versus Hadoop – Distributed Computing Challenges – History – Overview – Use case – Distributors – HDFS – Processing Data with Hadoop – Managing Resources And Applications With Hadoop YARN – Interacting With Hadoop Ecosystem- Few Interesting Differences.	18
Unit III	Apply Analytics : Evolution of analytics-Text analytics-Speech analytics-Video/image analytics-Behavior analytics-Combined analytics-Transparency-Prediction vs. privacy	17
Unit IV	Report Results : Data visualization-New data visualization-Displaying behavior & emotions-Displaying connections-How to improve data visualization-Info graphics - Beware the self-service business intelligence tools-The ingredients of successful data visualization and info graphics - Management dashboards	18
Unit V	Foundation for Social Media Analytics: Foundation for Analytics: – Digital Gap – Social Media Data Sources – Defining Social Media Data –Data Sources – Estimated vs. Factual Data Sources – Data Gathering in Social Media Analytics. From Data to Insights: Actionable Analytics – Focus on objective – Plan to shape data to insights – Choosing a good analytics tool – Data Aggregation calculations and display – Data display – Social-Media and Big data – Potential Challenges. Data Identification: Professional networking sites - social sites – information sharing sites – micro blogging sites – blogs /wikis	18
	Total Contact Hrs.	90

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments

Text Books:

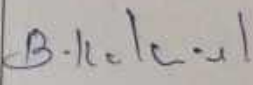
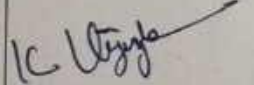
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- ❖ Bernard Marr, (2015) " Big data : using smart big data, analytics and metrics to make better decisions and improve performance", Wiley Publications (Unit – III, IV)
- ❖ Alex Goncalves, Social Media Analytics Strategy, (2017). - Using Data to Optimize Business Performance, Alex Goncalves, APress (Unit –V)

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- ❖ M. Vijayalakshmi Radha Shankarmani, (2016) "Big Data Analytics", Kindle Edition, Wiley Publications
- ❖ Peter Mika, (2007). Social Networks and the Semantic Web, First Edition, Springer.

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- ❖ <https://www.simplilearn.com/what-is-big-data-analytics-article>
- ❖ <https://searchbusinessanalytics.techtarget.com/definition/big-data-analytics>
- ❖ <https://www.youtube.com/watch?v=bY6ZzQmtOzk>
- ❖ <https://www.bmc.com/blogs/hadoop-introduction/>
- ❖ <https://www.bmc.com/blogs/hadoop-architecture/>
- ❖ <https://www.qualtrics.com/experience-management/research/social-media-analytics/>
- ❖ <https://www.ibm.com/topics/social-media-analytics>
- ❖ <https://cambridgesemantics.com/blog/semantic-university/intro-semantic-web/>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology		
Course Code:	25UIT6E8			Title	Batch:	2025 - 2028	
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	-	DSE - III: Artificial Intelligence	Semester:	VI	
					Credits:	4	

Course Objective

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

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To Understand the nature of AI problems and task domains of AI	K1
CO2	To Apply the appropriate search procedures to solve the problems by using best algorithms.	K3
CO3	To Analyze and select the suitable knowledge representation method.	K4
CO4	To Manipulate the acquired knowledge and infer new knowledge.	K4
CO5	To Demonstrate the development of AI systems by encoding the knowledge	K5

Mapping

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

Units	Content	Hrs.
Unit I	Introduction: Artificial Intelligence-Foundations-History-State of the Art. Intelligent Agents: Agents and Environment – Good Behaviour: The concept of Rationality – The Nature of Environments – Structure of Agents.	19
Unit II	Solving problems by searching: Problem Solving Agents – Example problems – Searching for solutions: Infrastructure for search algorithms – Measuring problem-solving performance. Uninformed Search Strategies: Breadth-first Search-Uniform cost Search – Depth-First search-Depth limited search- Iterative deepening depth first search – Bidirectional search. Informed Search Strategies: Greedy best-first search.	16
Unit III	Logical agents: Knowledge based agents – The Wumpus world – logic – Propositional Logic: A very simple logic. Knowledge Representation: Ontological Engineering – Categories and objects – Events.	18
Unit IV	Learning from examples: Forms of Learning- Supervised Learning – Learning Decision Trees – Evaluating and Choosing the Best Hypothesis – The theory of Learning – Regression and Classification – Artificial Neural Networks – Non Parametric Models – Support Vector Machines – Ensemble Learning – Practical Machine Learning.	18
Unit V	Natural Language Processing – Language Models – Text Classification – Information Retrieval – Information Extraction. Robotics: Introduction – Robot Hardware – Robotic Perception – Planning to Move – Planning Uncertain Movements – Moving – Robotic Software Architecture – Application Domains.	19
	Total Contact Hrs.	90

Pedagogy:

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Role Play /APS)

Text Book

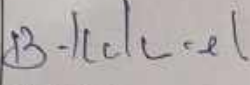
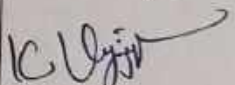
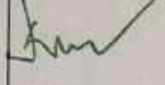
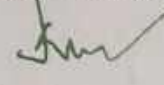
- ❖ Stuart Russell, Peter Norvig, (2009), *Artificial Intelligence: A Modern Approach*, 3rd Edition, Pearson New International Edition.

Reference Books

- ❖ Elaine Rich, Kevin Knight, (2009), *Artificial Intelligence*, 3rd edition, Tata McGraw Hill Publications
- ❖ Michael Negnevitsky, (2020), *Artificial Intelligence*, 3rd edition, Pearson India Education services PVT. Ltd.
- ❖ Er. Rajiv Chopra, (2005), *Artificial Intelligence: A Practical Approach*, 1st Edition, S. Chand Publications.

Web References

- ❖ https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_expert_systems.htm
- ❖ <https://www.geektonight.com/artificial-intelligence-pdf>

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Programme Code:	B.Sc. - IT	Programme Title:	Information Technology	
Course Code:	25UIT6E9	Title	Batch:	2025 - 2028
Lecture Hrs/Week:	6	DSE - III	Semester:	VI
	Tutorial Hrs/ Sem.	-	Credits:	4
		Block Chain Technology		

Course Objective

To understand the fundamentals of block chain and crypto currency, influence and role of block chain in various fields.

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 bit coin.	K3
CO4	To analyze security, privacy, and efficiency of a given Block chain system.	K4
CO5	To explain the Block chain technology in various fields.	K5

Mapping

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

Units	Content	Hrs.
Unit I	Introduction to Block chain: The big picture of the industry – size, growth, structure, players. Bitcoin versus Crypto currencies versus Block chain - Distributed Ledger Technology (DLT). Strategic analysis of the space – Block chain platforms, regulators, application providers. The major application: currency, identity, chain of custody.	18
Unit II	Network and Security: Advantage over conventional distributed database, Block chain Network, Mining Mechanism, Distributed Consensus, Block chain 1.0, 2.0 and 3.0 – transition, advancements and features. Privacy, Security issues in Block chain.	19
Unit III	Crypto currency: Crypto currency - History, Distributed Ledger, Bit coin protocols - Symmetric-key cryptography - Public-key cryptography - Digital Signatures -High and Low trust societies - Types of Trust model: Peer-to-Peer, Leviathan, and Intermediary. Application of Cryptography to Block chain.	19
Unit IV	Crypto currency Regulation: Crypto currency Regulation - Stakeholders, Roots of Bit coin, Legal views - exchange of crypto currency - Black Market - Global Economy. Crypto-economics – assets, supply and demand, inflation and deflation – Regulation.	18
Unit V	Challenges in Block Chain: Opportunities and challenges in Block Chain – Application of block chain: Industry 4.0 – machine to machine communication – Data management in industry 4.0 – future prospects. Block chain in Health 4.0 – Block chain properties - Healthcare Costs - Healthcare Quality - Healthcare Value - Challenges for using block chain for healthcare data.	16
Total Contact Hrs.		90

Pedagogy:

Digital Presentation, Chalk and talk, Flipped class.
--

Assessment Methods:

Seminar, Assignment, Group task

Text Books:

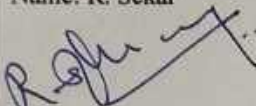
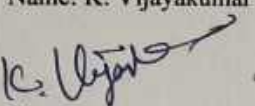
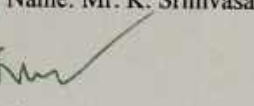
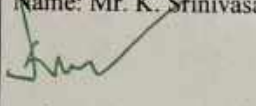
- ❖ Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder, (2016), "*Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction*", Princeton University Press.
- ❖ Antonopoulos, "*Mastering Bitcoin: Unlocking Digital Cryptocurrencies*"

Reference Books:

- ❖ Satoshi Nakamoto, "*Bitcoin: A Peer-to-Peer Electronic Cash System*".
- ❖ Rodrigo da Rosa Righi, Antonio Marcos Alberti, Madhusudan Singh, (2020), "*Blockchain Technology for Industry 4.0*", Springer.

Web Reference:

- ❖ <https://www.slideshare.net/Mithileysh/blockchain-technology-181440314>
- ❖ <https://www.slideshare.net/asrithak/blockchain-technology-ppt>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar  Signature:	Name: K. Vijayakumar  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Mr. K. Srinivasan  Signature:

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Programme Code:	B.Sc. - IT		Programme Title:	Information Technology	
Course Code:	25UIT619		Title	Batch:	2025 - 2028
Practical Hrs./Week	5	Tutorial Hrs./Sem.	CC Lab - VIII : Software Testing & Data Visualization Tools	Semester:	VI
		--		Credits:	2

Course Objective

To gain the knowledge to apply the various programming concepts of Software testing like integration, unit, functional, non-functional testing and also to learn about Data visualization tools

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To make use of properties for checking the values	K3
CO2	To justify the expected result with the obtained result.	K5
CO3	To create GUI based database applications to test	K6
CO4	To design different charts for data visualization	K6
CO5	To Analyse the data from different perspectives using various charts	K6

Mapping

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT620			Title	Batch:	2025 - 2028
Practical Hrs./Week	5	Tutorial Hrs./Sem.	-	CC Lab. – IX: Open Source Methodologies	Semester:	VI
					Credits:	2

Course Objective

To obtain the practical knowledge about Open Source Methodologies commands, Administrative, Normal Commands and Basic Android Applications.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply the concepts of GNOME, shell and SDK.	K3
CO2	To analyze the various commands.	K4
CO3	To verify the results for the different input data.	K5
CO4	To create applications in Open Source Methodologies.	K6
CO5	To create various simple Android applications.	K6

Mapping

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

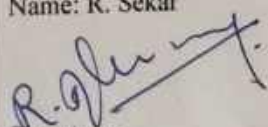
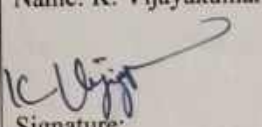
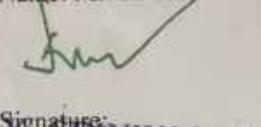
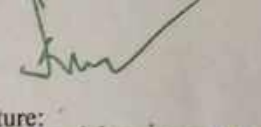
Content	Hrs.
Sample Program List Test I: Using GNOME, perform the following 1. Develop the Change of the Desktop Background and mouse pointer theme. 2. Develop the Change the Root Password. 3. Create the Add/Remove software. 4. Create List and view all the files using Icon. 5. Create an Archive file and Extract all Individual files from it. 6. Develop and Perform character Mapping. 7. Using Shell perform the following 1. Execute the File manipulation commands 2. Execute the Directory manipulation commands 3. Execute the Utility commands 4. Execute the Pipes & Filter commands Test II : Using Android SDK perform the following 1. Develop the phone dialer with the given number filled in. 2. Develop a Google search using Intent. 3. Create a Sending a text message and showing a picture (using extra attributes). 4. Develop the Music player and play a song stored in SD card. 5. Create a simple Android Application.	75
Total Contact Hrs.	75

Pedagogy:

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Assignments, Group Task.(GD)

Course Designed by	Verified by HOD	Checked by	Approved by
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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT621			Title	Batch:	2025 - 2028
Practical Hrs./Week:	-	Tutorial Hrs./Sem.	-	Project	Semester:	VI
					Credits:	3

Course Objective

To learn depth knowledge about tools used in software application development, web designing & web technologies and understand the usage of front end and back end tools.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To create database, tables, coding	K6
CO2	To apply the coding into System side	K3
CO3	To apply various tools in real time Applications/Software	K3
CO4	To analyze the system requirements of the Application /Software	K4
CO5	To verify the developed Application with the customer requirements	K5
CO6	Evaluate the Applications/Softwares through the stake holder	K6

Mapping

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	H	H	M	H	M	H	M	M	M
CO2	H	M	H	H	H	M	H	M	M	H	M	M
CO3	H	H	M	M	H	M	H	M	M	H	M	M
CO4	H	H	H	H	H	H	H	H	H	H	H	M
CO5	H	H	H	M	H	M	H	H	H	H	H	H
CO6	H	H	H	H	H	H	H	M	H	H	H	H

Content
Using only the following Elective Tools (Not Limited to...) Front end, Multimedia & Web based tools: 1. Java & Advanced Java 2. Angular, FX & JavaScript 3. PHP 4. Python 5. C#.NET 6. HTML 5.0, CSS 7. Flash, 3D Max 8. R - Programming Back end tools: 1. MySQL 2. Oracle 8i & above 3. MS Access 2007 4. SQL Server 2000 and Above Note: Project Internship (upto System Study – Criteria 1 (Evaluation - 5 Marks from Internal Marks)) going to fourth semester Vacation and submit their report on fifth semester.

INFORMATION TECHNOLOGY 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 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

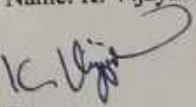
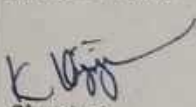
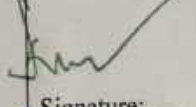
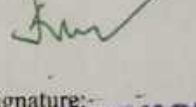
TABLE OF CONTENTS

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.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: K. Vijayakumar	Name: K. Vijayakumar	Name: Mr. K. Srinivasan	Name: Mr. K. Srinivasan
			
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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology		
	25UIT6S1			Title	Batch:	2025 - 2028	
Course Code:				SEC IV :Naan	Semester:	VI	
Practical Hrs./Week	2	Tutorial Hrs./Sem.	--	Mudhalvan: Generative AI Lab. Web development (Wix)	Credits:	2	

Course Objective

To leverage AI for creative content generation and build professional websites using Wix with minimal coding.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply Wix and AI tools to design, develop, and publish functional websites.	K3
CO2	To evaluate AI-generated content, website performance, and user engagement for improvements.	K4
CO3	To compare different AI-powered design approaches to optimize website aesthetics and functionality.	K5
CO4	To develop an interactive, AI-enhanced website with innovative content and advanced features.	K6
CO5	To Integrate AI-driven features and automation into a fully functional, user-friendly website to enhance user experience and engagement.	K6

Mapping

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

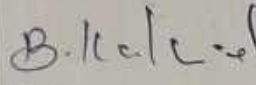
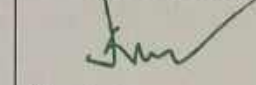
Units	Content	Hrs
Wix	- Customization of website by adding interactive elements - Make a website functional by adding a blog section and optimization for mobile view. - Add or update Mailchimp subscribers when a new Wix form is submitted - Create HubSpot contacts when a new Wix Form is submitted - Add rows to Google Sheets spreadsheets when a new Wix Form is submitted	30
	Total Contact Hrs.	30

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Assignments, Group discussion

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
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Programme Code:	B.Sc. - IT		Programme Title:	Information Technology	
	25UIT6S2		Title	Batch:	2025 - 2028
Course Code:			SEC IV :Naan	Semester:	VI
Practical Hrs./Week	2	Tutorial Hrs./Sem.	--	Credits:	2
			Mudhalvan: Generative AI Lab. Web development (Framer)		

Course Objective

To use AI-driven design and Framer's no-code/low-code tools to create interactive, high-performance websites.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To utilize Framer's no-code/low-code tools and AI features to design and develop responsive websites.	K3
CO2	To assess website performance, user interactions, and AI-generated elements for optimization.	K4
CO3	To compare and critique different AI-powered design strategies for improving functionality and aesthetics.	K5
CO4	To build a fully functional, AI-enhanced interactive website with innovative design and automation.	K6
CO5	To design and develop an AI-powered, interactive website using Framer, integrating automation and dynamic user experiences.	K6

Mapping

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

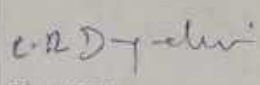
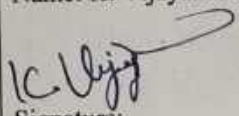
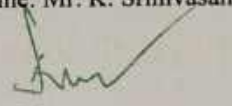
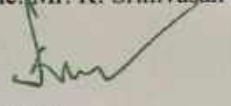
Units	Content	Hrs.
Framer	- Create Button Hover Animation - Create Smooth Page Transition - Animate a Box using Framer Motion - Build a website for an Arts and Science College - Build a online shopping website - Build a website for online educational content.	30
Total Contact Hrs.		30

Pedagogy:

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Assignments, Group discussion

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	25UIT6AL			Title	Batch:	2025 - 2028
				ALC - II Digital Forensics (Optional) – Self study	Semester:	VI
Lecture Hrs./Week	SS	Tutorial Hrs./Sem.	-		Credits:	2**

Course Objective

To cultivate knowledge on handling digital evidence, system artifacts and anti-forensic concepts.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the fundamentals of digital forensics.	K1
CO2	To understand about digital evidence	K2
CO3	To apply different types of system artifacts and anti-forensic concepts	K3
CO4	To evaluate the privacy search	K4
CO5	To determine mobile device forensics	K5

Mapping

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

Units	Content
Unit I	Introduction – Uses of Digital Forensics – Organizations of Note – Locard's Exchange Principles – Scientific Method. Key Technical Concepts: Bits, Bytes and Numbering Schemes – File Extensions and File Signatures – Storage and Memory – Computing Environments – Data Types – File Types – Allocated and Unallocated Space.
Unit II	Labs and Tools: Introduction – Forensic Laboratories - Policies and Procedures – Quality Assurance – Digital Forensic Tools – Accreditation. Collecting Evidence: Crime Scenes And Collecting Evidence - Documenting The Scene - Chain Of Custody – Cloning – Live System Versus Dead System – Hashing – Final Report.
Unit III	System Artifacts: Deleted Data - Hibernation File – Registry – Print Spooling Recycle Bin – Metadata - Restore Points And Shadow Copy –Link Files. Anti-Forensics: Introduction – Hiding Data – Password Attacks – Data Destruction.
Unit IV	Legal Aspect: Criminal Law-Searches Without a Warrant – Search with a Warrant – Electronic Discovery – Internet and E-mail: Internet Overview – Web Browsers – E-Mail – Social Networking Sites.
Unit V	Network Fundamentals – Network Security Tools – Network Fundamentals – Incident Responses – Network Evidence and Investigations – Mobile Cellular Networks – Operating Systems – Cell Phone Evidence - Cell Phone forensic tools - Global Positioning Systems. Challenges and Concerns: Standards And Controls - Cloud Forensics - Solid State Drives.

Assessment Methods:

Test, Quiz, Assignments

Text Books:

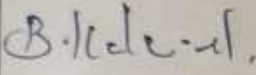
- ❖ John Sammons, (2012) "The Basics of Digital Forensics, The Primer for Getting Started in Digital Forensics", Syngress.
- ❖ Tony Sammes, Brian Jenkinson, (2007) "Forensic Computing", Second edition, Springer.

Reference Books:

- ❖ Cory Altheide and Harlan Carvey, (2011) "Digital Forensics with Open Source Tools", Elsevier.
- ❖ Bill Nelson, Amelia Philips, Chris Steuart (2015) "Guide to Computer Forensics and Investigations", 5th Edition, CENGAGE Learning.

Web References:

- ❖ <https://www.eccouncil.org/cybersecurity/what-is-digital-forensics/>
- ❖ <https://www.bluevoyant.com/knowledge-center/understanding-digital-forensics-process-techniques-and-tools>
- ❖ <https://www.guru99.com/digital-forensics.html>
- ❖ <https://www.lumatec.de/en/products/light-source-superlite-s04/>

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POLLACHI - 642 001.

R.H.

RATIFICATION FOR B.Sc. INFORMATION TECHNOLOGY

Modification of the course 23UIT6E5 & 24UIT6E8 - Artificial Intelligence for the batch of students 2023 – 2026 and 2024-2027 in Semester VI has been done in order to meet the contemporary needs. The Scheme and Syllabi of B.Sc. IT programme have been ratified as per recommendations of Experts in Board of studies meeting.

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology		
Course Code:	23UIT6E5			Title	Batch:	2023 - 2026	
				DSE – II :	Semester:	VI	
Lecture Hrs./Week:	5	Tutorial Hrs./Sem.:	-	Artificial Intelligence		Credits:	4

Course Objective

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

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To Understand the nature of AI problems and task domains of AI	K1
CO2	To Apply the appropriate search procedures to solve the problems by using best algorithms.	K3
CO3	To Analyze and select the suitable knowledge representation method.	K4
CO4	To Manipulate the acquired knowledge and infer new knowledge.	K4
CO5	To Demonstrate the development of AI systems by encoding the knowledge	K5

Mapping

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

Units	Content	Hrs.
Unit I	Introduction: Artificial Intelligence-Foundations-History-State of the Art. Intelligent Agents: Agents and Environment – Good Behaviour: The concept of Rationality – The Nature of Environments – Structure of Agents.	16
Unit II	Solving problems by searching: Problem Solving Agents – Example problems – Searching for solutions: Infrastructure for search algorithms – Measuring problem-solving performance. Uninformed Search Strategies: Breadth-first Search-Uniform cost Search – Depth-First search-Depth limited search- Iterative deepening depth first search – Bidirectional search. Informed Search Strategies: Greedy best-first search.	14
Unit III	Logical agents: Knowledge based agents – The Wumpus world – logic – Propositional Logic: A very simple logic. Knowledge Representation: Ontological Engineering – Categories and objects – Events.	16
Unit IV	Learning from examples: Forms of Learning- Supervised Learning – Learning Decision Trees – Evaluating and Choosing the Best Hypothesis – The theory of Learning – Regression and Classification – Artificial Neural Networks – Non Parametric Models – Support Vector Machines – Ensemble Learning – Practical Machine Learning.	14
Unit V	Natural Language Processing – Language Models – Text Classification – Information Retrieval – Information Extraction. Robotics: Introduction – Robot Hardware – Robotic Perception – Planning to Move – Planning Uncertain Movements – Moving – Robotic Software Architecture – Application Domains.	15
	Total Contact Hrs.	75

Pedagogy:

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

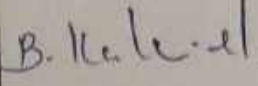
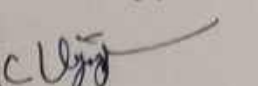
- ❖ Stuart Russell, Peter Norvig, (2009), *Artificial Intelligence: A Modern Approach*, 3rd Edition, Pearson New International Edition.

Reference Books

- ❖ Elaine Rich, Kevin Knight, (2009), *Artificial Intelligence*, 3rd edition, Tata McGraw Hill Publications
- ❖ Michael Negnevitsky, (2020), *Artificial Intelligence*, 3rd edition, Pearson India Education services PVT. Ltd.
- ❖ Er. Rajiv Chopra, (2005), *Artificial Intelligence: A Practical Approach*, 1st Edition, S. Chand Publications.

Web References

- ❖ https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_expert_systems.htm
- ❖ <https://www.geektonight.com/artificial-intelligence-pdf>

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi 	Name: K. Vijayakumar 	Name: Mr. K. Srinivasan 	Name: Mr. K. Srinivasan 
Signature:	Signature:	Signature:	Signature:

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Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	24UIT6E8			Title	Batch:	2024 - 2027
				DSE - III: Artificial Intelligence	Semester:	VI
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	-		Credits:	4

Course Objective

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

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To Understand the nature of AI problems and task domains of AI	K1
CO2	To Apply the appropriate search procedures to solve the problems by using best algorithms.	K3
CO3	To Analyze and select the suitable knowledge representation method.	K4
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Mapping

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

Units	Content	Hrs.
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	Total Contact Hrs.	90

Pedagogy:

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Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

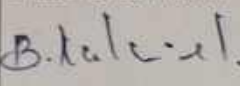
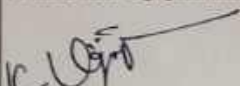
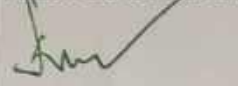
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PRIVATE RESOLUTION

Upon successful completion of courses from Swayam / NPTEL / UGC approved portal, which have durations of 30, 40, 60, 75 or 90 hours, students are eligible to receive 2, 3, 4, 5 or 6 credits respectively. These credits can be applied as a compensatory course in Part-III (Discipline specific Elective) and this could be certified by BoS, Chairman of Department Concerned. Additionally, the completion of these courses can be reflected in the consolidated mark sheets for undergraduate and postgraduate programs.