HAJEE KARUTHA ROWTHER HOWDIA COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai.)

Uthamapalayam, Theni District. Pin Code: 625 533.

DEPARTMENT OF INFORMATION TECHNOLOGY

BACHELOR OF SCIENCE – INFORMATION TECHNOLOGY

SYLLABUS

Choice Based Credit System – CBCS

(As per TANSCHE/MKU Guidelines)

with

Outcome Based Education (OBE)

(Academic Year 2020 -2021 onwards)

HAJEE KARUTHA ROWTHER HOWDIA COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai.)

Uthamapalayam, Theni District. Pin Code: 625 533.

Name of the Programme: B.Sc. Information Technology

Choice Based Credit System (CBCS)
(As per TANSCHE/MKU Guidelines)

with
Outcome Based Education (OBE)

(with effect from the Academic Year 2020 – 2021)

College Vision and Mission

Vision

Our vision is to provide the best type of higher education to all, especially to students hailing from minority Muslim community, rural agricultural families and other deprived, under privileged sections of the society, inculcating the sense of social responsibility in them. Our college is committed to produce talented, duty-bound citizens to take up the challenges of the changing times.

Mission

Our mission is to impart and inculcate social values, spirit of service and religious tolerance as envisioned by our beloved Founder President Hajee Karutha Rowther.

The Vision beckons ..... the Mission continues forever.

Programme Educational Objectives (PEO)

Our graduates will be progressive, efficient, value based, academically excellent, creative, collaborative, empowered and globally competent literates with the skills required for societal change.

They will demonstrate

PEO1	Comprehensive knowledge and expertise, employability, the acumen of creative and critical thinking, the spirit of enquiry and professional attitude required for a successful career
PEO2	Accountability, linguistic competence and communication skills in the work environment and beyond
PEO3	Perseverance, effective collaboration, team spirit, leadership and problem solving skills
PEO4	Keen sense of civility, professional ethics, receptivity and moral righteousness
PEO5	Commitment to address social and environmental threats and to act as responsible service-minded, duty-bound global citizens

Department Vision and Mission

Vision

To transform the students into good citizens and develop them to lead the country as IT professionals

Mission

- To provide the practical skill in developing the simpleapplications.
- To enrich the students knowledge in the recent trends that the industry is seekingfor.
- To impart comprehensive knowledge with equal emphasis on theory andpractices.
- To enhance the employability, the students are to be stimulated to work in ateam

Programme Outcomes (PO)

On completion (after three years) of B.Sc. Information Technology programme, the students are able to

PO1	Apply knowledge of mathematics, computer fundamentals to IT applications.
PO2	Ability to use a range of programming languages and tools to develop computerprograms to solve problems effectively
PO3	Identify, design and analyse complex computer concepts, implementing and interprete the result.
PO4	Select and apply current technology skills and tools accessory for computing practicesand integrate IT based solutions into the user environment effectively
PO5	Comminicate effectively with a range of audience using a range of modalities includingoral, written and graphical

Programme Specific Outcomes (PSO)

A graduate of B Sc. Information Technology after three years will

PSO1	Excel themselves as Software Engineers, System Analyst, Tester, Developer etc and acquire the leadership qualities
PSO2	Get specialization in the course through their Master‟s Degree
PSO3	Promote the students with cumulative skill set to provide solutions to a given real world problem using current trends and technology.
PSO4	Students will be equipped with the life-long learning process for self-sustainability,employability and leadership roles in our dynamic society
PSO5	Deliver a new generation with proficient on fundamental knowledge and recent trends on differentdisciplines in Information Technology.

Programme Scheme

Eligibility

Passed in HSC or any other Examination accepted by the Syndicate as equivalent with information Technology as one of the Subject in Higher Secondary Education.

For Programme Completion

A Candidate shall complete:

- Part I - Language papers – Tamil/Arabic/Malayalam in semesters I, II, III and IV respectively
- Part II - Language papers - English in semesters I, II, III, IV respectively
- Part III - Core papers in semesters I, II, III, IV, V and VI respectively
- Part III - Allied papers in semesters I, II, III, and IV respectively
- Part III - Elective papers in semesters V and VI respectively
- Part IV - Non- Major Elective papers in semesters I and II respectively
- Part IV - Skill based Subject papers in semesters III, IV, V and VI respectively
- Part IV - Value Education paper in semester I
- Part IV - Environmental Studies paper in semester II
- Part V - Extension activity in semester IV

Scheme of Examinations under Choice Based Credit System

Term End Examinations (TEE)	- 75 Marks
Continuous Internal Assessment Examinations (CIAE)	- 25 Marks
Total	- 100 Marks

Pattern of Continuous Internal Assessment Examinations (CIAE)

Average of Two Internal Tests (each 20 marks)	- 20 Marks
Assignment	- 05 Marks
Total	- 25 Marks

Pattern of Term End Examinations
(Max. Marks: 75 / Time: 3 Hours)

External Examinations Question Paper Pattern for Part I & III and Part IV (Non- Major Elective & Skill based Subject)

Section – A (10 X 1 = 10 Marks)
Answer ALL questions.

- Questions 1 - 10
- Two questions from each unit
- Multiple choice questions and each question carries Four choices

Section – B (5 X 7 = 35 Marks)
Answer ALL questions choosing either A or B.

- Questions 11 - 15
- Two questions from each unit (either…. or…. type)
- Descriptive Type

Section – C (3 X 10 = 30 Marks)
Answer any THREE out of five questions.

- Questions 16 - 20
- One question from each unit
- Descriptive Type

External Examinations Question Paper Pattern for Part IV (Environmental Studies and Value Education)

Section – A: (5 X 6 = 30 Marks)
Answer ALL questions choosing either A or B.

- Questions 1 - 5
- Two questions from each unit (either…. or…. type)
- Descriptive Type

Section – B (3 X 15 = 45 Marks)
Answer any THREE out of five questions.

- Questions 6 – 10
- One question from each unit
- Descriptive Type

Part V (Extension Activities)

- Internal Evaluation

Passing Marks

Minimum 27 for External Exam

Eligibility for the degree – passing minimum is **40%**

Practical Examination

Internal – 40 marks

External – 60 marks

Total – 100 marks

Passing minimum is **40%**

Weightage

Weightage for Bloom's Taxonomy	Percentage	Marks	
		CIAE	TEE
Knowledge (Remembering) – K1	40	10	30
Understanding – K2	40	10	30
Applying – K3	20	5	15
Gross Total	**100**	**25**	**75**

Assessment

Distribution of questions and marks for Continuous Internal Assessment Examinations

Bloom's Taxonomy	Section A	Section B	Section C	Total
Knowledge(K1)	2 (2)	1 (a or b) (3)	1 (5)	**25 marks**
Understanding(K2)	2 (2)	1 (a or b) (3)	1 (5)	
Apply(K3)	**Assignment (5)**			

Distribution of questions and marks for Term End Examinations

Bloom's Taxonomy	Section A	Section B	Section C	Total
Knowledge(K1)	2 (2)	4 (a or b) (28)	-------	**Total 75 Marks**
Understanding(K2)	3 (3)	1 (a or b) (7)	2 out of 3 (20)	
Apply(K3)	5 (5)	-------	1 out of 2 (10)	

Note: Figures in parenthesis are Marks

Credits Distribution

Part	Course Category	Courses	Credits	Total Marks
I	Tamil/ Arabic/ Malayalam	4	12	400
II	English	4	12	400
III	Core, Elective & Allied	25	98	2500
IV	Non- Major Elective	2	4	200
	Skill based Subject	4	8	400
	Value Education	1	2	100
	Environmental Studies	1	2	100
V	Extension Activities	1	2	100
		42	**140**	**4200**

Details of Course Category, Code, Credits & Title

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max. Marks	Credits
Semester - I							
Part - I							
Language - I	20UTAL11/ 20UARL11/ 20UMLL11	Tamil / Arabic / Malayalam	6	25	75	100	3
Part - II							
English - I	20UENL11	English for Enrichment - I	6	25	75	100	3
Part – III (OBE)							
Core – I	20UCTC11	C Programming	5	25	75	100	4
Core – II	20UCTC1P	C Programming - Lab	5	40	60	100	4
Allied – I	20UCTA11	Mathematical Foundations	4	25	75	100	4
Part - IV							
NME – I	20UCTN11	Principles of IT	2	25	75	100	2
VED	20UVED11	Value Education	2	25	75	100	2
		Total	**30**			**700**	**22**
Semester – II							
Part - I							
Language - II	20UTAL21/ 20UARL21/ 20UMLL21	Tamil / Arabic / Malayalam	6	25	75	100	3
Part - II							
English - II	20UENL21	English for Enrichment - II	6	25	75	100	3
Part – III (OBE)							
Core - III	20UCTC21	Programming with C++	5	25	75	100	4
Core – IV	20UCTC2P	C++ Programming - Lab	5	40	60	100	4
Allied – II	20UCTA21	Statistics and Aptitude	4	25	75	100	4
Part - IV							
NME – II	20UCTN21	Internet and Web Programming	2	25	75	100	2
EVS	20UEVS21	Environmental Studies	2	25	75	100	2
		Total	**30**			**700**	**22**

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max. Marks	Credits
Semester - III							
Part - I							
Language- III	20UTAL31/ 20UARL31/ 20UMLL31	Tamil / Arabic / Malayalam	6	25	75	100	3
Part - II							
English - III	20UENL31	English for Enlightenment - I	6	25	75	100	3
Part – III (OBE)							
Core - V	20UCTC31	Java Programming	5	25	75	100	4
Core – VI	20UCTC32	Data Structures	4	25	75	100	4
Core – VII	20UCTC3P	Java Programming - Lab	5	40	60	100	4
Allied – III	20UCTA31	Operations Research	4	25	75	100	4
		Total	**30**			**600**	**22**
Semester – IV							
Part - I							
Language - IV	20UTAL41/ 20UARL41/ 20UMLL41	Tamil / Arabic / Malayalam	6	25	75	100	3
Part - II							
English - IV	20UENL41	English for Enlightenment - II	6	25	75	100	3
Part – III (OBE)							
Core - VIII	20UCTC41	Database Management System	4	25	75	100	4
Core – IX	20UCTC42	Operating Systems	4	25	75	100	4
Core – X	20UCTC4P	Database Management System - Lab	4	40	60	100	4
Allied – IV	20UCTA41	Computer Oriented Numerical Methods	4	25	75	100	4
Part - IV							
SBS – I	20UCTS4P	Python - Lab	2	25	75	100	2
Part - V							
EA		Extension Activities**	--	100	--	100	2
		Total	**30**			**700**	**26**

Part – V
Extension Activities**

S.No.	Course Code	Course Title	Max. Marks	Credits
1.	20UNCC41	National Cadet Corps (Army)	100	2
2.	20UNCC42	National Cadet Corps (Navy)	100	2
3.	20UNSS41	National Service Scheme	100	2
4.	20UPED41	Physical Education	100	2
5.	20UYRC41	Youth Red Cross	100	2
6.	20URRC41	Red Ribbon Club	100	2
7.	20UHRC41	Human Rights Club	100	2
8.	20UCOC41	Consumer Club	100	2
9.	20UYOC41	Yoga Club	100	2
10.	20UHFC41	Health and Fitness Club	100	2
11.	20UECC41	Eco Club	100	2
12.	20ULIC41	Library & Information Science Club	100	2
13.	20USCC41	Science Communication Club	100	2
14.	20UFAC41	Fine Arts Club	100	2

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max. Marks	Credits
Semester - V							
Part – III (OBE)							
Core – XI	20UCTC51	Web Technology	5	25	75	100	4
Core – XII	20UCTC52	Digital Principles	5	25	75	100	4
Core – XIII	20UCTC53	Mobile Application Development	4	25	75	100	4
Core – XIV	20UCTC5P	Web Technology – Lab	5	40	60	100	4
Core - XV	20UCTC5Q	Android Programming - Lab	5	40	60	100	3
Elective - I	20UCTE51	Compiler Design	4	25	75	100	4
	20UCTE52	Data Mining and Warehousing					
	20UCTE53	Computer Graphics					
Part - IV							
SBS – II	20UCTS51	Competitive Paper for Aptitude - I	2	25	75	100	2
		Total	**30**			**700**	**25**
Semester – VI							
Part – III (OBE)							
Core – XVI	20UCTC61	Software Engineering	5	25	75	100	4
Core – XVII	20UCTC62	Computer Networks	5	25	75	100	4
Core – XVIII	20UCTC6P	DOT NET Programming - Lab	6	40	60	100	4
Core – XIX	20UCTC6T	Project Work	6	25	75	100	3
Elective - II	20UCTE61	Internet of Things	4	25	75	100	4
	20UCTE62	Open Source Technologies					
	20UCTE63	PC Trouble shooting and ALP					
Part – IV							
SBS - III	20UCTS6P	Animation Techniques - Lab	2	25	75	100	2
SBS – IV	20UCTS61	Competitive Paper for Aptitude - II	2	25	75	100	2
		Total	**30**			**700**	**23**
		Grand Total	**180**			**4200**	**140**

Course Code	Course Title	Category	Total Hours	Credits
20UCTC11	C Programming	Core - I	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

The course is designed to provide complete knowledge of C language. Students will be able to develop logics which will help them to create programs, applications in C.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Writing C Program structure and to declare the variables, constants, operators and expressions.	**K1, K2**
CO2	Developing conditional, iterative statements in C language.	**K1, K2, K3**
CO3	Discussing about Arrays and Strings.	**K1, K2, K3**
CO4	Applying Functions, Structures and Unions in C language.	**K1, K2, K3**
CO5	Utilizing Pointers and File Handling in C language.	**K1, K2, K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**3**	**3**	**3**	**3**
CO2	**2**	**3**	**2**	**3**	**3**
CO3	**3**	**3**	**3**	**2**	**3**
CO4	**2**	**2**	**1**	**2**	**1**
CO5	**3**	**1**	**1**	**1**	**1**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	2	2	2
CO2	1	2	1	2	3
CO3	2	3	2	2	3
CO4	1	2	2	3	2
CO5	2	3	2	3	3

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 10 Hours

Overview of C: History of C - Importance of C - Basic Structure of C - Programming Style. Contents, Variables and Data Types - Declaration of Variables, Storage Class- Defining Symbolic Constants - Declaring a Variable as Constant, Volatile - Overflow and Underflow of Data. Operator and expressions: Arithmetic, Relational, Logical, Assignment, Increment & Decrement, Conditional, Bitwise and Special Operators – Arithmetic Expression – Evaluation of Expressions – Precedence of Arithmetic Operators – Type Conversions in Expression – Operator Precedence and Associatively – Mathematical Functions. Managing I/O Operations: Reading and Writing a Character – Formatted Input, Output.

UNIT II 15 Hours

Decision Making and Branching: If Statement, If… Else Statement - Nesting of If….Else Statement – Else..If Ladder – Switch Statement – The? Operator - Goto Statement – Decision making and Looping: The While Statement – Do Statement – The for Statement –Jumps in Loops.

UNIT III 20 Hours

Arrays and Strings: One Dimensional Array – Declaration, Initialization – Two Dimensional Arrays – Multi Dimensional Array – Initialization – Dynamic Arrays. Strings: Declaration, Initialization of String Variables – Reading and Writing String – Arithmetic Operations on Strings – Putting Strings Together – Comparison – String Handling Function – Table of String – Features of String.

UNIT IV 15 Hours

Functions, Structure and Unions: Need – Multi Function Program – Elements of User Defined Functions – Definition – Return Values and their Types – Function Calls, Declaration, Category of all Types of Arguments and Return Values – Nesting of Functions – Recursion – Passing Arrays, Strings to Functions – Scope Visibility and Life Time of Variables – Multi File Programs. Structure and Unions: Introduction - Defining Structure – Declaring Structure Variables – Accessing Structure Members – Initialization – Union.

UNIT V 15 Hours

Pointers and Files: Introduction – Understanding Pointers – Accessing the Address of a Variable – Declaring Pointers Variables – Initialization of Pointer Variables – Accessing a Variable through its Pointer. Files: Defining Opening, Closing a File. I/O Operation on Files – Error Handling During I/O Operations – Random Access to File – Command Line Arguments.

Text Books

E. Balagurusamy, ***Programming in ANSI C***, TMH Company, 6th Edition.

Unit	Chapters	Unit	Chapters
I	1 to 4	IV	9, 10.1 to 10.5 & 10.12
II	5 & 6	V	11.1 to 11.6 & 12
III	7 & 8		

Reference Books

Byson. S, Gottfied, ***Programming in C***, TMH Company, Schaums Outline Series, 2008, 2nd Edition.

Kernighan B.W. & Ritchie. D.M, ***The C Programming Language***, Prentice Hall of India, 2002, 2nd Edition.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion.

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	History of C - Importance of C - Basic Structure of C - Programming Style.	2	Chalk & Talk Discussion,
1.2	Contents, Variables and Data Types - Declaration of Variables, Storage Class- Defining Symbolic Constants - Declaring a Variable as Constant, Volatile - Overflow and Underflow of Data.	3	Chalk & Talk, E-Resources
1.3	Operator and expressions: Arithmetic, Relational, Logical, Assignment, Increment & Decrement, Conditional, Bitwise and Special Operators – Arithmetic Expression- Evaluation of Expressions- Precedence of Arithmetic Operators – Type Conversions in Expression – Operator Precedence and Associatively – Mathematical Functions.	3	Chalk & Talk, BlogSpot
1.4	Managing I/O Operations: Reading and Writing a Character – Formatted Input, Output.	2	Chalk & Talk
UNIT - II			
2.1	If Statement, If… Else Statement - Nesting of If….Else Statement – Else..If Ladder	5	Discussion
2.2	Switch Statement – The ?: Operator – Goto Statement	3	Chalk & Talk
2.3	Decision making and Looping: The While Statement – Do Statement	2	PPT
2.4	The For Statement –Jumps in Loops.	5	PPT
UNIT - III			
3.1	One Dimensional Array – Declaration, Initialization – Two Dimensional Arrays – Multi Dimensional Array – Initialization. Dynamic Arrays.	7	BlogSpot
3.2	Strings: Declaration, Initialization of String Variables – Reading and Writing String	3	Chalk & Talk

3.3	Arithmetic Operations on Strings – Putting Strings Together – Comparison – String Handling Function	7	Discussion
3.4	Table of String – Features of String	3	PPT
UNIT - IV			
4.1	Need – Multi Function Program – Elements of User Defined Functions – Definition – Return Values and their Types	5	Chalk & Talk
4.2	Function Calls, Declaration, Category of all Types of Arguments and Return Values – Nesting of Functions	3	Chalk & Talk, PPT
4.3	Recursion – Passing Arrays, Strings to Functions – Scope Visibility and Life Time of Variables – Multi File Programs.	3	Chalk & Talk
4.4	Structure and Unions: Introduction - Defining Structure – Declaring Structure Variables – Accessing Structure Members – Initialization – Union.	4	Discussion
UNIT - V			
5.1	Introduction – Understanding Pointers – Accessing the Address of a Variable – Declaring Pointers Variables	5	BlogSpot
5.2	Initialization of Pointer Variables – Accessing a Variable Through its Pointer	4	Discussion
5.3	Files: Defining Opening, Closing a File. I/O Operation on Files – Error Handling During I/O Operations	4	Chalk & Talk
5.4	Random Access to File – Command Line Arguments	2	Chalk & Talk, PPT
	Total	**75**	

Course Designer
Mr. K. A. Sheik Fareed
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC1P	C PROGRAMMING LAB	Core - II	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

On successful completion of this subject the students have the programming ability in C Language.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Understand the basic concepts of C programming and looping Structure	**K1, K2, K3**
CO2	Understand the basic concepts of C programming and looping Structure	**K1, K2, K3**
CO3	Apply the functions & Arrays in C programming	**K1, K2**
CO4	Understand and apply the Strings & Pointers	**K1,K2,K3**
CO5	Understand and apply the Files and command line.	**K1,K2,K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**3**	**2**	**2**	**3**
CO2	**3**	**2**	**2**	**3**	**2**
CO3	**3**	**3**	**3**	**2**	**1**
CO4	**3**	**2**	**1**	**2**	**1**
CO5	**3**	**2**	**3**	**2**	**1**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**3**	**3**	**2**	**2**	**3**
CO2	**3**	**2**	**2**	**3**	**2**
CO3	**3**	**3**	**3**	**2**	**1**
CO4	**3**	**2**	**1**	**2**	**1**
CO5	**3**	**2**	**3**	**2**	**1**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 20 Hours

Program using Library Functions
Program using for-loop
Program using while loop
Program using do-loop

UNIT II 10 Hours

Program using nested if-else.
Program using "Switch".

UNIT III 20 Hours

Program using user-defined Functions
Program using Recursive Function
Program using Recursive Function
Program implementing Two-dimensional Array

UNIT IV 15 Hours

Program to process Strings
Program using pointer
Program implementing structure

UNIT V 10 Hours

Program to process files
Program with command-line arguments

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Program using Library Functions	5	LCD Projector
1.2	Program using for-loop	5	LCD Projector
1.3	Program using while loop	5	LCD Projector
1.4	Program using do-loop	5	LCD Projector
UNIT - II			
2.1	Program using nested if-else	5	LCD Projector
2.2	Program using Recursive Function	5	LCD Projector
UNIT - III			
3.1	Program using user-defined Functions	5	LCD Projector
3.2	Program using Recursive Function	5	LCD Projector
3.3	Program implementing One-dimensional Array	5	LCD Projector
3.4	Program implementing One-dimensional Array	5	LCD Projector
UNIT - IV			
4.1	Program to process Strings	5	LCD Projector
4.2	Program using pointer	5	LCD Projector
4.3	Program implementing structure	5	LCD Projector
UNIT - V			
5.1	Program to process files	5	LCD Projector
5.2	Program with command-line arguments	5	LCD Projector
	Total	**75**	

Course Designer

Mr. Peermohamed. A

Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTA11	Mathematical Foundations	Allied - I	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To enable the students to understand the basic concepts of discrete mathematics and applying its concepts to design algorithms.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	How to Solve the problems using Cayley Hamilton Theorem and know about types of matrices.	**K1, K2**
CO2	Work with relations and illustrate functions as relations	**K1,K2**
CO3	Tabulate the truth table by analyzing prepositions and prove it algebraically.	**K1, K2**
CO4	Compute the types of graphs and applying its concepts to design algorithms.	**K1,K2,K3**
CO5	Identify lattices as algebraic structures and simplify Boolean expressions.	**K1,K2,K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**3**	**2**	**3**	**3**
CO2	**2**	**3**	**1**	**3**	**1**
CO3	**3**	**2**	**2**	**2**	**3**
CO4	**2**	**3**	**3**	**3**	**3**
CO5	**3**	**3**	**2**	**3**	**1**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	3	3
CO2	2	3	1	3	1
CO3	3	2	2	2	3
CO4	2	3	3	3	3
CO5	3	3	2	3	1

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 15 Hours

Matrices: Introduction – Types of matrices - Inverse of a Matrix – Rank of a Matrix– Simultaneous Linear Equation – Characteristic Equation and Cayley Hamilton Theorem.

UNIT II 12 Hours

Set theory*:* Introduction – Relations - Equivalence Relations – Partial Order – Functions – Binary Operations – Group: Definitions and Examples – Elementary Properties of a group.

UNIT III 9 Hours

Logic: Introduction – Connectives – Conjunction - Disjunction – Conditional and Bi-conditional statements - Truth Table – Tautology Implication - Equivalence of Formulae.

UNIT IV 12 Hours

Graph Theory: Introduction – Definition and Examples – Degrees and Sub graphs – Matrices – Eulerian Graphs – Hamiltonian Graphs.

UNIT V 12 Hours

Lattices: Introduction - Partially ordered sets – Lattices – Distributive Lattices – Modular Lattices – Boolean Algebras.

Text Books

S. Arumugam & A. Thangapandi Isaac, A. Somasundrram ***"Modern Algebra".***

Unit I – Chapter 7.0, 7.2, 7.3, 7.5 - 7.7, Unit II – Chapter 1.0, 2.1 – 2.5,

Unit V – Chapter 9.1 – 9.9

Dr. M. K. Venkaatraman, Dr. N. Sridharan, Dr. N. Chandresekaran ***"Discrete Mathematics***".

Unit III – Chapter 9.1 – 9.30

S. A. Ramachandran ***"Invitation to Graph theory"*** Scitech Publication, 2005, Chennai.

Unit- IV – Chapter 2.0 -2.3, 2.8, 5.1 – 5.2

Reference Books

J. P. Tremblay and R. Manohar, *"Discrete Mathematical Structures with Applications to Computer Science"*, Tata McGraw-Hill Education Private Limited, 38th reprint 2010

Narsingh Deo ***"Graph Theory with Applications to Engineering & Computer Science",*** Dover Publications, INC.

Pedagogy

Chalk & Talk, E-Resources & Group Discussion.

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction	1	Chalk & Talk
1.2	Types of matrices	1	PPT
1.3	Inverse of a Matrix	3	PPT
1.4	Rank of a Matrix	3	Chalk & Talk
1.5	Simultaneous Linear Equation	3	Chalk & Talk
1.6	Characteristic Equation and Cayley Hamilton Theorem.	4	Chalk & Talk
UNIT - II			
2.1	Introduction	1	Discussion
2.2	Relations	2	Chalk & Talk
2.3	Equivalence Relations	1	PPT
2.4	Partial Order	1	Chalk & Talk
2.5	Functions	2	Chalk & Talk
2.6	Binary Operations	2	Chalk & Talk
2.7	Group: Definitions and Examples	2	Chalk & Talk
2.8	Elementary Properties of a group.	1	Chalk & Talk
UNIT - III			
3.1	Introduction	1	PPT
3.2	Connectives	1	Chalk & Talk
3.3	Conjunction	1	Discussion
3.4	Disjunction	1	Chalk & Talk
3.5	Conditional and Bi-conditional statements	1	Chalk & Talk

3.6	Truth Table	2	Chalk & Talk
3.7	Tautology Implication	1	Chalk & Talk
3.8	Equivalence of Formulae.	1	Chalk & Talk
UNIT - IV			
4.1	Introduction	1	Discussion
4.2	Definition and Examples	2	E-Resources
4.3	Degrees and Sub graphs	2	Chalk & Talk
4.4	Matrices	1	Chalk & Talk
4.5	Eulerian Graphs	3	Chalk & Talk
4.6	Hamiltonian Graphs	3	Chalk & Talk
UNIT - V			
5.1	Introduction	1	E-Resources
5.2	Partially ordered sets	2	Chalk & Talk
5.3	Lattices	2	Discussion
5.4	Distributive Lattices	2	Chalk & Talk
5.5	Modular Lattices	2	Chalk & Talk
5.6	Boolean Algebras.	3	Chalk & Talk
	Total	**60**	

Course Designer
Ms. R. Neshana
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC21	Programming With C++	Core - III	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To acquire knowledge on Object-oriented programming concepts using C++ and to develop various application programs using C++.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Understanding the concepts of OOPs, data types (both basic and derived)	**K1,K2**
CO2	Apply different types of operators, looping concepts and conditional state for developing the code..	**K1,K2**
CO3	Develop the constructor and destructor with their types in user defined functions and Implement the operator overloading and function overloading concept in complicated problems.	**K1,K2,K3**
CO4	Write the C++ code using inheritance, polymorphism, pointers and virtual functions in impact of application programs.	**K1,K2,K3**
CO5	Utilize the files and their operations, connectivity of the data bases.	**K1,K2,K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**2**	**3**	**2**	**1**
CO2	**2**	**3**	**2**	**3**	**3**
CO3	**2**	**3**	**1**	**2**	**3**
CO4	**3**	**2**	**3**	**3**	**2**
CO5	**2**	**2**	**3**	**2**	**2**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**2**	**1**	**2**	**1**	**3**
CO2	**1**	**1**	**1**	**1**	**2**
CO3	**2**	**1**	**2**	**1**	**2**
CO4	**1**	**2**	**3**	**3**	**3**
CO5	**1**	**2**	**3**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 15 Hours

Basic Concepts of OOPs – Structure of C++ Program – Tokens – Keywords – Identifiers – Constants – Basic Data Types – User Defined Data Types – Derived Data Types – Declaration of Variables – Reference Variables – Manipulators – Expression and its Types.

UNIT II 15 Hours

Functions: Main Function – Function Prototyping – Call by Reference – Return by Reference – Inline Function – Default arguments – Function Overloading.

Classes and Objects: Specifying the Class – Defining Member Function – A C++ Program with Class – Static Members – Arrays of Objects – Friendly Functions.

UNIT III 15 Hours

Constructor and Destructor*:* Constructors – Parameterized Constructor – Multiple Constructors in a Class – Copy Constructor – Destructor.

Operator Overloading*:* Defining Operator Overloading – Overloading Unary Operator – Overloading Binary Operator – Using Friend Function – Rules for Overloading Operators.

UNIT IV 15 Hours

Inheritance: Defining Derived Classes – Single Inheritance – Multilevel Inheritance –Multiple Inheritance – Virtual Base Classes.

Pointers: Pointers to the Object – these Pointers – Pointer to Derived Classes – Virtual Functions Pure Virtual Function.

UNIT V 15 Hours

Managing Console I/O Operations*:* C++ Streams – C++ Stream Classes – Unformatted I/O Operations – Formatted Console I/O Operations.

Files*:* Classes for File Stream Operations – Opening and Closing a File – Detecting end-of-file – File Modes.

Text Books

E. Balagurusamy,***"Object Oriented Programming with C++"***, 4th Edition, TMH Publications, New Delhi.

Unit I - Chapters 1.5, 2.6, 3.2 to 3.7, 3.10, 3.12, 3.17 and 3.19
Unit II - Chapters 4.2 to 4.7, 4.9, 5.3 to 5.5, 5.11, 5.13 and 5.15
Unit III - Chapters 6.2 to 6.4, 6.7, 6.11, 7.2 to 7.5 and 7.7
Unit IV - Chapters 8.2, 8.3, 8.5, 8.6, 8.9 and 9.3 to 9.7
Unit V - Chapters 10.2 to 10.5 and 11.2 to 11.5.

Reference Books

Robert Lafore,***"Object–Oriented Programming in Turbo C++",*** Galgotia Publication, New Delhi.

Herbert schildt,***"C++ The complete References",*** 4th edition, TMH.

Pedagogy

Chalk & Talk, E-Resources & Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Basic Concepts of OOPs and Structure of C++ program	**2**	Chalk & Talk
1.2	Tokens, Keywords, Identifiers Basic , User defined and Derived Data types	**3**	Chalk & Talk
1.3	Declaration of variables and reference variables	**2**	Chalk & Talk
1.4	Manipulators	**3**	Chalk & Talk
1.5	Expressions and their types	**3**	Chalk & Talk
1.6	Basic Concepts of OOPs and Structure of C++ program	**2**	Chalk & Talk
UNIT - II			
2.1	Main Function, Function Prototyping, Call by reference, Return by reference, Inline function, Default arguments	**1**	Chalk& talk
2.2	Function Overloading	**2**	PPT

2.3	Specifying a class, defining member functions	**3**	Chalk & Talk
2.4	Static Data Members	**3**	PPT
2.5	Array of objects	**3**	PPT
2.6	Friendly functions	**3**	PPT
UNIT - III			
3.1	Constructors, Parameterized and multiple constructors in a class	**3**	PDF
3.2	Copy constructor	**3**	PPT
3.3	Destructors	**3**	PPT
3.4	Defining Operator Overloading (Unary, Binary and binary Using Operators)	**3**	Chalk & Talk
3.5	Rules for Overloading Operators	**3**	Chalk & Talk
UNIT - IV			
4.1	Defining Derived Classes	**2**	PPT
4.2	Single, Multiple, Multilevel Hierarchical and Hybrid Inheritance	**7**	PPT
4.3	Pointers, this Pointers, Pointers to derived class and pure virtual Pointers	**6**	Chalk & Talk
UNIT - V			
5.1	C++ stream ,Formatted and unformatted I/O Operations	**7**	Chalk & Talk
5.2	File Stream Operations, Opening and closing a file	**8**	PPT
	Total	**75**	

Course Designer
Dr. J. Thasleen Fathima
Associate Professor of Information Technology and Head

Course Code	Course Title	Category	Total Hours	Credits
20UCTC2P	C++ Programming - Lab	Core - IV	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

Train to write oops concept coding using C++ programs and to solve the problems using constructors, polymorphism, pointers and file concepts.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Demonstrate the concept of classes, arrays and their types by using C++	K1,K2
CO2	Implement Constructors and Destructors using C++ coding.	K1,K2
CO3	Apply the concept of polymorphism in C++	K1,K2
CO4	Apply the concept of Inheritance in C++	K1,K2,K3
CO5	Create and manage files in C++ programs.	K1,K2,K3

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	1	1
CO2	3	3	3	2	1
CO3	3	3	2	3	1
CO4	3	2	2	3	1
CO5	2	2	2	2	1

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**2**	**2**	**2**	**1**	**3**
CO2	**2**	**1**	**2**	**1**	**2**
CO3	**2**	**3**	**3**	**3**	**3**
CO4	**2**	**2**	**3**	**2**	**3**
CO5	**2**	**2**	**2**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 20 Hours

Class, Objects and Arrays

1. Program using static class members.
2. Program using arrays of objects.
3. Program using objects as function arguments and function returning object
4. Program using arrays within a class.
5. Program to implement Two-dimensional arrays

UNIT II 10 Hours

Constructors and Destructors

1. Program to implement constructors in derived class.
2. Program to implement Destructor.

UNIT III 15 Hours

1. Program to implement overloaded constructors.
2. Program to overload operators.
3. Program for overloading binary operators using friend function.

UNIT IV 10 Hours

1. Program to implement multiple and multilevel inheritances.
2. Program to implement Hybrid inheritances.

UNIT V 20 Hours

1. Program to create a file.
2. Program to work with multiple files.
3. Program using sequential I/O operations
4. Program to update a file by Random access

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board & LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Program using static class members	4	PPT
1.2	Program using array of objects	4	PPT
1.3	Program using object as function arguments and function returning object	4	PPT
1.4	Program using arrays within class	4	PPT
1.5	Program using static class members	4	PPT
UNIT - II			
2.1	Program to implement Constructors using derived class	5	PPT
2.2	Program to implement Destructors	5	PPT
UNIT - III			
3.1	Program to implement overloaded Constructors	5	PPT
3.2	Program to overload operators	5	PPT
3.3	Program for overloading binary operator	5	PPT
UNIT - IV			
4.1	Program to implement Multiple and Multilevel inheritances	5	PPT
4.2	Program to implement Hybrid Inheritance	5	PPT
UNIT - V			
5.1	Program to create a file	5	PPT
5.2	Program to work with multiple files	5	PPT
5.3	Program using sequential I/O operations	5	PPT
5.4	Program to update a file by random access	5	PPT
	Total	**75**	

Course Designer

Dr. J. Thasleen Fathima

Associate Professor of Information Technology and Head

Course Code	Course Title	Category	Total Hours	Credits
20UCTA21	Statistics & Aptitude	Allied - II	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	✓
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To improve the numerical and logical ability of the student and enable the students to summary statistics and enhance the problem solving skills.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Demonstrate the Arithmetic mean and to find the average growth of an investment.	**K1, K2**
CO2	Modify and interpret the correlation and determine whether the correlation is significant.	**K1, K2**
CO3	Explain the problems based on average and know the simplification tricks.	**K1, K2**
CO4	Apply the concepts of Problems on Ages, Percentage, Ratio and Proportion to solving real life problems.	**K1,K2,K3**
CO5	Calculate financial accounts for partnership firms in different situations.	**K1,K2,K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**3**	**1**	**3**	**3**
CO2	**3**	**2**	**3**	**2**	**3**
CO3	**3**	**3**	**2**	**3**	**2**
CO4	**3**	**2**	**2**	**2**	**3**
CO5	**3**	**3**	**3**	**3**	**3**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**3**	**3**	**1**	**3**	**3**
CO2	**3**	**2**	**3**	**2**	**3**
CO3	**3**	**3**	**2**	**3**	**2**
CO4	**3**	**2**	**2**	**2**	**3**
CO5	**3**	**3**	**3**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

Statistics – Meaning – Functions – Importance – Limitations- Data Collection – Sources – Primary – Secondary – Techniques – Census – Sampling – Classification – Presentation – Tabulation – Diagrammatic – Graphic.

UNIT II 12 Hours

Measures of Central Tendency: Averages or Measures of Central Tendency - Arithmetic Mean(A.M.) - Important Properties of A.M - Simplified Calculation for A.M - Mean of Composite Group - Geometric Mean(G.M) - Properties of G.M**.**

UNIT III 12 Hours

Statistics: Index numbers – Types – Tests – Consumer Price Index.

UNIT IV 12 Hours

Quantitative Aptitude - Data interpretation: Tabulation - Bar Graphs.

UNIT V 12 Hours

Quantitative Aptitude - Data interpretation: Pie Chart – Line Graphs.

Text Books

N G Das**, *"Statistical Methods (Volume I)",*** Tata McGraw Hill Publishing Company Limited (2009).

R. S. Aggarwal, ***"Quantitative Aptitude"*** S. Chand & Company Ltd., Ram Nagar, New Delhi (2007).

Reference Books

Thambidurai .P, ***"Practical Statistics",*** Rainbow publishers – CBE (1991).

Prof. Abhilasha Khanna, Arvind *Sharma* ***"Quantitative Aptitude and Arithmetic Competitive Exam Book".***

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Statistics – Meaning	1	Chalk & Talk
1.2	Functions – Importance – Limitations	2	PPT
1.3	Data Collection – Sources – Primary – Secondary	2	Discussion
1.4	Techniques – Census – Sampling	2	Chalk & Talk
1.5	Classification – Presentation	2	Chalk & Talk
1.6	Tabulation	2	Chalk & Talk
1.7	Diagrammatic – Graphic.	1	Chalk & Talk
UNIT - II			
2.1	Averages or Measures of Central Tendency	1	Discussion
2.2	Arithmetic Mean(A.M.)	2	Chalk & Talk
2.3	Important Properties of A.M	2	PPT
2.4	Simplified Calculation for A.M	2	Chalk & Talk
2.5	Mean of Composite Group	2	Chalk & Talk
2.6	Geometric Mean(G.M)	2	Chalk & Talk
2.7	Properties of G.M.	1	Chalk & Talk
UNIT - III			
3.1	Index numbers	3	Chalk & Talk
3.2	Types	3	Chalk & Talk
3.3	Tests	3	Chalk & Talk
3.4	Consumer Price Index.	3	Chalk & Talk
UNIT - IV			
4.1	Quantitative Aptitude	2	Discussion
4.2	Tabulation	5	Chalk & Talk
4.3	Bar Graphs.	5	Chalk & Talk

UNIT - V			
5.1	Data interpretation	2	PPT
5.2	Pie Chart	5	Chalk & Talk
5.3	Line Graphs.	5	Chalk & Talk
	Total	**60**	

Course Designer
Ms. R. Neshana
Assistant Professor of Information Technology.

Course Code	Course Title	Category	Total Hours	Credits
20UCTC31	Java Programming	Core - V	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

This course provides concepts about Object Oriented Programming, Java Packages, Java Script, JSP, Sockets, Networking, Swing, Servlets, Java Bean and JDBC.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Explain Java fundamentals and Object Oriented Programming (OOP) concepts and AWT Components.	K1, K2, K3
CO2	Summarize the Overloading, Overriding Constructor packages and Interface	K1, K2, K3
CO3	Organize the exceptions, threads, collections.	K1, K2, K3
CO4	Apply events through I/O Stream Files Applet Concepts	K1, K2, K3
CO5	Develop an Applications using PL/SQL	K1, K2, K3

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	3	1
CO2	1	3	3	2	3
CO3	3	3	3	3	1
CO4	3	2	2	3	3
CO5	3	3	3	1	1

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	1	3	3
CO2	2	1	2	3	2
CO3	3	2	2	2	2
CO4	3	3	2	3	1
CO5	3	3	2	1	3

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 14 Hours

Introduction to Java Programming: Introduction – Features of Java – Applications and Applets – Java Developer Kit. Java Language Fundamentals: The Building Blocks of Java – Data Types – Variable Declarations: Declaring, Initializing and Variables – Variable Types in Java. Wrapper Classes – Operators – Control Structures – Arrays – Strings

UNIT II 14 Hours

Java as an OOP Language – Defining Classes – Defining Methods – Knowing This – Passing Arguments to Methods – Overloading Methods – Constructor Methods – Inheritance – Overriding Methods – Modifiers: The Four Ps of Protection – Finalizing Classes, Methods and Variables – Abstract Classes and Methods – Packages – Interfaces.

UNIT III 16 Hours

Exception Handling: Introduction – Basics of Exception Handling in Java – Exception Hierarchy – Constructors and Methods in Throw able Class – Handling Exceptions in Java – Throwing User Defined Exceptions. Multithreading – Overview of Threads - Creating Threads – Thread Life – cycle – Thread Priorities and Thread Scheduling.

UNIT IV 15 Hours

Files and I/O Streams: Java I/O – File Streams – File Input Stream and File Output Stream – Filter Streams Random Access File. Applets: Introduction – Java Applications Versus Java Applets – Applet Life Cycle – Working with applets – The HTML APPLET Tag.

UNIT V 16 Hours

The Abstract Window Toolkit: Basic Classes in AWT – Drawing with Graphics class - Class Hierarchy in AWT – Event Handling – AWT Controls – Layout Managers.

Text Books

P. Radha Krishna, ***Object Oriented Programming through JAVA***, Universities Press, 2007.

Reference Books

E. Balagurusamy, ***Java Programming***, TMH, 2006.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction Features and its Applications	3	Discussion
1.2	Building Blocks, Data Type and Variable	3	Chalk & Talk
1.3	Wrapper Class and Operators	4	LCD Projector
1.4	Control Statements Array and String Concept	4	LCD Projector
UNIT - II			
2.1	Defining Class and Methods	2	Chalk & Talk
2.2	Passing methods and Arguments	3	Chalk & Talk
2.3	Overloading, Constructor, Overriding and Modifiers	4	LCD Projector
2.4	Abstract Classes and methods	2	Chalk & Talk
2.5	Packages and Interface	3	PPT
UNIT - III			
3.1	Exception Handling its Hierarchy	2	Chalk & Talk, PPT
3.2	Constructors and Methods	2	PPT
3.3	Pre-defined and User Defined Exception and Throw able	4	Chalk & Talk, PPT
3.4	Multithreading Overview Create and Life cycle	4	Chalk & Talk,
3.5	Thread Priority and Scheduling	4	LCD PROJECTOR

UNIT - IV			
4.1	Java I/O File Streams Input and Output stream	3	Chalk & Talk
4.2	data encryption, integrity, availability, security practices, network security, security auditing	4	LCD Projector
4.3	Applet Introduction, Life Cycle Application vs Applet and Working with Applet and its applications	5	Chalk & Talk, PPT
4.4	HTML Applet Tag	3	Chalk & Talk, PPT
UNIT - V			
5.1	AWT Basics and Classes	3	Discussion
5.2	Drawing with Graphics Class	2	LCD Projector
5.3	Event Handling	4	Chalk & Talk, PPT
5.4	AWT Controls	4	LCD Projector
5.5	Layout Manager	3	Chalk & Talk
	Total	**75**	

Course Designer
Mr. A. K. Jenarthanan
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC32	Data Structures	Core - VI	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To understand and remember data structures algorithms and its analysis procedure to develop application.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Illustrate the concept of data structures and the types of arrays.	**K1, K2**
CO2	Demonstrate the concept of ADT including list.	**K1, K2**
CO3	Enumerate and implement various data structure algorithms using stack and queues.	**K1, K2**
CO4	Build the concept of Binary trees, Representation of Binary Trees and Tree Traversals.	**K1,K2,K3**
CO5	Compute a good formal foundation on Types of sorting and Representation of graphs.	**K1,K2,K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**3**	**1**	**3**	**3**
CO2	**3**	**2**	**1**	**3**	**1**
CO3	**2**	**3**	**2**	**2**	**3**
CO4	**3**	**1**	**3**	**3**	**3**
CO5	**3**	**3**	**2**	**3**	**3**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**3**	**3**	**1**	**3**	**3**
CO2	**3**	**2**	**1**	**3**	**1**
CO3	**2**	**3**	**2**	**2**	**3**
CO4	**3**	**1**	**3**	**3**	**3**
CO5	**3**	**3**	**2**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

Introduction to Data Structures: Introduction – Algorithm Analysis – Problem Solving – Modular Design – Implementation Of Algorithms – Testing – Verification.

Arrays*:* Introduction – Range Of Array – Primitive Operations – Addressing Function – One Dimensional Array – Two Dimensional Array – Storage Representation of 2D Arrays – Multi Dimensional Array – Special Types of Mat Races – Sparse Matrices.

UNIT II 12 Hours

Linked lists: Introduction – Memory Allocation – Benefits – Limitations – Types: Basic Operation – Singly Linked Lists – Simple Algorithms on Linked Lists – Circular Linked Lists – Doubly Linked Lists – Circular Doubly Linked Lists – Multiply Linked Lists – Polynomial Representation – Polynomial Addition.

UNIT III 12 Hours

Stack: Introduction – ADT Stack – Implementation of Stack – Applications – Tower of Hanoi. Queues: Implementation of Queues – Basic Operations on Array, Linked Lists Based – Circular Queues – Desuetude.

UNIT IV 12 Hours

Trees: Binary trees – Representation of Binary Trees – Tree Traversals.

UNIT V 12 Hours

Sorting and Graph: Types of Sorting - Representation on Graph – Operations on Graphs – BFS – DFS.

Text Books

A. Chitra, P.T. Rajan, ***"Data Structures",*** Vijay Nicole Imprints Pvt., Chennai.

Reference:

Unit I: Chapter 1, 2, 3
Unit II: Chapter 4
Unit III: Chapter 5, 6
Unit IV: Chapter 7
Unit V: Chapter 11, 12

Reference Books

Ellis Horowitz, Sartaj Shani, **"Data and File Structures"** Galgotia Publication.

Ellis Horowitz, Sartaj Shani, Sanguthevar Rajasekaran, **"Computer Algorithms"** Galgotia Publication.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction	1	Chalk & Talk
1.2	Algorithm Analysis	1	PPT
1.3	Problem Solving, Modular Design	1	Discussion
1.4	Implementation Of Algorithms	1	Chalk & Talk
1.5	Testing, Verification	1	PPT
1.6	Arrays-Introduction, Range Of Array	1	Discussion
1.7	Primitive Operations, Addressing Function	1	Chalk & Talk
1.8	One Dimensional Array	1	PPT
1.9	Two Dimensional Array	1	Discussion
1.10	Storage Representation of 2D Arrays	1	Chalk & Talk
1.11	Special Types of Matrices	1	PPT
1.12	Multi-Dimensional Array, Sparse Matrices	1	Discussion

UNIT - II			
2.1	Introduction	1	Chalk & Talk
2.2	Memory Allocation	1	PPT
2.3	Benefits ,Limitations	1	Discussion
2.4	Types: Basic Operation	1	Chalk & Talk
2.5	Singly Linked Lists	1	PPT
2.6	Simple Algorithms on Linked Lists	1	Discussion
2.7	Circular Linked Lists	1	Chalk & Talk
2.8	Doubly Linked Lists	1	PPT
2.9	Circular Doubly Linked Lists	1	Discussion
2.10	Multiply Linked Lists	1	Chalk & Talk
2.11	Polynomial Representation	1	PPT
2.12	Polynomial Addition.	1	Discussion
UNIT - III			
3.1	Introduction	1	Chalk & Talk
3.2	ADT Stack	1	PPT
3.3	Implementation of Stack	1	Discussion
3.4	Applications	1	Chalk & Talk
3.5	Tower of Hanoi	1	PPT
3.6	Queues	2	Discussion
3.7	Implementation of Queues	1	Chalk & Talk
3.8	Basic Operations on Array	1	PPT
3.9	Linked Lists Based	1	Discussion
3.10	Circular Queues	1	Chalk & Talk
3.11	Desuetude.	1	PPT
UNIT - IV			
4.1	Binary trees	4	Discussion
4.2	Representation of Binary Trees	4	Chalk & Talk
4.3	Tree Traversals	4	PPT
UNIT - V			
5.1	Types of Sorting	2	Discussion
5.2	Representation on Graph	2	Chalk & Talk
5.3	Operations on Graphs	2	PPT
5.4	BFS	3	Discussion
5.5	DFS.	3	Chalk & Talk
	Total	**60**	

Course Designer
Ms. R. Neshana
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC3P	Java Programming Lab	Core - VII	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

On successful completion of this subject the students have the programming ability in C Language.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Demonstrate the concept of classes, arrays and their types by using java programming	**K1, K2, K3**
CO2	Manipulating String Class and its Methods and interface using java coding.	**K1, K2, K3**
CO3	Apply the concept of Overloading and Exception Handling	**K1, K2, K3**
CO4	Apply the concept of package, threading and Applet	**K1, K2, K3**
CO5	Demonstrate and Implementing the concept of Keyboard Event, Mouse Event, Graphics and JDBC Connectivity	**K1, K2, K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**2**	**3**	**3**	**3**
CO2	**3**	**3**	**2**	**1**	**2**
CO3	**3**	**2**	**3**	**3**	**2**
CO4	**2**	**3**	**3**	**3**	**1**
CO5	**3**	**3**	**3**	**3**	**1**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**3**	**3**	**3**	**3**	**3**
CO2	**3**	**3**	**3**	**3**	**2**
CO3	**3**	**3**	**3**	**3**	**2**
CO4	**3**	**3**	**3**	**2**	**1**
CO5	**3**	**3**	**2**	**2**	**1**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

1. Write a Java Program to Implement Class And Object Concepts.
2. Write a Java Program to Implement Array of Objects.

UNIT II 15 Hours

3. Write a Java Program to manipulate String Class and its Methods.
4. Write a Java Program To Demonstrate the Use of Interfaces.

UNIT III 16 Hours

5. Write a Java program to implement the overloading and overriding concepts.
6. Write a Java program to implement the concept of exception handling using pre-defined exceptions.
7. Write a Java program to implement the concept of exception handling using user defined exception.

UNIT IV 16 Hours

8. Write a Java program to create package and importing classes from user defined packages.
9. Write a Java program to implement the concept of threading.
10. Write a Java program to display a message using applet.

UNIT V 16 Hours

11. Write a Java program to demonstrate keyboard event and mouse event.
12. Write a Java programs to display basic shapes and fill them, to set background and foreground colors using graphics class.
13. To implement the JDBC connectivity.

Pedagogy

Chalk & Talk & E-Resources

Teaching aids

Black Board, LCD Projector

Course Designer

Mr. K. A. Sheik Fareed
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTA31	Operations Research	Allied-III	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To understand various mathematical applications in industries and to improve Decision making for real time environment.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Examine the theoretical workings of linear programming and perform iterations of it by hand.	**K1, K2**
CO2	Describe the simplex method problems and find optimal solution for various problems.	**K1, K2**
CO3	Show specialized linear programming problems and understand the given problem as transportation and assignment problem.	**K1, K2**
CO4	Model a dynamic system as a queuing model and compute important performance measures.	**K1,K2,K3**
CO5	Solve network problems like measures of activity and Resource scheduling.	**K1,K2,K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**2**	**1**	**3**	**3**
CO2	**3**	**3**	**3**	**3**	**2**
CO3	**2**	**3**	**2**	**2**	**3**
CO4	**3**	**1**	**2**	**3**	**2**
CO5	**3**	**3**	**3**	**3**	**3**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**3**	**2**	**1**	**3**	**3**
CO2	**3**	**3**	**3**	**3**	**2**
CO3	**2**	**3**	**2**	**2**	**3**
CO4	**3**	**1**	**2**	**3**	**2**
CO5	**3**	**3**	**3**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

Operations Research*:* Introduction – Nature & Features of OR-Scientific Method in OR – Modeling in OR – General solution methods for OR models-Methodology of OR - OR & Decision Making – Applications in OR – Linear Programming Formulations & Graphical Solution of Two Variables – Canonical & Standard Forms of LPP.

UNIT II 12 Hours

Simplex Method*:* Introduction – Fundamental Properties of Solutions – The Computational procedure – Use of Artificial Variables – Degeneracy in Linear Programming.

UNIT III 12 Hours

Transportation Problem*:* Introduction – LP Formulation of the Transportation Problem – Existence of Solution in Transportation Problem – Duality in Transportation Problem – The Transportation Table – Loops in Transportation Tables – Triangular Basis in Transportation Problem – Solution of a Transportation Problem – Finding an Initial Basic Feasible Solution – Test for Optimality – Economic Interpretation of u_j's and v_j's – Degeneracy in Transportation Problem, Unbalanced Transportation Problem– Mathematical Formulation of the Problem – Solution Methods of Assignment Problem – Special Cases in Assignment Problem.

UNIT IV 12 Hours

Sequencing Problem: Processing of n Jobs through two Machines – Processing of n Jobs through 3 Machines – Processing of two Jobs through m Machines.

UNIT V 12 Hours

Networks: Introduction – Network: Basic components – Logical sequencing – Rules of Network construction – Concurrent Activities – Critical Path Analysis – Probability Considerations in PERT – Distinction between PERT and CPM.

Text Books

Manmohan & Gupta, ***"Operations Research"***, Sultan Chand Publishers, New Delhi

Unit I – Chapter 1.1, 1.3 – 1.5, 1.7 -1.10, 2.2 – 2.4, 3.2- 3.5

Unit II – Chapter 4,Unit III – Chapter 10.2 - 10.12, 10.13, 11.2 – 11.4

Unit IV – Chapter 12.4, 12.5, 12.6,Unit V – Chapter 25

Reference Books

Prem Kumar Gupta and D.S. Hira, ***"Operations Research: An Introduction"***, S. Chand and Co., Ltd. New Delhi,

Hamdy A. Taha, ***"Operations Research"***, 7th Edition, McMillan Publishing Company, New Delhi, 1982.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction – Nature & Features of OR	1	Chalk & Talk
1.2	Scientific Method in OR – Modeling in OR – General solution methods for OR models	1	PPT
1.3	Methodology of OR -- OR & Decision Making –	1	Chalk & Talk
1.4	Applications in OR	1	Chalk & Talk
1.5	Linear Programming Formulations & Graphical Solution of Two Variables	4	Chalk & Talk
1.6	Canonical & Standard Forms of LPP.	4	Chalk & Talk
UNIT - II			
2.1	Introduction – Fundamental Properties of Solutions	2	Chalk & Talk
2.2	The Computational procedure	4	Chalk & Talk
2.3	Use of Artificial Variables	4	Chalk & Talk
2.4	Degeneracy in Linear Programming	2	Chalk & Talk

UNIT - III			
3.1	Introduction – LP Formulation of the Transportation Problem	1	Chalk & Talk
3.2	Existence of Solution in Transportation Problem – Duality in Transportation Problem – The Transportation Table	1	Chalk & Talk
3.3	Loops in Transportation Tables – Triangular Basis in Transportation Problem – Solution of a Transportation Problem	2	Chalk & Talk
3.4	Finding an Initial Basic Feasible Solution – Test for Optimality – Economic Interpretation of u_j's and v_j's	2	Chalk & Talk
3.5	Degeneracy in Transportation Problem, Unbalanced Transportation Problem	2	Chalk & Talk
3.6	Mathematical Formulation of the Problem – Solution Methods of Assignment Problem.	2	Chalk & Talk
3.7	Special Cases in Assignment Problem.	2	Chalk & Talk
UNIT - IV			
4.1	Processing of n Jobs through two Machines	4	Chalk & Talk
4.2	Processing of n Jobs through 3 Machines	4	Chalk & Talk
4.3	Processing of two Jobs through m Machines.	4	Chalk & Talk
UNIT - V			
5.1	Introduction – Network: Basic components – Logical sequencing	4	Chalk & Talk
5.2	Rules of Network construction – Concurrent Activities	2	Chalk & Talk
5.3	Critical Path Analysis	2	Chalk & Talk
5.4	Probability Considerations in PERT	2	Chalk & Talk
5.5	Distinction between PERT and CPM	2	Chalk & Talk
	Total	**60**	

Course Designer
Ms. R. Neshana
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC41	Database Management System	Core - VIII	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To inculcate knowledge on DBMS concepts and Programming with Oracle.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Familiar with the concept Relational model and gain the knowledge on Database Management Systems	**K1, K2**
CO2	To work with Oracle data base and able to write DDL commands	**K1, K2, K3**
CO3	To understand the DML commands & know the use of where clause, to perform arithmetic operations.	**K1, K2**
CO4	To work with Procedural SQL and Cursors & know the use of Exceptions	**K1, K2, K3**
CO5	Develop packages, triggers in Pl/Sql and make use of Data dictionary views	**K1, K2, K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**2**	**3**	**2**	**3**
CO2	**1**	**3**	**2**	**3**	**1**
CO3	**2**	**1**	**3**	**1**	**2**
CO4	**2**	**3**	**1**	**2**	**2**
CO5	**3**	**2**	**2**	**3**	**3**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**3**	**3**	**3**	**3**	**3**
CO2	**3**	**2**	**3**	**3**	**3**
CO3	**3**	**3**	**3**	**1**	**2**
CO4	**2**	**3**	**3**	**3**	**1**
CO5	**2**	**3**	**3**	**3**	**1**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 10 Hours

Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modelling and Normalization: Data Modelling – Dependency – Database Design – Normal forms – Dependency Diagrams – De-normalization – Another Example of Normalization.

UNIT II 12 Hours

Oracle9i: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus 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.

UNIT III 12 Hours

Working with Table: Data Management and Retrieval: DML – adding a new Row/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. Multiple Tables: Joins and Set operations: Join– Set operations.

UNIT IV 14 Hours

PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.

UNIT V 12 Hours

PL/SQL Composite Data Types: Records – Tables Varrays. Named Blocks: Procedures – Functions Packages Triggers Data Dictionary Views.

Text Books

Data Base System Using Oracle – ***Nilesh Shah***, 2nd edition, PHI.

Reference Books

Data Base Management System – ***Arun Majumdar***, ***Pritimoy Bhattacharya***, TMH.

Data Base Management Systems – ***Gerald V. Post***, 3rd edition, TMH.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	An Introduction	1	Discussion
1.2	Relationships Data Base Management Systems	1	Lecture
1.3	Theoretical Relational Languages	1	Lecture
1.4	Data Modeling Dependency	1	Chalk & Talk
1.5	Database Design	1	Chalk & Talk
1.6	Normal Forms	2	Chalk & Talk
1.7	Dependency Diagrams	2	Chalk & Talk

1.8	Denormalization - Another Example of Normalization	1	Chalk & Talk
UNIT - II			
2.1	An Introduction-The SQL* Plus Environment	2	Lecture
2.2	Logging in to SQL *Plus-SQL *Plus Commands	2	Chalk & Talk
2.3	Oracle Errors Online Help- Alternate Text Editors	2	Chalk & Talk
2.4	Creating an Oracle Table	1	Chalk & Talk
2.5	Displaying Table Information-Altering an Existing Table	2	Chalk & Talk
2.6	Truncating a Table-Oracle's Various Table Types	2	Chalk & Talk
2.7	Spooling-Error Codes	1	Chalk & Talk
UNIT - III			
3.1	Data Manipulation Language-Adding a New Row/Record-Customized Prompts	2	Discussion
3.2	Updating and Deleting an Existing Rows/Records	2	Lecture
3.3	Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables	2	Lecture
3.4	CASE Structure	2	Chalk &Talk
3.5	Built-In Functions	2	Lecture
3.6	Grouping Data-Join-Set Operators	2	Chalk & Talk
UNIT - IV			
4.1	A Brief History of PL/SQL-Fundamentals of PL/SQL-PL/SQL Block Structure	3	Discussion
4.2	Printing in PL/SQL	1	Chalk & Talk
4.3	Arithmetic Operators Control Structures	3	Chalk & Talk
4.4	Nested Blocks	1	Chalk & Talk
4.5	Explicit Cursor Attributes-Implicit Cursor Attributes	2	Chalk & Talk
4.6	Cursor FOR Loops	2	Chalk & Talk
4.7	Exceptions – Types of Exceptions	2	Chalk & Talk

UNIT - V			
5.1	Composite Data Types-PL/SQL Records PL/SQL Tables	2	Chalk & Talk
5.2	PL/SQL Varrays	2	Chalk & Talk
5.3	Procedures-Functions	2	Chalk & Talk
5.4	Packages	2	Chalk & Talk
5.5	Triggers	2	Chalk & Talk
5.6	Data Dictionary Views	2	Chalk & Talk
	Total	**60**	

Course Designer
R. Karthigai Chelvi
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC42	Operating Systems	Core - IX	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

The major objective of this course are to introduce basic concepts and principles of Windows and Linux operating systems which include memory management, device management, process management, file management and security & protection mechanisms.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Describe the evolution, types, structure and functions of operating systems	**K1**
CO2	Explain techniques involved in process, memory, device and file management	**K1, K2**
CO3	By applying the security and protection measures used in operating systems.	**K1, K2, K3**
CO4	Implement processor scheduling, synchronization, deadlocks and disk allocation algorithms for a given scenario	**K1, K2, K3**
CO5	Analyze the code for the resource allocation	**K1, K2, K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**1**	**2**	**1**	**2**	**3**
CO2	**1**	**1**	**2**	**3**	**1**
CO3	**3**	**3**	**2**	**3**	**3**
CO4	**3**	**2**	**3**	**3**	**3**
CO5	**3**	**3**	**3**	**3**	**2**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	1	3
CO2	3	3	1	3	3
CO3	3	3	2	3	2
CO4	2	3	2	3	3
CO5	3	3	3	2	3

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

Introduction: Computer system organization – system architectures – OS structure – operations – process management – memory management – storage management: OS services and interface - System calls – types – system programs.

UNIT II 14 Hours

Process concept: Process scheduling – operations on process – interposes communications. Multithreaded programming: Models – thread issues. Process scheduling: Basic concepts – criteria – algorithms – multiprocessor scheduling – thread scheduling.

UNIT III 12 Hours

Synchronization: The critical section problem – semaphores. Deadlocks: system model – deadlock characterization – methods of handling deadlock – prevention – avoidance – detection and recovery from deadlock.

UNIT IV 12 Hours

Memory management: Swapping – contiguous memory allocation - paging – structure of the page table – segmentation. File system: file concept – access methods – directory structure – file system mounting – file sharing – protection.

UNIT V 10 Hours

Secondary storage structure: Disk structure – disk attachment – disk scheduling – disk management – swap space management.

Text Books

Abraham Silberschatz, Peter Baer Galvin, Greg Gagine, ***Operating system principles*****,** seventh edition , Jhon Wiley & sons ing.

Unit I – Chapter 1.1 to 1.8, 2.1 to 2.5

Unit II – Chapter 3.1 to 3.4, 4.1, 4.2, 4.4, 5.1 to 5.5

Unit III – Chapter 6.1 to 6.3, 6.5, 7.1 to 7.7

Unit IV – Chapter 8.1 to 8.6, 10.1 to 10.6

Unit V – Chapter 12.1 to 12.6, 21.1 to 21.10

Reference Books

Achyut s Godbole,**"*Operating Systems*"**, TMH Publications , 2002.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
	UNIT - I		
1.1	**Introduction:** Computer system organization	1	Chalk & Talk
1.2	System Architectures	1	E-Resources
1.3	OS structure	1	Chalk & Talk
1.4	Operations	1	E-Resources
1.5	Process management	1	E-Resources
1.6	Memory management	2	E-Resources
1.7	Storage management: OS services and interface	2	E-Resources
1.8	System calls	1	E-Resources
1.9	Types	1	E-Resources
1.10	System programs	1	Discussion
	UNIT - II		
2.1	**Process concept:** Process scheduling	1	Discussion
2.2	Operations on process	2	Chalk & Talk
2.3	Interposes communications	1	E-Resources
2.4	Multithreaded programming: Models	2	E-Resources
2.5	Thread issues	2	E-Resources
2.6	Process scheduling: Basic concepts	1	Discussion
2.7	Criteria	1	E-Resources
2.8	Algorithms	2	E-Resources
2.9	Multiprocessor scheduling	1	E-Resources
2.10	Thread scheduling	1	Chalk & Talk

UNIT - III			
3.1	**Synchronization:** The critical section problem	2	E-Resources
3.2	Semaphores.	1	Chalk & Talk
3.3	Deadlocks: system model	2	E-Resources
3.4	Deadlock characterization	1	E-Resources
3.5	Methods of handling deadlock	1	E-Resources
3.6	Prevention	2	E-Resources
3.7	Avoidance	2	E-Resources
3.8	Detection and recovery from deadlock.	1	Chalk & Talk
UNIT - IV			
4.1	**Memory management:** Swapping – contiguous memory allocation	2	E-Resources
4.2	Paging	1	Chalk & Talk
4.3	Structure of the page table	1	E-Resources
4.4	Segmentation	1	E-Resources
4.5	File system: file concept	1	E-Resources
4.6	Access methods	1	E-Resources
4.7	Directory structure	1	E-Resources
4.8	File system mounting	1	E-Resources
4.9	File sharing	2	E-Resources
4.10	Protection	1	E-Resources
UNIT - V			
5.1	**Secondary storage structure: D**isk structure	3	E-Resources
5.2	Disk attachment	1	Chalk & Talk
5.3	Disk scheduling	2	E-Resources
5.4	Disk management	2	E-Resources
5.5	Swap space management	2	E-Resources
	Total	**60**	

Course Designer
Mr. Z. Abdul Basith
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC4P	Data Base Management System Lab	Core - X	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

Understand DBMS architecture DDL, DML, TCL Set operations Sub queries and PL/SQL Procedure Concept and apply to the database.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Generalize the DBMS architecture Learn the DDL Commands like create, Alter, Drop, Truncate and Delete.	K1, K2
CO2	Experiment of DML Commands like Insert Update String Operations.	K1, K2, K3
CO3	Apply the Set Operations like Union, Union all intersect and minus Operations.	K1, K2, K3
CO4	Organize the various Sub queries with Update, Select, Insert, and Delete Statements.	K1, K2, K3
CO5	Apply the PL/SQL Procedure functions and Procedures.	K1, K2, K3

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	3	3
CO2	3	2	2	2	3
CO3	2	2	3	3	1
CO4	2	3	3	3	1
CO5	3	3	2	1	1

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**2**	**3**	**2**	**2**	**1**
CO2	**3**	**2**	**3**	**2**	**1**
CO3	**2**	**3**	**3**	**3**	**3**
CO4	**2**	**2**	**3**	**2**	**1**
CO5	**3**	**3**	**2**	**2**	**3**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 10 Hours

Foreign Key, On Delete Cascade
Table Alteration - Rename table and Column name,
Add Column, Drop column,
Modify Column size and Data type
Drop Table

UNIT II 10 Hours

Insertion
Updates
Deletion
String Operations

UNIT III 10 Hours

Set Operations
Tuple Variables
Aggregate Functions with Grouping and Having Clause

UNIT IV 15 Hours

Ordering Tuples
Nested Sub queries – Set Membership (IN, NOTIN),
Set Comparison (SOME, ALL Sub-queries in the From Clause
Join Operations – Equi Join, Left-outer join, Right outer join, Self Join Views

UNIT V 15 Hours

Reverse the String
Find Factorial number using Recursive Function
Prepare Student Mark Sheet
Employee Pay Roll
EB – Bil.

Text Books

Alexis Leon Mathews Leon ***"Essentials of Database Management Systems"*** **,** Vijay Nicole Imprints Pvt. Ltd, 2006.

Reference Books

Alexis Leon Mathews Leon ***"Essentials of Database Management Systems"*** , Vijay Nicole Imprints Pvt. Ltd, 2006.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Create, Alter, Drop and Truncate the table	2	LCD Projector
1.2	Insert the data into table	2	LCD Projector
1.3	Alter the table name column name	2	LCD Projector
1.4	Drop the table	2	LCD Projector
1.5	Apply the all DDL commands	2	LCD Projector
UNIT - II			
2.1	Insert the data in to table	2	LCD Projector
2.2	Update the data	2	LCD Projector
2.3	Delete the commands	2	LCD Projector
2.4	Drop the table and Modify	2	LCD Projector
2.5	String Operations	2	LCD Projector
UNIT - III			
3.1	Union	3	LCD Projector
3.2	Union All	3	LCD Projector
3.3	Intersect	3	LCD Projector
3.4	Minus	1	LCD Projector

UNIT - IV			
4.1	Select, Insert, Update, Delete along with Operators	3	LCD Projector
4.2	Sub queries with Insert Operations	3	LCD Projector
4.3	Sub queries with Update statement	3	LCD Projector
4.4	Sub queries with Delete statement	3	LCD Projector
4.5	Sub queries with Select statement	3	LCD Projector
UNIT - V			
5.1	In, Out , In Out Parameters	3	LCD Projector
5.2	Create and Call Procedure	3	LCD Projector
5.3	PL/SQL Function	3	LCD Projector
5.4	PL/SQL Calling Function	3	LCD Projector
5.5	PL/SQL Applications	3	LCD Projector
	Total	**60**	

Course Designer
Mr. A. K. Jenarthanan
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTA41	**Computer Oriented Numerical Methods**	**Allied - IV**	**60**	**4**

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

Understand the basic concepts and techniques of numerical solution of algebraic equation, numerical solution of differentiation, integration and system of algebraic equation.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Apply Arithmetic Operations for Normalized Floating Point Numbers. Working on Floating Point Representation of Numbers	**K1,K2**
CO2	Apply Numerical methods to find our solution of algebraic using different methods under different conditions and numerical solution of system of algebraic equations	**K1,K2**
CO3	Apply various interpolation and finite difference concepts	**K1,K2,K3**
CO4	Apply and work on Numerical differentiation and integration whenever and wherever routine methods are not applicable	**K1,K2,K3**
CO5	Work Numerically on the ordinary differential equations through the theory of finite differences	**K1,K2,K3**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	2	1
CO2	2	3	2	3	3
CO3	2	3	1	2	3
CO4	3	2	3	3	1
CO5	2	2	3	2	3

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2
CO2	2	2	1	1	1
CO3	1	1	1	2	3
CO4	1	1	1	1	3
CO5	2	1	1	1	2

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 8 Hours

Computer Arithmetic: Introduction – Floating Point Representation of Numbers – Arithmetic Operations with Normalized Floating Point Numbers – Consequences of Normalized Floating Point Representation of Numbers: Non Associatively of Arithmetic, The concept of zero in Floating point.

UNIT II 20 Hours

Algebraic and Transcendental Equations: Errors in Numerical Computations – Iteration Method – Bisection Method – Regula - False Position – Newton Raphson Method. Simultaneous Equations – Back Substitution – Gauss Elimination Method and Gauss Jordon Methods – Curve Fitting: Method of Least Squares.

UNIT III 12 Hours

Interpolation and Approximation: Newton's Interpolation Formula Newton's Forward Interpolation and Newton's Backward Interpolation – Central Difference Interpolation Formula – Gauss Forward, Gauss Backward and Sterling's Formula – Lagrange's Interpolation Formula.

UNIT IV 12 Hours

Numerical Differentiation And Integration: Derivatives and Problems using Newton's Forward Difference, Backward Difference and Central Difference Formulas – Numerical Integration – Trapezoidal – Simpson's 1/3 Rule and Simpson's 3/8 Rule

UNIT V 8 Hours

Numerical Solutions Of Ordinary Differential Equations: Taylor Series Method – Euler and Modified Euler Methods – First, Second, Third and Fourth order Runge – Kutta Methods.

Text Books

V. Rajaraman***," Computer Oriented Numerical Methods",*** 3rd edition.

S. Arumugam, A. Thangapandi & A. Somasundaram, ***"Numerical Methods",*** 2nd edition ISSAC.

Unit – I (CONM) Chapter 2 - 2.1 to 2.4

Unit –II (Numerical Methods) Chapter 2, 3, 4 - 2.4, 3.0 to 3.5, 4.0 to 4.4

Unit –III (Numerical Methods) Chapter 7 - 7.0 to 7.3

Unit – I (Numerical Methods) Chapter 8 - 8.0 to 8.3

Unit– V (Numerical Methods) Chapter 10-10.0, 10.1, 10.3 &10.4

Reference Books

K. Jain, S. R. K. Iyengar & R. K. Jain***," Numerical Methods Problems and Solutions".***

Kandasamy. P, Thilagavathy. K, Gunavathy, ***"Numerical Methods",*** (Revised Edition) by S. Chand and company, New Delhi, 2003.

S. Saastry***," Introductory Methods of Numerical Analysis"***, 3rd Edition, Printice Hall of India Pvt. Ltd., New Delhi 1999.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction to Computer Arithmetic	1	Chalk& talk
1.2	Floating Point Representation of numbers	1	Chalk& talk
1.3	Arithmetic operations with normalized floating point representation of numbers	3	Chalk& talk
1.4	Consequence of normalized floating point representation of numbers	3	Chalk& talk
UNIT - II			
2.1	Method of Least Squares	3	Chalk& talk
2.2	Introduction to Algebraic and transcendental Equations	1	Chalk& talk
2.3	Errors in Numerical Computation	1	Chalk& talk
2.4	Iteration Method	2	Chalk& talk
2.5	Bisection Method	2	Chalk& talk
2.6	Regula Falsi Method	2	Chalk& talk
2.7	Newton-Raphson Method	2	Chalk& talk
2.8	Introduction to Simultaneous Equations	1	Chalk& talk
2.9	Back Substitution	2	Chalk& talk
2.10	Gauss Elimination Method	2	Chalk& talk
2.11	Gauss – Jordan Elimination Method	2	Chalk& talk
UNIT - III			
3.1	Introduction to Interpolation	2	Chalk& talk
3.2	Newton's Interpolation formulae	3	Chalk& talk
3.3	Central Difference Interpolation formulae	4	Chalk& talk
3.4	Lagrange's Interpolation formulae	3	Chalk& talk
UNIT - IV			
4.1	Introduction to Numerical Differentiation and Integration	3	Chalk& talk
4.2	Derivatives Using Newton's forward difference formula	3	Chalk& talk
4.3	Derivatives Using Newton's backward difference formula	3	Chalk& talk
4.4	Derivatives Using Central difference formula	3	Chalk& talk

UNIT - V			
5.1	Introduction to Numerical Solutions of Ordinary Differential Equations	1	Chalk& talk
5.2	Taylor's Series Method	2	Chalk& talk
5.3	Euler's Method	2	Chalk& talk
5.4	Runge-Kutta Method	3	Chalk& talk
	Total	**60**	

Course Designer
Dr. J. Thasleen Fathima
Associate Professor of Information Technology and Head

Course Code	Course Title	Category	Total Hours	Credits
20UCTS4P	Python Lab	SBS - I	30	2

Nature of Course	
Knowledge Oriented	
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

The purpose of this lab is to become familiar with pythons built in text container and list containing multiple strings.

Syllabus

UNIT I 6 Hours

Using Arithmetic Operators

1. Program to demonstrate arithmetic operations.
2. Python program to LCM and GCD of two numbers.

UNIT II 6 Hours

Using built-in functions

3. Program using string built-in functions.
4. Python program to implement the concept lists.

UNIT III 6 Hours

Using module concepts

5. Python program to illustrate the use of calendar module and time module
6. Python program to implement the concept of internet module.

UNIT IV 6 Hours

Using Threading and object concepts

7. Python program to send an e–mail.
8. Python program to implement the concept of multi-threading.

UNIT V 6 Hours

Using Exception handling functions.

9. Python program to implement Tinder module.
10. Python program to illustrate the concept of exception handling.

Text Books

John Zele, Franeclin, Beedle, "***Python Programming: An Introduction to Computer Science ".***

Reference Books

David Beazley and Brian K. Jones " ***Python Cookbook***", III Edition.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction to Python Program	1	Chalk and Talk
1.2	Data types in Python	1	Lecture
1.3	Operators in Python	1	Chalk and Talk
1.4	Simple Program Execution	1	PPT
1.5	Using Functions	1	Chalk and Talk
1.6	Program to LCM and GCD	1	PPT
UNIT - II			
2.1	Introduction to function	1	Chalk and Talk
2.2	Built in functions	1	Lecture
2.3	Introduction to data structures	1	Chalk and Talk
2.4	array	1	Lecture
2.5	Linked list	1	Chalk and Talk
2.6	Program to Linked list	1	PPT
UNIT - III			
3.1	Introduction to modules	1	Lecture
3.2	Calendar modules	1	Chalk and Talk
3.3	Time modules	1	Lecture
3.4	Internet modules	1	Chalk and Talk
3.5	Program to calendar and time module	1	PPT
3.6	Program to internet modules	1	PPT

UNIT - IV			
4.1	Introduction to Threading	1	Chalk and Talk
4.2	Multithreading	1	PPT
4.3	Program to Multithreading	1	PPT
4.4	Introduction to email concepts	1	Chalk and Talk
4.5	Tools in Form design	1	PPT
4.6	Program to Email Concepts	1	PPT
UNIT - V			
5.1	Introduction to errors	1	Chalk and Talk
5.2	Error Handling Functions	1	PPT
5.3	Program to Error handling	1	PPT
5.4	Introduction to Tinder Modules	1	PPT
5.5	Program for Tinder Modules	2	PPT
	Total	**30**	

Course Designer
Ms. R. Karthigai Chelvi
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC51	Web Technology	Core - XI	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To develop the skill & knowledge of Web page design

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Recall and be acquainted with elements, Tags and basic structure of HTML files.	**K1, K2**
CO2	Develop the concept of basic and advanced text formatting.	**K2**
CO3	Designing of webpage-Document Layout, Working with List, Working with Table and Practice Hyper linking, Designing of webpage-Working with Frames, Forms and Controls.	**K1, K2, K2**
CO4	Prepare creating style sheet, CSS properties, Background, Text, Font and styling etc.	**K2,K3**
CO5	Apply and Working with Scripting elements box, Positioning, Block properties in CSS.	**K1,K2,K3**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**2**	**2**	**3**	**2**	**3**
CO2	**3**	**3**	**1**	**3**	**2**
CO3	**2**	**1**	**3**	**3**	**1**
CO4	**3**	**3**	**3**	**2**	**2**
CO5	**3**	**2**	**3**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2
CO2	2	2	3	3	3
CO3	3	3	3	2	2
CO4	3	3	2	3	3
CO5	2	1	3	2	3

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 11 Hours

Fundamentals: A Brief Introduction to the Internet – Internet services and accessibility – Uses of the internet – Protocols – Web concepts – internet standards – Internet protocols- Host names – Internet applications and application protocols.

UNIT II 13 Hours

Introduction to HTML: SGML - Outline of HTML document - Head Section – Body section – HTML forms. JavaScript: Introduction – Language elements – Objects of JavaScript – Other objects – Arrays – Worked Examples.

UNIT III 17 Hours

VBScript: Introduction – comments – variables, array variables, - Operators – Procedures – Conditional statements – looping constructs – objects and VBScript – Cookies. DHTML: Introduction – Cascading Style Sheets (CSS) – DHTML Document object model and collections – Event Handling – Filters and Transition – Data Binding

UNIT IV 15 Hours

XML: Introduction – HTML versus XML - Syntax – XML Attributes – XML validation – XML DTD – Building Blocks of XML documents – DTD elements –DTD Attributes – DTD entities – DTD Validation – XSL – XSL transformation – XML name spaces – XML schema.

UNIT V 19 Hours

JSP: Advantages of JSP – Developing a JSP program – Components of JSP – Reading request information – Retrieving a data posted from HTML file to a JSP file – JSP sessions – Cookies – Disabling sessions. ASP: Introduction – advantages – processing ASP scripts with forms – variables and Constructs – Sub routines - Include / virtual – ASP Cookies – ASP objects – Connecting to data with ASP.

Text Books

N. P. Gopalan, J. Akilandeswari, "***Web Technology a Developer's Prospective"***, PHI 2010.

Unit I- Chapters 1, 2, Unit II – Chapters 4, 5, Unit III - Chapters 6, 7, Unit IV - Chapters 8, Unit V - Chapters 11, 12

Reference Books

Wendy Willard, "***Web Design -A Beginners Guide***", Tata McGraw Hill.

C. Xavier, "***World Wide Web Designing",*** Tata McGraw Hill, 2000.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	A Brief Introduction to the Internet	1	Chalk & Talk
1.2	Internet services and accessibility	1	PPT
1.3	Uses of the internet	1	Discussion
1.4	Protocols	1	PPT
1.5	Web Concepts	1	PPT
1.6	Internet Standards	1	PPT
1.7	Internet protocols	2	PPT
1.8	Host names	1	PPT
1.9	Internet Applications and Application Protocols	2	Discussion
UNIT - II			
2.1	Introduction to HTML	2	Discussion
2.2	SGML	1	Chalk & Talk
2.3	Outline of HTML document	1	PPT
2.4	Head Section	1	PPT
2.5	Body section	1	PPT
2.6	HTML forms.	1	PPT
2.7	JavaScript: Introduction	1	PPT
2.8	Language elements	1	Chalk & Talk

2.9	Objects of JavaScript	1	PPT
2.10	Other objects	1	PPT
2.11	Arrays	1	Discussion
2.12	Worked Examples	1	PPT
UNIT - III			
3.1	VB Script: Introduction	2	PPT
3.2	Comments	1	Chalk & Talk
3.3	Variables, array variables	1	Discussion
3.4	Operators	1	PPT
3.5	Procedures	1	PPT
3.6	Conditional statements	1	PPT
3.7	looping constructs	1	PPT
3.8	Objects and VBScript	1	PPT
3.9	Cookies	1	Discussion
3.10	DHTML: Introduction	2	Chalk & Talk
3.11	Cascading Style Sheets(CSS)	2	PPT
3.12	DHTML Document object model and collections	1	PPT
3.13	Event Handling	1	PPT
3.14	Filters and Transition	1	PPT
UNIT - IV			
4.1	Introduction	1	Discussion
4.2	HTML versus XML	1	PPT
4.3	Syntax	1	Chalk & Talk
4.4	XML Attributes	1	PPT
4.5	XML validation	1	PPT
4.6	XML DTD	1	PPT
4.7	Building Blocks of XML documents	1	Discussion
4.8	DTD elements	1	PPT
4.9	DTD Attributes	1	PPT
4.10	DTD entities	1	PPT
4.11	DTD Validation	1	PPT
4.12	XSL	1	PPT
4.13	XSL transformation	1	PPT
4.14	XML name spaces	1	PPT
4.15	XML schema.	1	PPT

UNIT - V			
5.1	Advantages of JSP	1	PPT
5.2	Developing a JSP program	1	Discussion
5.3	Components of JSP	2	PPT
5.4	Reading request information.	1	Chalk & Talk
5.5	Retrieving a data posted from HTML file to a JSP file	1	PPT
5.6	JSP sessions	1	PPT
5.7	Cookies	1	PPT
5.8	Disabling sessions.	1	Discussion
5.9	ASP: Introduction	1	PPT
5.10	Advantages	1	PPT
5.11	Processing ASP scripts with forms	1	PPT
5.12	Variables and Constructs	1	PPT
5.13	Sub routines	1	PPT
5.14	Include / virtual	1	PPT
5.15	ASP Cookies	1	PPT
5.16	ASP objects	2	PPT
5.17	Connecting to data with ASP	1	Discussion
	Total	**75**	

Course Designer
Mr. Z. Abdul Basith
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC52	Digital Principles	Core - XII	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To enable the students to acquire the knowledge about number system widely used in computers, understanding the principles of logic gates, Boolean algebra, map simplification, arithmetic and data processing circuits and its applications

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Understanding the basics of integrated chips, digital logic, number systems and its conversions, various codes like binary codes, ASCII, Gray and Excess-3 codes	**K1 & K2**
CO2	Acquire knowledge about the Boolean algebra and simplifications for minimize logic expressions into K-map	**K1 &K2**
CO3	Describe the sign magnitude numbers and its arithmetic operations and basic arithmetic and data processing circuits.	**K2 & K3**
CO4	Develop the knowledge about hoe the data to be store and forward through sequential and combinational circuits such as flip flops and registers.	**K3**
CO5	Understanding the design of the counter circuits and applications of Integrated circuits like digital clock.	**K1&K2**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**3**	**3**	**3**	**3**
CO2	**3**	**3**	**3**	**3**	**2**
CO3	**3**	**3**	**3**	**2**	**2**
CO4	**3**	**3**	**2**	**2**	**1**
CO5	**2**	**2**	**1**	**2**	**1**

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	2
CO3	3	3	3	2	2
CO4	3	3	2	2	1
CO5	2	2	1	2	1

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 16 Hours

Introduction to digital integration circuits - Number Systems and Codes: Binary, Decimal, Octal and hexadecimal number systems -Conversion from one system to another -ASCII code – Excess 3 code -Gray code - Digital Logic: The Basic Gates - AND, OR, NOT -Boolean algebra- Universal Logic Gates–NOR and NAND gates.

UNIT II 15 Hours

Boolean laws and theorems - Simplifications -Sum of Products Method - Truth table to Karnaugh map –Pairs, Quads and Octets -Karnaugh Simplifications -Don't care conditions -Product of Sums method - Product of Sums Simplifications.

UNIT III 16 Hours

Arithmetic circuits: Binary Addition -Binary Subtraction -Unsigned binary numbers -Sign magnitude numbers -2's complement representations -2's complement arithmetic - Arithmetic Building Blocks - Data Processing Circuits: Multiplexers –De-multiplexers –Decoders –Encoders – Exclusive OR gates – parity generators and checkers

UNIT IV 16 Hours

Flip Flops: RS Flip Flops – edge triggered RS flip flops – edge triggered D flip flop – Edge triggered JK flip flops – JK master-slave flip flop -Registers: Types of registers –serial in serial out – serial in parallel out – parallel in seriel out.

UNIT V 12 Hours

Counters: Asynchronous counters – Synchronous counters – Decade counters – presentable counters – shift counters – MOD counters – A digital clock.

Text Books

Donald P Leach, Albert Paul Malvino, GoutamSaha,***Digital Principles and Applications***, Tata McGraw Hill Education Private Limited, New Delhi, Fifth Edition, 2002

Unit I –Chapters 1.7, 5.2-5.8, 2.2–2.5, Unit II –Chapter 3.1-3.8
Unit III –Chapters 4.1-4.8, 6.1-6.7 Unit IV –Chapters 8.1-8.7, 9.1-9.4
Unit V - Chapters10.1, 10.3, 10.5-10.9

Reference Books

M. Morris Mano, ***Digital Logic and Computer Design*****,** Prentice-Hall of India Private Limited, New Delhi, 2001

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction to Digital integrated circuits	2	Chalk & Talk
1.2	Number Systems and Codes: Binary, Decimal,	2	Chalk & Talk
1.3	Octal and hexadecimal number systems	2	Chalk & Talk
1.4	Conversion from one system to another	3	Chalk & Talk
1.5	ASCII code – Excess 3 code -Gray code	2	PPT
1.6	Digital Logic: The Basic Gates - AND, OR, NOT	2	PPT
1.7	Boolean algebra	2	PPT
1.8	Universal Logic Gates -NOR, NAND gates	1	PPT
UNIT - II			
2.1	Boolean Laws and Theorems	3	Chalk & Talk
2.2	Simplifications -Sum of Products Method	2	Chalk & Talk
2.3	Truth table to Karnaugh map	1	PPT
2.4	Pairs, Quasd and Octets	2	PPT
2.5	Karnaugh Simplifications - SOP	2	Chalk & Talk
2.6	Karnaugh Simplifications – POS	1	Chalk & Talk
2.7	Don’t care conditions	2	Chalk & Talk
2.8	Duality	1	PPT
2.9	SOP and POS Simplifications.	1	Discussion

UNIT - III			
3.1	Arithmetic circuits: Binary Addition	2	Chalk & Talk
3.2	Binary Subtraction	2	Chalk & Talk
3.3	Unsigned, Sign magnitude numbers	3	PPT
3.4	2's complement representations	1	PPT
3.5	2's complement arithmetic	1	Chalk & Talk
3.6	Arithmetic Building Blocks	1	PPT
3.7	Data Processing Circuits: Multiplexers	1	PPT
3.8	De-multiplexers	1	PPT
3.9	Decoders -Encoders.	2	PPT
3.10	Exclusive OR Gates and	1	PPT
3.11	parity generators and checkers	1	PPT
UNIT - IV			
4.1	Flip Flops –Introduction	1	Chalk & Talk
4.2	RS Flip Flops	2	PPT
4.3	Edge triggered RS flip flops	2	PPT
4.4	Edge triggered D flip flop	2	PPT
4.5	Edge triggered JK flip flops	1	PPT
4.6	JK master-slave flip flop	2	PPT
4.7	Registers: Types of registers	2	Chalk & Talk
4.8	Serial in serial out.	1	PPT
4.9	Serial in parallel out	1	PPT
4.10	parallel in serial out	2	PPT
UNIT - V			
5.1	Introduction to Counters	1	PPT
5.2	Asynchronous counters	2	PPT
5.3	Synchronous counters	1	PPT
5.4	Decade counters	2	PPT
5.5	presentable counters	2	PPT
5.6	MOD counters	2	PPT
5.7	A digital clock	2	Discussion
	Total	**75**	

Course Designer
Mr. C. Sheik Mydeen
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC53	Mobile Application Development	Core – XIII	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

Seeks to develop and enhance web development and programming skills by focusing upon issues and techniques specific to the delivery of content and applications for mobile platforms**.**

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Install and configure how to develop Android application tools.	**K1, K2**
CO2	Design and demonstrate user interfaces for the android platform.	**K2**
CO3	How to Apply basic graphics by extending the view class.	**K1, K2**
CO4	Understand how to work with Text files and images.	**K1,K2,K3**
CO5	Apply common UI elements and Evaluate Sockets.	**K1,K2,K3**

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**3**	**2**	**3**	**2**
CO2	**2**	**3**	**1**	**3**	**3**
CO3	**3**	**2**	**3**	**2**	**2**
CO4	**2**	**3**	**2**	**3**	**3**
CO5	**3**	**3**	**3**	**3**	**1**

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**3**	**3**	**2**	**3**	**2**
CO2	**2**	**3**	**1**	**3**	**3**
CO3	**3**	**2**	**3**	**2**	**2**
CO4	**2**	**3**	**2**	**3**	**3**
CO5	**3**	**3**	**3**	**3**	**1**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

Introduction - Installation and Configuration of Your Development Platform: Installing Eclipse and Java – Installing Android Developer Kit - Starting an Android Application Project.

UNIT II 12 Hours

Application Design – Controls and User interface: Progress bar, Toggle Button , Seek bar, Rating bar, Fragmen , The Spinner, and Date Picker, Include other Layout, Sliding drawer , Web view – Key classes

UNIT III 12 Hours

Basic Graphics by Extending the View Class - Multi Screen applications: Stretching the Screen – Popup Dialog Boxes – Menus on the Android Devices – Key Classes

UNIT IV 12 Hours

Working with Images - Text Files – Data Tables and XML: Working with Text Files – Data Tables using SQLite – Using XML for Data Exchange – Key classes

UNIT V 12 Hours

Client Server Application – Key classes: Socket – Server Socket – HTTP URL connection – URL

Text Books

James C. Sheusi, ***Android Application Development for Java Programmers,*** Course Technology, 2013 edition.

Unit I - Chapter 1 & 2 Unit II - Chapter 3 & 4

Unit III - Chapter 5 & 7 Unit IV - Chapter 8 & 9

Unit V - Chapter 10

Reference Books

Dr. MadhuGoel, Chetna Sharma ***"Mobile Application Development"***, ISHAN Publications,2020 Edition.

Carmen Delessio ET AL ***"Android Application Development",*** Pearson India Publications,2016 Edition.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction	2	Chalk & Talk
1.2	Installation and Configuration of Your Development Platform	2	PPT
1.3	Installing Eclipse and Java	2	Discussion
1.4	Installing Android Developer Kit	3	Chalk & Talk
1.5	Starting an Android Application Project	3	PPT
UNIT - II			
2.1	Application Design	2	Discussion
2.2	Controls and User interface:	2	Chalk & Talk
2.3	Progress bar, Toggle Button	2	PPT
2.4	Seek bar, Rating bar	2	Chalk & Talk
2.5	The Spinner, Fragmen	2	PPT
2.6	Key classes	2	PPT
UNIT - III			
3.1	Basic Graphics by Extending the View Class	2	PPT
3.2	Multi-Screen applications	2	Chalk & Talk
3.3	Stretching the Screen	2	Discussion
3.4	Popup Dialog Boxes	2	PPT
3.5	Menus on the Android Devices	2	Chalk & Talk
3.6	Key Classes	2	Discussion
UNIT - IV			
4.1	Working with Images	2	Discussion
4.2	Text Files	2	PPT
4.3	Data Tables and XML	2	Chalk & Talk
4.4	Working with Text Files	2	Discussion
4.5	Data Tables using SQLite	2	PPT
4.6	Using XML for Data Exchange	1	Chalk & Talk
4.7	Key classes	1	Chalk & Talk

UNIT - V			
5.1	Client Server Application	2	PPT
5.2	Key classes	2	Chalk & Talk
5.3	Socket	2	Discussion
5.4	Server Socket	2	PPT
5.5	HTTP URL connection	2	Chalk & Talk
5.6	URL	2	Discussion
	Total	**60**	

Course Designer
Ms. R. Neshana
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC5P	Web Technology - LAB	Core – XIV	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

Students will gain the web design knowledge, skills and project-based creativity is needed for entry into web design and development careers. Students to learn to work as freelancers in web design or prepare to become employed at a website design firm.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Recall and be acquainted with elements, Tags and basic structure of HTML files.	**K1, K2**
CO2	Develop the concept of basic and advanced text formatting.	**K2**
CO3	Designing of webpage-Document Layout, Working with List, Working with Table and Practice Hyper linking, Designing of webpage-Working with Frames, Forms and Controls.	**K1, K2, K3**
CO4	Prepare creating style sheet, CSS properties, Background, Text, Font and styling etc.	**K2,K3**
CO5	Apply and Working with Scripting elements box, Positioning, Block properties in CSS.	**K1,K2,K3**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**2**	**2**	**3**	**3**	**3**
CO2	**3**	**3**	**2**	**3**	**2**
CO3	**2**	**1**	**3**	**2**	**2**
CO4	**3**	**3**	**2**	**2**	**2**
CO5	**3**	**2**	**3**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2
CO2	2	2	2	3	3
CO3	3	3	3	2	2
CO4	2	2	2	3	3
CO5	3	1	3	2	3

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 15 Hours

HTML:

Design a colorful webpage of your home town.

Design a timetable using table tag and various font styles.

Develop a html program using div tag and span tag.

UNIT II

DHTML: 15 Hours

Develop a html program using order list and unordered list.

Write a html program to demonstrate Internal Cascade Style Sheet.

Develop a Resume Registration form using suitable controls.

UNIT III 15 Hours

JAVA SCRIPT:

Write a JavaScript program to compute the sum of an array of Integers

Write a JavaScript to perform multiplication & division of two numbers by getting from user

Write a JavaScript program to accept two integers and display the largest

UNIT IV 15 Hours

VB SCRIPT:

Write a VBScript program for Fibonacci using for loop

Write a VBScript program to demonstrate the checkbox and list box

UNIT V 15 Hours

PHP:

Check whether the given character is a vowel or a consonant.

Generate a multiplication table using for each statement.

Create a chess board using nested for loop.

Sort the given set of positive integers using arrays.

Check whether a passed string is a palindrome or not using functions.

Addition of two given matrices

Get all combinations of a string using arrays

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Design a colorful webpage of your home town	5	LCD Projector
1.2	Design a timetable using table tag and various font styles	5	LCD Projector
1.3	Develop a html program using div tag and span tag	5	LCD Projector
UNIT - II			
2.1	Develop a html program using order list and unordered list	5	LCD Projector
2.2	Write a html program to demonstrate Internal Cascade Style Sheet	5	LCD Projector
2.3	Develop a Resume Registration form using suitable controls	5	LCD Projector
UNIT - III			
3.1	Write a JavaScript program to compute the sum of an array of Integers	5	LCD Projector
3.2	Write a JavaScript to perform multiplication & division of two numbers by getting from user	5	LCD Projector
3.3	Write a JavaScript program to accept two integers and display the largest	5	LCD Projector
UNIT - IV			
4.1	Write a VBScript program for Fibonacci using for loop	7	LCD Projector
4.2	Write a VBScript program to demonstrate the checkbox and list box	8	LCD Projector
UNIT - V			
5.1	Check whether the given character is a vowel or a consonant.	2	LCD Projector

5.2	Generate a multiplication table using for each statement.	2	LCD Projector
5.3	Create a chess board using nested for loop.	2	LCD Projector
5.4	Sort the given set of positive integers using arrays.	2	LCD Projector
5.5	Check whether a passed string is a palindrome or not using functions.	3	LCD Projector
5.6	Addition of two given matrices.	2	LCD Projector
5.7	Get all combinations of a string using arrays	2	LCD Projector
	Total	**75**	

Course Designer
Mr. Z. Abdul Basith
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC5Q	Android Programming - Lab	Core - XV	75	3

Nature of Course	
Knowledge Oriented	
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

The purpose of this lab is to become familiar with android programming and mobile application development framework

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Demonstrate the concept of android programming using java.	**K1, K2, K3**
CO2	By applying Background change and arithmetic operations using calculator	**K1, K2, K3**
CO3	By applying the concept of image view and List activity	**K1, K2, K3**
CO4	Demonstrate the concept of menu application and view activity	**K1, K2, K3**
CO5	Demonstrate and Implementing the concept of Countdown timer and to do list activity	**K2, K3**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**3**	**2**	**2**	**3**
CO2	**3**	**2**	**2**	**3**	**2**
CO3	**2**	**3**	**3**	**3**	**3**
CO4	**3**	**3**	**2**	**3**	**2**
CO5	**3**	**3**	**2**	**2**	**3**

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**2**	**3**	**2**	**3**	**1**
CO2	**3**	**2**	**2**	**3**	**3**
CO3	**2**	**3**	**3**	**2**	**1**
CO4	**3**	**3**	**2**	**3**	**3**
CO5	**3**	**2**	**2**	**3**	**2**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 15 Hours

To create a java android to build a simple android applications

To create a java android to demonstrate activity life cycle

UNIT II 15 Hours

To create a java android to change the background of your activity

To create a java android to perform all operations using calculator

UNIT III 15 Hours

To create a java android to change the image displayed on the screen.

To create a java android to demonstrate the use of scroll view.

UNIT IV 15 Hours

To create a java android to demonstrate the menu application

To create a java android to demonstrate list view activity

UNIT V 15 Hours

To create a java android to demonstrate the countdown timer application

To create a java android to demonstrate a simple to do list application

Reference Books

Wallace Jackson **"*Android Apps for Absolute Beginners*"** Second Edition

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	To create a java android to build a simple android applications	8	LCD Projector
1.2	To create a java android to demonstrate activity life cycle	7	LCD Projector
UNIT - II			
2.1	To create a java android to change the background of your activity.	7	LCD Projector
2.2	To create a java android to perform all operations using calculator.	8	LCD Projector
UNIT - III			
3.1	To create a java android to change the image displayed on the screen.	7	LCD Projector
3.2	To create a java android to demonstrate the use of scroll view.	8	LCD Projector
UNIT - IV			
4.1	To create a java android to demonstrate the menu application.	7	LCD Projector
4.2	To create a java android to demonstrate list view activity.	8	LCD Projector
UNIT - V			
5.1	To create a java android to demonstrate the countdown timer application.	7	LCD Projector
5.2	To create a java android to demonstrate a simple to do list application	8	LCD Projector
	Total	**75**	

Course Designer
Mr. A. Peermohamed
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTE51	Compiler Design	Elective - I	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

This Course describes the theory and practice of compilation, in particular, the lexical analysis, parsing and code generation and optimization phases of compilation, and design of compiler for a concise programming language.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Discuss the major phases of compilation	**K1, K2**
CO2	Elaborate the various parsing techniques	**K2,K3**
CO3	Construct the intermediate code representations and generation	**K3**
CO4	Demonstrate Front-end of the Compiler	**K2**
CO5	Generalize Code Generator	**K2,K3**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	1	1
CO2	3	1	2	1	2
CO3	2	3	3	2	1
CO4	3	2	1	3	2
CO5	2	1	3	2	3

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	3	1	1
CO2	3	1	2	1	2
CO3	2	3	3	2	1
CO4	3	2	1	3	2
CO5	2	1	3	2	3

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

Structure of a compiler– Lexical Analysis – Role of Lexical Analyzer – Input Buffering – Specification of Tokens – Recognition of Tokens – Lex – Finite Automata – Regular Expressions to Automata.

UNIT II 12 Hours

Role of Parser – Grammars – Error Handling – Context-free grammars – Writing a grammar – Top Down Parsing – General Strategies Recursive Descent Parser Predictive Parser – LL(1) Parser – Shift Reduce Parser – LR Parser – LR(0) Item Construction of SLR Parsing Table – Introduction to LALR Parser – Error Handling and Recovery in Syntax Analyzer - YACC.

UNIT III 12 Hours

Syntax Directed Definitions – Evaluation Orders for Syntax Directed Definitions – Intermediate Languages: Syntax Tree – Three Address Code – Types and Declarations – Translation of Expressions – Type Checking

UNIT IV 12 Hours

Storage Organization – Stack Allocation Space – Access to Non-local Data on the stack- Heap Management – Issues in Code Generation – Design of a Simple Code Generator

UNIT V 12 Hours

Principal Sources of Optimization – Peep-hole Optimization – DAG – Optimization of Basic Blocks – Global Data Flow Analysis – Efficient Data Flow Algorithm.

Text Books

Alfred V. Aho, Monica S.Lam, Ravi Sethi, Jeffrey D. Ullman, "***Compilers Principles, Techniques and Tools***" Second Edition, Pearson Education, 2009

Reference Books

Dhamdhere D.M, ***"Compile Construction principles and Practice",*** Macmillan India. 1981.

Reinhard Wilhelm, Director Mauser ***"Compiler Design"***, Addision Wesley1995,

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Structure of a compiler	2	Chalk & Talk
1.2	Lexical Analysis – Role of Lexical Analyzer – Input Buffering	2	PPT
1.3	Specification of Tokens	2	Discussion
1.4	Recognition of Tokens	2	Chalk & Talk
1.5	Lex	2	PPT
1.6	Finite Automata	1	Discussion
1.7	Regular Expressions to Automata	1	PPT
UNIT - II			
2.1	Role of Parser – Grammars – Error Handling	2	Discussion
2.2	Context-free grammars – Writing a grammar	2	Chalk & Talk
2.3	Top Down Parsing – General Strategies Recursive Descent Parser Predictive Parser – LL(1) Parser	2	PPT
2.4	Shift Reduce Parser	1	Discussion
2.5	LR Parser – LR(0) Item Construction of SLR Parsing Table	2	PPT
2.6	Introduction to LALR Parser	1	PPT
2.7	Error Handling and Recovery in Syntax Analyzer	1	PPT
2.8	YACC	1	PPT
UNIT - III			
3.1	Syntax Directed Definitions	2	PPT
3.2	Evaluation Orders for Syntax Directed Definitions	2	Chalk & Talk

3.3	Intermediate Languages: Syntax Tree	2	Discussion
3.4	Three Address Code	2	Chalk & Talk
3.5	Types and Declarations	1	PPT
3.6	Translation of Expressions	2	
3.7	Type Checking	1	Chalk & Talk
UNIT - IV			
4.1	Storage Organization	2	Discussion
4.2	Stack Allocation Space	2	PPT
4.3	Access to Non-local Data on the stack	2	Chalk & Talk
4.4	Heap Management	2	PPT
4.5	Issues in Code Generation	2	PPT
4.6	Design of a Simple Code Generator	2	PPT
UNIT - V			
5.1	Principal Sources of Optimization	2	PPT
5.2	Peep-hole Optimization	2	Chalk & Talk
5.3	DAG	2	Discussion
5.4	Optimization of Basic Blocks	2	PPT
5.5	Global Data Flow Analysis	2	PPT
5.6	Efficient Data Flow Algorithm	2	PPT
	Total	**60**	

Course Designer
Mr. A. K. Jenarthanan
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTE52	Data Mining and Warehousing	Elective - I	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To Study Algorithms and Computational Paradigms That Allow Computers to Find Patterns and Regularities in Databases.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Define the purpose of Data warehouse and OLAP and its association with Data mining	**K1,K2**
CO2	Discuss the difference between the KDD and Data mining	**K1,K3**
CO3	Find the patterns in underlying data with the given association rules	**K2,K3**
CO4	Construct the clusters of data which are stored in database by using various clustering techniques	**K2,K3**
CO5	Identify the methods which are used to extract data in the web	**K1,K2**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**3**	**1**	**3**	**3**
CO2	**3**	**3**	**1**	**3**	**3**
CO3	**3**	**3**	**2**	**3**	**3**
CO4	**3**	**3**	**2**	**3**	**3**
CO5	**3**	**3**	**2**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**3**	**3**	**3**	**3**	**3**
CO2	**3**	**2**	**3**	**3**	**3**
CO3	**3**	**3**	**3**	**1**	**2**
CO4	**2**	**3**	**3**	**3**	**1**
CO5	**3**	**3**	**2**	**2**	**3**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 10 Hours

Data Warehousing: Introduction – Definitions – multi dimensional data model – OLAP operations – warehouse schema – architecture – metadata – OLAP engine –Data Warehouse backend process.

UNIT II 12 Hours

Data Mining: Introduction –what is data mining -- Definitions –KDD Vs Data Mining—DBMS Vs DM–Other Mining problems--DM Techniques – Issues and challenges in DM – DM Application area.

UNIT III 12 Hours

Association Rules: Introduction –What is an Association Rule? - Methods to Discover Association Rules – A Priori Algorithm – Partition Algorithm – Pincer-Search Algorithm –Dynamic Item set Counting Algorithm—FP – tree Growth Algorithm-- Border Algorithm.

UNIT IV 13 Hours

Clustering Techniques: Introduction—Clustering Paradigms - Partitioning Algorithm - K-method Algorithm – CLARA – CLARANS - Hierarchical Algorithms – DBSCAN – BIRCH – CURE - Categorical Clustering Algorithms – STIRR.

UNIT V 13 Hours

Web Mining: Introduction - Web Mining- Web Content Mining- Web Structure Mining - Web Usage Mining- Text Mining - Unstructured Mining - Episode Rule Discovery of Texts - Hierarchy of Categories - Text Clustering.

Text Books

Arun K Pujari, ***"Data Mining Techniques"***, University Press, 2001-Third Edition.

Unit I– Chapter 2.1 –2.12, Unit II– Chapter 3.1 – 3.10, Unit III– Chapter 4.1 - 4.8, 4.13, Unit IV– Chapter 5.1 - 5.12, Unit V– Chapter 10.1-10.10

Reference Books

Paulraj Ponniah, *"Data Warehousing fundamentals"*, Awileyintersciene publication.

Bing Liu, ***"Web Datamining"***, 2nd edition, Springer.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction – Definitions – multi dimensional data model	2	Discussion
1.2	OLAP operations – warehouse schema – architecture – metadata	5	Chalk & Talk
1.3	OLAP engine –Data Warehouse Backend process	3	Chalk & Talk
UNIT - II			
2.1	What is data mining - Definitions – KDD Vs Data Mining	3	Discussion
2.2	DBMS Vs DM – Other Mining problems - DM Techniques	5	Chalk & Talk
2.3	Issues and challenges in DM – DM Application area.	4	Chalk & Talk
UNIT - III			
3.1	Introduction –What is an Association Rule? - Methods to Discover Association Rules	3	Discussion
3.2	A Priori Algorithm – Partition Algorithm – Pincer-Search Algorithm	5	Chalk & Talk
3.3	Dynamic Item set Counting Algorithm - FP tree Growth Algorithm-- Border Algorithm	4	Chalk & Talk

UNIT - IV			
4.1	Introduction - Clustering Paradigms - Partitioning Algorithm - K-method Algorithm	3	Discussion
4.2	CLARA – CLARANS - Hierarchical Algorithms – DBSCAN	5	Chalk & Talk
4.3	BIRCH – CURE - Categorical Clustering Algorithms – STIRR	5	Chalk & Talk
UNIT - V			
5.1	Introduction - Web Mining- Web Content Mining- Web Structure Mining	5	Chalk & Talk
5.2	Web Usage Mining- Text Mining - Unstructured Mining	5	Chalk & Talk
5.3	Episode Rule Discovery of Texts - Hierarchy of Categories - Text Clustering.	3	Chalk & Talk
	Total	**60**	

Course Designer
Mr. K. Iscaq Faizal
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTE53	Computer Graphics	Elective - I	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

Understand the basic concepts Graphics regarding 2D and 3D transformations.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Illustrate the basic concepts of computer graphics application and its Input – Output devices	**K1, K2**
CO2	Discuss about Scan conversion	**K1,K2**
CO3	Illustrate and demonstrate basic 2D transformation	**K2, K3**
CO4	Illustrate and demonstrate basic 3D transformation, viewing and clipping	**K2,K3**
CO5	Explain the concepts of colours and various models of CIE colour standard	**K2,K3**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**2**	**3**	**2**	**3**
CO2	**2**	**3**	**2**	**3**	**1**
CO3	**2**	**3**	**1**	**2**	**3**
CO4	**3**	**2**	**3**	**3**	**3**
CO5	**2**	**2**	**3**	**2**	**1**

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2
CO2	2	1	1	1	1
CO3	3	3	2	3	3
CO4	3	3	2	3	3
CO5	3	2	2	1	2

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

Introduction - Graphical Input–Output Devices: Graphical Input Devices–Graphical Output Devices, Raster Scan Video Principles–Random Scan Devices–Plotters, Graphic Accelerators and Graphic Co–Processor

UNIT II 12 Hours

Scan Conversion–DDA Algorithms –Bresenham's Algorithms–Midpoint Methods–Scan Conversion of Solids: Solid Area Filling Algorithm.

UNIT III 12 Hours

2D Geometrical Transformations: Basic Transformations Translation, Scaling, Rotation, Transformation of Points and Objects. Homogeneous Coordinate System – Other Transformations

UNIT IV 12 Hours

Basic3DTransformations–3DTranslation, 3D Scaling,3D Rotation, Rotation about an Arbitrary Point. Other 3D Transformations – 3D Reflection, Reflection about any Arbitrary Plane, 3DShearing. 2D Viewing and Clipping: Windows and Viewports, Viewing Transformations – Clipping of Lines 2D.

UNIT V 12 Hours

Hidden surface elimination and Concepts of Colours: Back face removal Algorithm and the Z-Buffer Algorithm – Light, shades and Colours: Concept of Colours - CIE Colour Standard.

Text Books

Malay K. Pakhira, **"Computer Graphics Multimedia and Animation"**, PHI 2nd edition

Unit I - Chapter – 1.1 – 1.5, 2.1 –2.5
Unit II-Chapter –3.1, 3.3–3.5, 4.3
Unit III-Chapter– 5.1–5.3
Unit IV- Chapter– 7.1, 7.2, 9 .1, 9.2, 9.3

Unit V- Chapter– 12.1, 12.2, 13.5, 13.6

Reference Books

Donald Hearn, Pauline Baker, **"Computer Graphics** – C Version", 2nd edition, Pearson Education, 2004

F. S. Hill, **"Computer Graphics using OPENGL",** 2nd edition, Pearson Education, 2003.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction	2	Chalk & Talk
1.2	Graphical Input Devices	2	PPT
1.3	Graphical Output Devices	2	PPT
1.4	Raster Scan Video Principles	2	PPT
1.5	Random Scan Devices	2	PPT
1.6	Graphic Accelerators and Graphic Co-processors	2	PPT
UNIT - II			
2.1	Scan Conversion	2	PPT
2.2	DDA Algorithm	2	PDF
2.3	Bresenham's Algorithm	2	PDF
2.4	Midpoint Methods	2	PPT
2.5	Solid Area Filling Algorithm	4	PPT
UNIT - III			
3.1	Basic Transformations	4	PPT
3.2	Homogeneous Coordinate System	4	Chalk & Talk
3.3	Other Transformations	4	PPT
UNIT - IV			
4.1	Basic 3-D Transformations	3	PPT
4.2	Other 3-D Transformations	3	PPT
4.3	Windows and Viewports	2	Chalk & Talk
4.4	Viewing Transformations	2	Chalk & Talk
4.5	Clipping of Lines in 2-D	2	Chalk & Talk

UNIT - V			
5.1	Back Face Removal Algorithm	4	Chalk & Talk
5.2	The Z-Buffer Algorithm	2	PPT
5.3	Concept of Colours	2	Chalk & Talk
5.4	CIE Colour Standard	4	Chalk & Talk
	Total	**60**	

Course Designer
Dr. J. Thasleen Fathima
Head & Associate Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTS51	Competitive Paper For Aptitude-I	SBS - II	30	2

Nature of Course	
Knowledge Oriented	
Skill Oriented	✓
Employability Oriented	✓
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To improve the logical and Numerical ability of the student and enhance the problem solving skills.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Solve the problems based on numbers.	K1
CO2	Know how to convert decimal fractions and use the simplification tricks.	K2,K3
CO3	Apply the concepts of average and know the square and cube roots.	K2,K3
CO4	Solve the problems based on Simple interest and find the solution of problems on ages.	K1,K2
CO5	Apply the concepts of logarithms and enhance problem solving skills in Time and work .	K2,K3

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3
CO2	2	3	2	3	2
CO3	3	2	2	2	3
CO4	2	3	1	3	2
CO5	3	3	2	3	3

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	3
CO2	2	3	2	3	2
CO3	3	2	2	2	3
CO4	2	3	1	3	2
CO5	3	3	2	3	3

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 6 Hours

Numbers: Operations on Numbers, Various types of numbers, Tests of Divisibility – Highest Common Factor of Numbers – Least Common Multiple of Numbers.

UNIT II 6 Hours

Decimal Fractions: Conversion of Decimal into Vulgar Fractions, Operations on Decimal Fractions – Simplification – BODMAS Rule – Word problems in Simplification.

UNIT III 6 Hours

Square roots – Problems on Cube roots – Average: Important Facts and Formulae, Solved Examples.

UNIT IV 6 Hours

Problems on Numbers – Problems on Ages – Simple Interest: Important Facts and Formulae Solved Examples.

UNIT V 6 Hours

Time and work: Important Facts and Formulae, Solved Examples – Compound Interest – Logarithms: Properties of Logarithms.

Text Books

Dr. R. S.Aggarval "***Quantitative Aptitude***" S.Chand & Company LTD,2011 edition.
Unit I : Chapter 1,2., Unit II : Chapter 3,4., Unit III: Chapter 5,6., Unit IV : Chapter 7,8,21., Unit V : Chapter 15,22,23.

Reference Books

Prof.Abhilasha Khanna, Arvind Sharma," ***Quantitative Aptitude and Arithmetic***

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Numbers : Operations on Numbers	1	Chalk & Talk
1.2	Various types of numbers	1	E-Resources
1.3	Tests of Divisibility	1	Discussion
1.4	Highest Common Factor of Numbers	2	Discussion
1.5	Least Common Multiple of Numbers.	1	Discussion
UNIT - II			
2.1	Decimal Fractions : Conversion of Decimal into Vulgar Fractions	2	Discussion
2.2	Operations on Decimal Fractions	1	Chalk & Talk
2.3	Simplification	1	E-Resources
2.4	BODMAS Rule	1	Discussion
2.5	Word problems in Simplification	1	Discussion
UNIT - III			
3.1	Square roots	2	E-Resources
3.2	Problems on Cube roots	1	Chalk & Talk
3.3	Average: Important Facts and Formulae,	2	Discussion
3.4	Solved Examples	1	Discussion
UNIT - IV			
4.1	Problems on Numbers	2	Discussion
4.2	Problems on Ages	2	E-Resources
4.3	Simple Interest: Important Facts and Formulae	1	Chalk & Talk
4.4	Solved Examples	1	Discussion
UNIT - V			
5.1	Time and work : Important Facts and Formulae	1	E-Resources
5.2	Solved Examples	1	Chalk & Talk
5.3	Compound Interest	2	Discussion
5.4	Logarithms: Properties of Logarithms.	2	Discussion
	Total	**30**	

Course Designer
Ms. R. Neshana
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC61	Software Engineering	Core – XVI	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To provide knowledge of the various phases of software engineering

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Recall and understand the basic phases of Software Engineering	**K1, K2**
CO2	Discuss about the cost and requirements of Software Engineering	**K1, K2**
CO3	Appling the software design techniques	**K1, K2, K3**
CO4	Identifying the implementation issues in software engineering	**K2, K3**
CO5	Utilizing the testing methods and Maintenance processes in a software project.	**K2, K3**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**1**	**1**	**2**	**2**	**3**
CO2	**2**	**2**	**1**	**2**	**3**
CO3	**2**	**1**	**1**	**3**	**3**
CO4	**3**	**3**	**2**	**2**	**2**
CO5	**3**	**2**	**3**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	2
CO2	2	2	2	3	3
CO3	3	3	3	2	2
CO4	2	2	2	3	3
CO5	3	1	3	2	3

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 15 Hours

Introduction to Software Engineering: Definitions, Size factors– Quality and Productivity Factors- Managerial Issues. Planning a Software Project*:* Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure.

UNIT II 15 Hours

Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques – Staffing Level Estimation – Estimating Software Maintenance Costs. Software Requirements Definition: The Software Requirements Specification – Formal Specification Techniques – State Oriented Notations

UNIT III 15 Hours

Software Design: Fundamental design concepts – Modules and Modularization criteria – Design Notations – Design Techniques.

UNIT IV 15 Hours

Implementation Issues: Structured coding techniques – Coding Style. Modern programming language Features: Type checking – User-defined data types – Data abstraction – Scoping Rules.

UNIT V 15 Hours

Verification and Validation Techniques: Quality Assurance – Walkthroughs and Inspections Unit Testing and Debugging – System Testing – Formal Verification. Software Maintenance: Enhancing Maintainability during development – Managerial Aspects of Software maintenance.

Text Books

Richard E. Fairley, ***"Software Engineering Concepts"***, Tata McGraw Hill, 30th Reprint, 2008

Unit I - Chapter: 1, 1.1 to 1.4, 2.1 to 2.4.
Unit II - Chapter: 3.1 to 3.4, 4.1 to 4.2.

Unit III - Chapter: 5.1 to 5.4.
Unit IV - Chapter: 6.1 to 6.2, 7.1 & 7.3 to 7.5.
Unit V - Chapter: 8.1 to 8.2, 8.5 to 8.7, 9.1 to 9.2.

Reference Books

Roger S. Pressman, ***"Software Engineering: A Practitioner's Approach"***, TMH, 4th edition.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Definitions, Size factors– Quality and Productivity Factors - Managerial Issues.	5	Chalk & Talk
1.2	Defining the Problem – Developing a Solution Strategy	5	PPT
1.3	Planning the Development Process Planning an Organizational Structure.	5	Discussion
UNIT - II			
2.1	Software Cost Factors	2	Discussion
2.2	Software Cost Estimation Techniques	2	Chalk & Talk
2.3	Staffing Level Estimation	2	PPT
2.4	Estimating Software Maintenance Costs.	2	Discussion
2.5	The Software Requirements Specification	2	Chalk & Talk
2.6	Formal Specification Techniques	2	Discussion
2.7	State Oriented Notations	3	PPT
UNIT - III			
3.1	Fundamental design concepts	3	PPT
3.2	Modules and Modularization criteria	4	Chalk & Talk
3.3	Design Notations	4	Discussion
3.4	Design Techniques	4	Chalk & Talk

UNIT - IV			
4.1	Structured coding techniques	3	Discussion
4.2	Coding Style	3	PPT
4.3	Type checking	3	Chalk & Talk
4.4	User-defined data types	2	Chalk & Talk
4.5	Data abstraction	2	Discussion
4.6	Scoping Rules	2	Chalk & Talk
UNIT - V			
5.1	Quality Assurance	3	PPT
5.2	Walkthroughs and Inspections	3	Chalk & Talk
5.3	Unit Testing and Debugging	2	Discussion
5.4	System Testing	2	PPT
5.5	Formal Verification	2	Chalk & Talk
5.6	Enhancing Maintainability during development	2	Chalk & Talk
5.7	Managerial Aspects of Software maintenance.	1	Discussion
	Total	**75**	

Course Designer
Mr. K. A. Sheik Fareed
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC62	Computer Networks	Core - XVII	75	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To inculcate knowledge on concept of Computer Networks

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Elaborate the concept of computer Networks like connection oriented and connection less.	**K1, K2**
CO2	Visualize the transmission media and telephone system.	**K1,K2**
CO3	Summarize concept of different types of protocols	**K1, K2**
CO4	Apply the concept of network layer design issues and routing algorithms.	**K2,K3**
CO5	Discuss Overview of the Hypertext Transfer Protocol	**K2,K3**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**2**	**2**	**2**	**3**
CO2	**2**	**3**	**1**	**3**	**1**
CO3	**2**	**2**	**3**	**1**	**1**
CO4	**2**	**3**	**2**	**2**	**2**
CO5	**3**	**2**	**2**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	**3**	**3**	**2**	**3**	**3**
CO2	**1**	**2**	**2**	**1**	**3**
CO3	**3**	**3**	**3**	**2**	**1**
CO4	**2**	**1**	**2**	**3**	**2**
CO5	**3**	**3**	**2**	**3**	**3**

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 15 Hours

Introduction: Business Applications -Social Issues -Network Hardware - Network Software -Protocol Hierarchies -Connection-Oriented Versus Connectionless Service -The OSI Reference Models -The TCP/IP Reference Models -Comparison of the OSI and TCP/IP Reference Models.

UNIT II 14 Hours

The Physical Layer: Guided Transmission Media -Wireless Transmission - The Mobile Telephone System.

UNIT III 14 Hours

The Data Link Layer: Data Link Layer Design Issues -Error Detection and Correction -Sliding Window Protocols -Multiple Access Protocols -ALOHA, CSMA, Collision free Protocols.

UNIT IV 16 Hours

The Network Layer: Network Layer Design Issues -Routing Algorithms - Shortest path, Flooding, Hierarchical and Broadcast.

The Transport Layer: The Transport Service -Services Provided to the Upper Layers -Transport Service Primitives - Elements of Transport Protocols.

UNIT V 16 Hours

The Application Layer: DNS -The Domain Name System -Electronic Mail - The World Wide Web -Architectural Overview -HTTP-The Hypertext Transfer Protocol

Text Books

Andrew S. Tanenbaum and David J. Wetherall, *"**Computer Networks***", 5th Edition, Pearson Education.

Reference Books

William Stallings, "***Data and Computer Communications***", Prentice Hall of India, New Delhi, 2002.

Behrouzan A. Forouzan "***Data Communications and Networking***" - TMH, 2005.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Uses of Computer Networks	1	Chalk & Talk
1.2	Business Applications	1	PPT
1.3	Home Applications	1	Discussion
1.4	Mobile users	1	Chalk & Talk
1.5	Social Issues		PPT
1.6	Network Hardware	1	Discussion
1.7	Network Software	1	Chalk & Talk
1.8	Reference Model	2	PPT
1.9	OSI Reference Models	2	Chalk & Talk
1.10	TCP/IP Reference Models	2	Discussion
1.11	Comparison of the OSI and TCP/IP Reference Models.	3	PPT
UNIT - II			
2.1	The Physical Layer introduction	1	Discussion
2.2	Guided Transmission Media introduction	1	Chalk & Talk
2.3	Magnetic Media	1	PPT
2.4	Twisted Pair	1	Discussion
2.5	Co-axial Cable	1	PPT
2.6	Fiber Optics	1	PPT
2.7	Wireless transmission media introduction	1	Chalk & Talk
2.8	Electromagnetic Spectrum	1	PPT
2.9	Radio transmission	1	Chalk & Talk
2.10	Microwave Transmission	1	PPT
2.11	Infrared Transmission	1	Discussion
2.12	Light Transmission	1	PPT
2.13	Mobile Telephone System introduction	1	Chalk & Talk
2.14	First Generation	1	PPT
2.15	Second Generation		
2.16	Third Generation		

UNIT - III			
3.1	Data Link layer Design Issues	1	PPT
3.2	Service provided to the network layer		Chalk & Talk
3.3	Framing	1	Discussion
3.4	Error	1	Chalk & Talk
3.5	Flow Control	1	PPT
3.6	Error Detection and Correction		
3.7	Error Correcting Codes	1	Chalk & Talk
3.8	Error Detecting Codes	1	PPT
3.9	Sliding Window Protocol	1	Chalk & Talk
3.10	One bit sliding protocol	1	PPT
3.11	A protocol using go back-N	1	Chalk & Talk
3.12	A protocol using Selective Repeat	1	PPT
3.13	Multiple Access Protocol introduction	1	Chalk & Talk
3.14	ALOHA	1	PPT
3.15	Carrier Sense Multiple Protocol	1	Chalk & Talk
3.16	Collision Free Protocol	1	PPT
UNIT - IV			
4.1	Network Layer Design Issues	1	Discussion
4.2	Shortest Path Algorithm	3	PPT
4.3	Flooding	2	Chalk & Talk
4.4	Hierarchical Routing	2	PPT
4.5	Broadcast Routing	2	PPT
4.6	Transport Layer Service	2	PPT
4.7	Transport Service Primitives	2	Discussion
4.8	Elements of transport Protocols	2	PPT
UNIT - V			
5.1	Domain Name system	3	PPT
5.2	Architectural services	3	Chalk & Talk
5.3	Message formats	2	Discussion
5.4	Message transfer	2	PPT
5.5	Final Delivery	2	PPT
5.6	Architectural Overview	2	PPT
5.7	Hyper Text Transfer Protocol	2	PPT
	Total	**75**	

Course Designer
Mr. A. K. Jenarthanan
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC6P	Dot Net Programming Lab	Core –XVIII	90	4

Nature of Course	
Knowledge Oriented	
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

Students will gain the ability to implement the algorithms in HTML,VB.NET and ASP.NET Pre-requisite.

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Develop algorithmic step to solve Problem and resolving skills-to analyze real life problem.	**K2 & K3**
CO2	Select and Set up a programming environment in HTML.	**K2 & K3**
CO3	Developing Tools in VB. NET.	**K2 & K3**
CO4	Make use of Tools and Experience with developing and debugging software in ASP DOT NET.	**K2 & K3**
CO5	Plan and Configure an VB.NET, ASP.NET applications.	**K2 & K3**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	3
CO2	3	2	2	3	3
CO3	3	3	3	3	3
CO4	3	3	2	3	3
CO5	3	3	2	3	3

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	3	3
CO2	3	2	2	3	3
CO3	3	3	3	3	3
CO4	3	3	2	3	3
CO5	3	3	2	3	3

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 10 Hours

HTML:

To Write a Time Table Program by using Html Tags.

To Create an E-Mail Registration Form by using Html Tags.

UNIT II 20 Hours

VB DOT NET:

To Write a Constructor & Destructor Program by using Console Application in Vb.net

To Write an Inheritance Program by using Console Application inVb.net

To Create a Procedure by using Windows Application in Vb.net

UNIT III 20 Hours

VB DOT NET

To Write an Exception Handling Program by using Windows Application in Vb.net.

To Create a Validation Form by using Windows Application in Vb.net

To write a String Handling Program by using Windows Application in Vb.net.

UNIT IV 20 Hours

ASP DOT NET

To Write a Validation Control Program by using Asp.net

To Create a Calendar Control by using Asp.net

To Create an Ad rotator Control by using Asp.net.

UNIT V 20 Hours

ASP DOT NET

To Create a Web Service by using Asp.net

To Create a Database Connectivity by using ADO.NET

Text Books

ASP.NET 4.5(Covers c# and VB codes), Black Book, Dreamtech Press India Pvt. Ltd

DOT NET TECHNOLOGY, DaminniCrover, I K International *Publishing* House Pvt. Ltd, 2011.

Reference Books

Bipin Joshi, ***"Beginning Database Programming Using ASP.NET Core3"***,
Joel Murach, Mary Delamater***," Murachi's ASP.NET Core MVC***".

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	To Write a Time Table Program by using Html Tags.	5	PPT
1.2	To Create an E-Mail Registration Form by using Html Tags.	5	PPT
UNIT - II			
2.1	To Write a Constructor & Destructor Program by using Console Application in Vb.net.	7	PPT
2.2	To Write an Inheritance Program by using Console Application in Vb.net.	7	PPT
2.3	To Create a Procedure by using Windows Application in Vb.net.	6	PPT
UNIT - III			
3.1	To Write an Exception Handling Program by using Windows Application in Vb.net.	6	PPT
3.2	To Create a Validation Form by using Windows Application in Vb.net.	7	PPT
3.3	To write a String Handling Program by using Windows Application in Vb.net.	7	PPT

UNIT – IV			
4.1	To Write a Validation Control Program by using Asp.net.	6	PPT
4.2	To Create a Calendar Control by using Asp.net	7	PPT
4.3	To Create an Ad rotator Control by using Asp.net.	7	PPT
UNIT - V			
5.1	To Create a Web Service by using Asp.net.	10	PPT
5.2	To Create a Database Connectivity by using ADO.NET	10	PPT
	Total	**90**	

Course Designer
Ms. G. Manonmani
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTC6T	**Project Work**	**Core - XIX**	**90**	**3**

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

External Evaluation	**(Viva -Voce)**	**100 Marks**
Total Marks		**100 Marks**

Course Designer
Dr. J. Thasleen Fathima
Head & Associate Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTE61	Internet of Things	Elective -II	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To assess the vision and introduction of IoT, Understand IoT Market perspective. Implement Data and Knowledge Management and use of Devices in IoT Technology

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Discuss the concept of IoT on the market perspective	**K1, K2**
CO2	Describe the design and technologies of the devices	**K1, K2**
CO3	Understanding the concept of how it is been used in various sectors	**K1, K2,K3**
CO4	Demonstrate the concept of Methodology, purpose and its specifications, model.	**K1,K2 , K3**
CO5	Apply programming concept in IoT concepts	**K2, K3**

K1-Knowledge **K2-Understand** **K3-Apply**

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	**3**	**2**	**2**	**3**	**3**
CO2	**2**	**3**	**1**	**3**	**1**
CO3	**2**	**2**	**3**	**1**	**1**
CO4	**3**	**3**	**3**	**2**	**1**
CO5	**3**	**3**	**2**	**2**	**2**

1-Low **2-Medium** **3-Strong**

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	3	1
CO2	3	2	2	3	2
CO3	3	3	3	2	2
CO4	3	2	2	3	1
CO5	3	3	2	2	3

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

Introduction - Definition & characteristics of IoT - physical design of IoT - logical design of IoT - IoT enabling Technologies - IoT levels & Deployment templates.

UNIT II 12 Hours

Domain specific Iots : Home Automation - cities - Environment - Energy - retail - logistics - Agriculture - Industry - Health and life style.

UNIT III 12 Hours

IoT and M2M - Deference between Iot and M2M - SDN and NFV for IoT - IoT systems management - SNMP - YANG – NETOPEER

UNIT IV 12 Hours

IoT platforms design Methodology - purpose and specification - process specification - Domain model specification - Information model specification - Service specification - IoT level specification - functional view specification - operational view specification - Device and component Integrators - Application Development.-Case study on IoT system weather Monitoring-Motivation on Using Python.

UNIT V 12 Hours

Logical design using python - Installing python – Python Data types and data structures- Control flow - functions - modules - File handling – classes- Python Packages of interest for IoT.

Text Books

Internet of Things - A hands on Approach by ArshdeepBahga, Vijay Madisetti

Publisher: Universities press

Reference Books

Srinivasa K.G., Siddesh G.M. HanumanthaRaju R. "***Internet of Things*** ", Cengage Learning India Pvt. Ltd (2018)

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Definition & characteristics of IoT	2	Chalk & Talk
1.2	physical design of IoT	2	PPT
1.3	logical design of IoT	4	PPT
1.4	IoT enabling Technologies	2	Chalk & Talk
1.5	IoT levels & Deployment templates.	2	PPT
UNIT - II			
2.1	Domain specific Iots : Home Automation - cities – Environment	4	PPT
2.2	Guided Transmission Media introduction	4	PPT
2.3	Agriculture - Industry - Health and life style.	4	PPT
UNIT - III			
3.1	IoT and M2M	3	PPT
3.2	Deference between Iot and M2M	1	PPT
3.3	SDN and NFV for IoT	2	PPT
3.3	IoT systems management	3	Discussion
3.4	SNMP	1	PPT
3.5	YANG	1	PPT
3.6	NETOPEER	1	PPT
UNIT - IV			
4.1	IoT platforms design Methodology	2	Discussion
4.2	purpose and specification – process specification – Domain model specification	2	PPT
4.3	Information model specification - Service specification	1	PPT
4.3	IoT level specification - functional view specification	1	Chalk & Talk
4.4	operational view specification	1	Chalk & Talk

4.5	Device Iand component Integrators Application Development	2	Chalk & Talk
4.6	Case study on IoT system weather Monitoring-Motivation on Using Python.	3	Discussion
UNIT - V			
5.1	Logical design using python	3	PPT
5.2	Installing python	1	PPT
5.3	Python Data types and data structures	1	PPT
5.4	Control flow	1	Chalk & Talk
5.5	Functions	1	Chalk & Talk
5.6	Modules	1	Chalk & Talk
5.7	File handling	1	Chalk & Talk
5.8	Classes- Python Packages of interest for IoT.	3	Chalk & Talk
	Total	**60**	

Course Designer
Mr. A. Peermohamed
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTE62	Open Source Technologies	Elective -II	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

The Students are able to understand the open source software is made available for use or modification as users or other developers see fit and acquire the knowledge about linux, Apache and MySQ and PHP Programming standards

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Understand the LINUX operating system and its features, Apache web server	K1 & K2
CO2	Acquire the basics of MYSQL database and various commands like CREATE, USE, DESCRIBE…..	K2 & K3
CO3	Understand the PHP programming basics and apply the concepts to develop applications	K1, K2 & K3
CO4	Use standards of PHP to make the programming and designing the web pages using tables and arrays.	K2, K3
CO5	Create and develop the file operations in PHP and ability to apply the advanced OOP's concepts in PHP.	K1, K2 & K3

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	3
CO2	3	3	2	2	2
CO3	3	3	3	1	1
CO4	3	3	3	2	1
CO5	3	3	3	2	2

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	2
CO3	3	2	2	2	2
CO4	3	2	2	2	1
CO5	3	3	2	2	1

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

Linux – The choice of a GNU generation – Introduction – Linux distributions – Download and install –Decisions, Decisions – Linux Partition Sizes – Accounts – Security – Basic Unix. Apache Web Server: Introduction – Starting, Stopping and Restarting Apache - Configuration – Securing Apache.

UNIT II 12 Hours

MySQL – Introduction – SHOW DATABASES and CREATE DATABASE – USE Command – CREATE TABLE and SHOW TABLE Command – DESCRIBE, INSERT, SELECT, UPDATE & DELETE Command – Some administrative details – Table Joins – Loading and Dumping a database.

UNIT III 12 Hours

Introducing PHP - Unique Features - Basic Development Concepts - Sample Applications - Using Variables and Operators: Storing Data in Variables - Understanding PHP's Data Types - Setting and Checking Variable Data Types - Using Constants - Manipulating Variables with Operators - Handling Form Input

UNIT IV 12 Hours

Controlling Program Flow: Writing Simple Conditional Statements - Writing More Complex Conditional Statements - Repeating Actions with Loops - Working with String and Numeric Functions - Working with Arrays: Storing Data in Arrays - Processing Arrays with Loops and Iterates - Using Arrays with Forms - Working with Array Functions - Working with Dates and Times

UNIT V 12 Hours

Using Functions and Classes: Creating User-Defined Functions - Creating Classes - Using Advanced OOP Concepts. - Working with Files and Directories: Reading Files - Writing Files Processing Directories - Performing Other File and Directory Operations.

Text Books

James Lee and Brent Ware, ***Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP***, Dorling Kindersley (India Pvt. Ltd., 2008.

Steven Holzner, ***The Complete Reference PHP,*** Tata McGraw Hill, New Delhi, 2007.

UNIT I: Chapters 2 & 3 UNIT II: Chapter 5

UNIT III: Chapters 1& 2 UNIT IV: Chapters 3 & 4

UNIT V: Chapters 9 & 11

Reference Books

M.N. Rao, ***Fundamentals of Open Source Software***, PHI., Delhi, 2015.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	The choice of a GNU generation	1	Discussion
1.2	Introduction to Linux distributions	1	PPT
1.3	LINUX download and Installation	2	PPT
1.4	Decisions, Decisions, Linux Partition Sizes	2	PPT
1.5	Accounts and Security	1	PPT
1.6	Apache Web Server: Introduction	2	PPT
1.7	Starting, Stopping and Restarting Apache	2	PPT
1.8	Configuration and Securing Apache	1	PPT
UNIT - II			
2.1	MySQL – Introduction	1	Chalk & Talk
2.2	SHOW DATABASES and CREATE DATABASE	2	PPT
2.3	USE Command	1	PPT
2.4	CREATE TABLE and SHOW TABLE Command	2	Chalk & Talk
2.5	DESCRIBE, INSERT, SELECT,	2	Chalk & Talk
2.6	UPDATE & DELETE Command	1	PPT
2.7	administrative details of MYSQL	1	Chalk & Talk

2.8	Table Joins, Loading and Dumping a database	2	PPT
UNIT - III			
3.1	Essential, PHP page PHP "Here" documents	1	Chalk & Talk
3.2	Working with variables and constants	1	Chalk & Talk
3.3	PHP's internal data types,	1	PPT
3.4	Operators and Flow control	1	PPT
3.5	Assignment operators, String operators,	1	PPT
3.6	Bitwise operator, Comparison operators,	1	Chalk & Talk
3.7	Logical operators and Ternary operator	1	Chalk & Talk
3.8	if, else, else if statement, Switch statement	2	PPT
3.9	Using for, while,	1	PPT
3.10	Using do...while,	1	PPT
3.11	Using for each loops	1	PPT
UNIT - IV			
4.1	Strings and Arrays introduction	1	Chalk & Talk
4.2	The String functions, Converting strings	1	PPT
4.3	Formatting text strings, Building some arrays	2	PPT
4.4	PHP array functions	2	PPT
4.5	Sorting Arrays	1	PPT
4.6	Handling Multi-dimensional arrays,	2	PPT
4.7	Splitting and Merging arrays	2	PPT
4.8	Creating functions in PHP	1	PPT

UNIT - V			
5.1	File Handling – Introduction	1	PPT
5.2	Opening files using fopen	1	PPT
5.3	Reading text from a file using fgets – Close	2	PPT
5.4	Checking if a file exists with file exists,	2	PPT
5.5	Writing to a file with fwrite	1	PPT
5.6	Sessions, Cookies, and FTP	1	PPT
5.7	Setting a cookie, Reading a cookie,	1	PPT
5.8	Setting cookie's expiration, Deleting cookies	1	PPT
5.9	Working with FTP	1	PPT
5.10	Downloading files with FTP.	1	Discussion
	Total	**60**	

Course Designer
Mr. C. Sheik Mydeen
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTE63	PC Troubleshooting and ALP	Elective -II	60	4

Nature of Course	
Knowledge Oriented	✓
Skill Oriented	
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

The Students are able to understand the architecture of microprocessor architecture and its operations, the technical aspects of PC hardware and troubleshooting tricks, getting knowledge of assembly language and construct the assembly language programming

Course Outcomes (CO)

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

No.	Course Outcome	Knowledge Level
CO1	Understand the hardware and software fails and troubleshoot the problems, basics of microcomputer architecture and construction.	K1 & K2
CO2	Describe the computer's memory, memory Diagnostics and I/O communications inside the PC.	K2 & K3
CO3	Analyze the Disk drives working process and measuring the performance of drives, graphics and displays	K2 & K3
CO4	Analyze the microprocessors architecture like pin configuration, signal handling and timing of system	K2, K3
CO5	Describe the assembly language programming and develop programming for various applications	K1, K2 & K3

K1-Knowledge K2-Understand K3-Apply

Mapping of CO with PO

	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	3
CO2	3	3	2	2	2
CO3	3	3	3	1	1
CO4	3	3	3	2	1
CO5	3	3	3	2	2

1-Low 2-Medium 3-Strong

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	2
CO3	3	2	2	2	2
CO4	3	1	2	2	1
CO5	2	2	1	2	1

1-Low **2-Medium** **3-Strong**

Syllabus

UNIT I 12 Hours

Introduction: General approach to troubleshooting – Categorizing faults – hardware and software faults – Configuration problems – Burn-in. Microcomputer fundamentals: Basics – catching the bus – expanding the system – clocks and timing – interrupting system – tour of the system – static hazards – System architecture and Construction.

UNIT II 12 Hours

The expansion buses – Troubleshooting the PCI Bus and AGP – Semi Conductor Memory: Memory buses – BIOS ROM and RAM – CMOS RAM – Memory Diagnostics - Printer and the Printer interface – Parallel I/O – Troubleshooting the Printers – Serial Communication ports – Replicable disk drives.

UNIT III 12 Hours

Hard disk drives: Basics – Disk Performance – Drive interfaces – SCSI abd IDE/ATA – Troubleshooting the hard drive – Displays: Standards – video graphics – cards and display types – Troubleshooting - Viruses.

UNIT IV 12 Hours

8086 Architecture, Pin Configuration & Timing Diagram: Register Organization of 8086 – Architecture – Signal Description – Minimum Mode 8086 System and Timings – Maximum Mode 8086 System and Timings – The 8088 Architecture

UNIT V 12 Hours

8086 Addressing Modes, Instruction Set and Assembler Directives: Machine Language Instruction Formats-Addressing Modes of 8086-Instruction Set of 8086: Assembler Directives and Operators – Assembly language example programs.

Text Books

Howard Anderson, Mike Tooley, ***PC Troubleshooting – Pocket Book***, Newnes Publications, 2nd Edition

A.K. Ray, K.M. Bhurchandi, ***Advanced Microprocessors and Peripherals,*** TMH Publications, Third Edition, 2013.

Unit I - Chapters 1, 3, 4
Unit II - Chapters 5to 9
Unit III - Chapters 10 to 12
Unit IV – Chapter 1 (1.1-1.3, 1.8-1.10)
Unit V – Chapter 2 & 3 (2.1-2.4, 3.4)

Reference Books

Badri Ram, ***Fundamentals of Microprocessors and Microcomputers***, Fifth Revised and Enlarged Edition, DhanpatRai Publications, 2003.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
	UNIT - I		
1.1	General approach to troubleshooting	2	Discussion
1.2	Categorizing faults,	1	PPT
1.2	hardware and software faults and Configuration problems	1	PPT
1.4	Microcomputer fundamentals	3	PPT
1.5	expanding the system and interrupting system	3	PPT
1.6	System architecture and Construction	2	PPT
	UNIT - II		
2.1	Troubleshooting the PCI Bus and AGP	2	Chalk & Talk
2.2	Memory buses – BIOS ROM and RAM	2	PPT
2.3	CMOS RAM and Memory Diagnostics	1	PPT
2.4	Printer and the Printer interface	2	Chalk & Talk
2.5	Parallel I/O and Troubleshooting the Printers	1	Chalk & Talk
2.6	Serial Communication ports	2	PPT
2.7	Replicable disk drives.	2	Chalk & Talk

UNIT - III			
3.1	Description of Hard disk drives	2	Chalk & Talk
3.2	Disk Performance and Drive interfaces	2	PPT
3.3	SCSI abd IDE/ATA	2	PPT
3.4	Troubleshooting the hard drive	1	PPT
3.5	Displays: Standards and video graphics	2	PPT
3.6	cards and display types: Troubleshooting	2	PPT
3.7	Viruses	1	PPT
UNIT - IV			
4.1	Introduction : 8086 Architecture	2	Chalk & Talk
4.2	Pin Configuration & Timing Diagram	2	PPT
4.3	Register Organization	2	PPT
4.4	Signal Description	1	PPT
4.5	Minimum Mode and maximum modes of 8086	2	PPT
4.6	System and Timings	1	PPT
4.7	The 8088 Architecture	2	PPT
UNIT - V			
5.1	Introduction: Assembly Language Programming	1	PPT
5.2	8086 Addressing Modes	2	PPT
5.3	Instruction Set and Assembler Directives	2	PPT
5.4	Machine Language Instruction Formats	2	PPT
5.5	Instruction Set of 8086	2	PPT
5.6	Assembler Directives and Operators	1	PPT
5.7	Assembly language example programs.	2	PPT
	Total	**60**	

Course Designer
Mr. C. Sheik Mydeen
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTS6P	Animation Techniques -Lab	SBS - III	30	2

Nature of Course	
Knowledge Oriented	
Skill Oriented	✓
Employability Oriented	
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

Deals with the Drawing for Animation, Quick Studies from real life and Sequential movement drawing using Photoshop and Flash.

Syllabus

UNIT I 6 Hours

Handling different file formats and interchanging them, changing the resolution, colour, gray scales and size of the images.

Using brushes and creating multicolour real life images.

Cropping, rotating, overlapping, superimposing, pasting photos on a page

Creation of a single image from selected portions of many images

UNIT II 6 Hours

Developing a commercial brochure with background tints

Creating an image with multi-layers of images and texts

Applying masks and filtering on images.

UNIT III 6 Hours

Develop an image(s) and do the following.

Basic Drawing and Painting.

Working with Strokes and Fills

UNIT IV 6 Hours

Creating Custom Colours, Gradients, and Line Styles Transforming and Grouping Objects.

Creating and Managing Multiple Layers.

UNIT V 6 Hours

Converting Text into Shapes

Animate using motion, shape, Twining, and actions.

Text Books

Richard Williams "***The Animator's Survival Kit***", Faber & Faber,4th Edition, 2012.

Edoux, Trish, Ranney, Doug & Patten, Fred (Ed) ***"Complete Anime Guide: Japanese Animation Flim Directory and Resource Guide"***, Tiger Mountain Press, 1997

Reference Books

Bob Godfrey and Anna Jackson ***"The Do-It-Yourself Film Animation Book",*** BBC Publications, Edition I,1974 ISBN 978-0-563-10829-0

Thomas, Frank and Johnson Ollie ***"Disney Animation: The illusionof Life",***Abbevile Publications.

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Introduction about Photoshop	1	PPT
1.2	Handling different file formats	1	PPT
1.3	Changing the resolution	1	Discussion
1.4	Cropping, rotating, overlapping	1	PPT
1.5	Creation of a single image	1	PPT
1.6	Creating Multicolour real life images	1	Discussion
UNIT - II			
2.1	Developing a commercial brochure	1	Discussion
2.2	Creating an image	1	PPT
2.3	Applying masks	1	PPT
2.4	Filtering on images	1	Discussion
2.5	Understanding image resolution	1	PPT
2.6	Compositing images	1	PPT
UNIT - III			
3.1	Basics in Flash	1	PPT
3.2	Develop an image	1	PPT
3.3	Working with Strokes	2	Discussion
3.4	Basic Drawing.	1	PPT

3.5	Working with Fills	1	PPT
UNIT - IV			
4.1	Creating Custom Colours	1	Discussion
4.2	Transforming and Grouping Objects	2	PPT
4.3	Creating Multiple Layers	1	PPT
4.4	Managing Multiple Layers	2	PPT
UNIT - V			
5.1	Converting Text into Shapes	2	PPT
5.2	Animate using Motion	1	PPT
5.3	Animate using Shape	1	Discussion
5.4	Animate using Twining	1	PPT
5.5	Animate using Actions	1	PPT
	Total	**30**	

Course Designer
Ms. R. Neshana
Assistant Professor of Information Technology

Course Code	Course Title	Category	Total Hours	Credits
20UCTS61	Competitive Paper For Aptitude-II	SBS - IV	30	2

Nature of Course	
Knowledge Oriented	
Skill Oriented	✓
Employability Oriented	✓
Entrepreneurship Oriented	

Course Relevance	
Local	
Regional	
National	
Global	✓

Preamble

To improve the logical reasoning skills and to enhance students speed and accuracy skills in Numerical ability.

Syllabus

UNIT I 6 Hours

Percentage: Important Facts and Formulae, Solved Examples – Profit and Loss: Important Facts.

UNIT II 6 Hours

Number Series – Clock: Important Facts, Solved Examples – Calendar: Important Facts and Formulae

UNIT III 6 Hours

Time and Distance: Important Facts and Formulae, Solved Examples – Probability – Permutations and Combinations.

UNIT IV 6 Hours

Problems on Trains – Allegation or Mixture: Important Facts, Solved Examples – Inequalities.

UNIT V 6 Hours

Area: Important Facts and Formulae, Solved Examples – Volume and Surface Areas – Odd Man Out.

Text Books

Dr.R.S.Aggarval "***Quantitative Aptitude***" S. Chand & Company LTD,2011 edition.
Unit I: Chapter 10,11., Unit II: Chapter 27,28., Unit III: Chapter 17,30,31., Unit IV: Chapter 24,25,35., Unit V: Chapter 15,22,23.

Reference Books

Prof. Abhilasha Khanna, Arvind Sharma," ***Quantitative Aptitude and Arithmetic Competitive Exam Book***"

Pedagogy

Chalk & Talk, E-Resources, Group Discussion

Teaching aids

Black Board, LCD Projector

Course Contents and Lecture Schedule

Module No.	Topic	No. of Lectures	Content Delivery Methods
UNIT - I			
1.1	Percentage:Important Facts and Formulae	2	Chalk & Talk
1.2	Solved Examples	2	E-Resources
1.3	Profit and Loss: Important Facts	2	Discussion
UNIT - II			
2.1	Number Series	2	Discussion
2.2	Clock -Important Facts,	1	Chalk & Talk
2.3	Solved Examples	1	E-Resources
2.4	Calendar : Important Facts and Formulae	2	E-Resources
UNIT - III			
3.1	Time and Distance : Important Facts and Formulae	1	E-Resources
3.2	Solved Examples	1	Chalk & Talk
3.3	Probability	2	Discussion
3.4	Permutations and Combinations.	2	
UNIT - IV			
4.1	Problems on Trains	2	Discussion
4.2	Allegation or Mixture: Important Facts	1	E-Resources
4.3	Solved Examples	1	Chalk & Talk
4.4	Inequalities.	2	
UNIT - V			
5.1	Area : Important Facts and Formulae	1	E-Resources
5.2	Solved Examples	1	Chalk & Talk
5.3	Volume and Surface Areas	2	Discussion
5.4	Odd Man Out.	2	
	Total	**30**	

Course Designer

Ms. R. Neshana

Assistant Professor of Information Technology