SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS), COIMBATORE – 641 020
B.Sc. COMPUTER SCIENCE (UCS/USC)
Under Choice Based Credit System (CBCS) 2017– 2018 onwards
SCHEME OF EXAMINATION

SEMESTER – I

S.No	COURSE CODE	PART	COURSE TITILE	HRS/ WK	CRE DITS	EXA M HRS	MAX MARKS		
							INT	EXT	TOT
01	17UGC1TA1	I	Tamil– I	6	3	3	25	75	100
02	16UGC1EN1	II	English – I	6	3	3	25	75	100
03	17UCS/USC1 CO1	III	Core – 1 Programming in C	4	4	3	25	75	100
04	13UCS/USC1 AL1	III	Allied-1: Mathematics – I	6	5	3	25	75	100
05	13UCS/USC1 CP1	III	Core Practical – 1 Programming Lab in C	6	3	3	40	60	100
06	15UGC1ENS	IV	Environmental Studies	2	2	2	-	75	75
TOTAL – 1				**30**	**20**		**140**	**435**	**575**

SEMESTER – II

S.No	COURSE CODE	PART	COURSE TITILE	HRS/W K	CREDI TS	EXAM HRS	MAX MARKS		
							INT	EXT	TOT
01	17UGC2TA2	I	Tamil– II	6	3	3	25	75	100
02	16AUG2EN2	II	English – II	6	3	3	25	75	100
03	17UCS/USC2 CO2	III	Core – 2 Object Oriented Programming with C++	4	4	3	25	75	100
04	13UCS/USC2 AL2	III	Allied-2: Mathematics – II	6	5	3	25	75	100
05	13UCS/USC2 CP2	III	Core Practical – 2 Programming Lab in C++	6	3	3	40	60	100
06	16UGC2VAE	IV	Value Education	2	2	2	-	75	75
TOTAL – 2				**30**	**20**		**140**	**435**	***575***

SEMESTER – III									
S.No	COURSE CODE	PART	COURSE TITILE	HRS/ WK	CRE DITS	EXAM HRS	MAX MARKS		
							INT	EXT	TOT
01	17UCS/USC3 CO3	III	Core– 3 Database Management System	4	4	3	25	75	100
02	17UCS/USC3 CO4	III	Core– 4 Data Structures and Algorithms	5	5	3	25	75	100
03	17UCS/USC3 CO5	III	Core – 5 Java Programming	5	4	3	25	75	100
04	13UCS/USC3 AL3	III	Allied- 3: Accounting and Business Management	6	5	3	25	75	100
05	17UCS/USC3 CP3	III	Core Practical – 3 Java Programming	4	3	3	40	60	100
06	16UCS/USC3 CP4	III	Core Practical – 4 RDBMS Lab	4	3	3	40	60	100
07	16UCS/USC3 NM1	IV	Non Major Elective – 1 ------ / Basic Tamil - I	2	2	2	-	50	50
TOTAL – 3				**30**	**26**		**180**	**470**	**650**

SEMESTER – IV

S.No	COURSE CODE	PART	COURSE TITILE	HRS/WK	CREDITS	EXAM HRS	MAX MARKS		
							INT	EXT	TOT
01	16UCS/USC4 CO6	III	Core – 6 .NET Technology (**C#)**	6	5	3	25	75	100
02	16UCS/USC4 CO7	III	Core – 7 Computer Organization and Architecture	6	4	3	25	75	100
03	17UCS/USC4 CO8	III	Core – 8 OBJECT ORIENTED MODELING & DESIGN with UML and SOAD	5	3	3	25	75	100
04	13UCS/USC4 AL4	III	Allied 4- Operations Research	6	5	3	25	75	100
05	16UCS/USC4 CP5	III	Core Practical – 5 **C# .NET LAB**	5	3	3	40	60	100
06	16UCS/USC4 NM2	IV	Non Major Elective - 2: -----/ Basic Tamil - II	2	2	2	-	50	50
07	15UGC4NSS/ 4SPO/4NCC	V	NSS / NCC / SPORTS		1	2	-	50	50

TOTAL – 4	**30**	**23**		**155**	**445**	**600**

SEMESTER – V									
S. No	COURSE CODE	PART	COURSE TITILE	HRS /WK	CRE DITS	EXAM HRS	MAX MARKS INT	EXT	TOT
01	16UCS/USC5CO9	III	Core– 9 Operating System	4	4	3	25	75	100
02	17UCS/USC5C10	III	Core – 10 Web Technology(XML, Web Services and PHP)	4	4	3	25	75	100
03	17UCS/USC5C11	III	Core – 11 Android Programming	4	4	3	25	75	100
04	17UCS/USC5CP6	III	Core Practical – 6 Android Programming Lab	4	4	3	40	60	100
05	16UCS/USC5CP7	III	Core Practical – 7 Web Technology Lab	5	3	3	40	60	100
06	16UCS/USC5EL1	III	Elective – I (From Group A)	4	4	3	25	75	100
07	13UCS6CPR	III	PROJECT	5					
TOTAL – 5				**30**	**23**		**180**	**420**	**600**

SEMESTER – VI									
S. No	COURSE CODE	PART	COURSE TITILE	HRS /WK	CRE DITS	EXAM HRS	MAX MARKS INT	EXT	TOT
01	16UCS/USC6C12	III	Core– 12 Software Engineering	5	5	3	25	75	100
02	17UCS/USC6C13	III	Core – 13 PYTHON and IOT	5	5	3	25	75	100
03	17UCS/USC6C14	III	Core – 14 Computer Networks and Cyber-Security	5	5	3	25	75	100
04	16UCS/USC6EL2	III	Elective – II (From Group B)	5	5	3	25	75	100
05	17UCS/USC6CP8	III	Core Practical -8 PYTHON Lab	5	3	3	40	60	100
06	13UCS/USC	III	Project Work	5	5		40	60	100

	6CPR								
TOTAL – 6				**30**	**28**		**180**	**420**	**600**

Electives

Group A:

1. **Artificial Intelligence and Soft Computing.**
2. Distributed Computing System
3. Management Information System
4. TCP/IP Protocol Suit

Group B:

1. **Data Mining and Warehousing**
2. Multimedia Applications.
3. Software Project Management
4. Unix Internals

NON MAJOR ELECTIVES:

01	16UEC3NM1	IV	Non Major Elective – 1 Java Programming	2	2	2	-	50	50
02	16UEC4NM2	IV	Non Major Elective – 2 HTML	2	2	2	-	50	50

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For the candidates admitted from academic year 2016 - 2017 onwards under New CBCS

CORE: PROGRAMMING IN C

Year : I | **Semester** : I
Hours / Week : 4 | **Subject Code:** 13UCS/USC1C01
Credits : 4

UNIT I

Overview of C: Importance of C – Basic Structure of C programs – Executing a 'C' Program – Sample Programs;

Constants, Variables and Data Types: Character Set – C tokens – Keywords and Identifiers – Constants – Variables – Data Types – Declaration of Variables – Assigning Values to Variables – Declaring a Variable as Constant.

UNIT II

Operators and Expressions: Arithmetic Operators – Relational Operators – Logical Operators – Assignment Operators – Increment and Decrement Operators – Conditional Operator – Bitwise Operators – Special Operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operator – Some Computational Problems – Type Conversions in Expressions – Operator Precedence and Associativity – Mathematical Functions;

Managing Input and Output Operations: Reading a Character – Writing a Character – Formatted Input – Formatted Output.

UNIT III

Decision Making and Branching: Decision Making with IF Statement – Simple IF Statement – The IF … ELSE Statement – Nesting of IF … ELSE Statement – The ELSE IF Ladder – The Switch Statement – The ?: Operator – The GOTO Statement;

Decision Making and Looping: The WHILE Statement – The DO Statement – The FOR Statement – Jumps in LOOPS.

UNIT IV

Array: One-dimensional Arrays – Declaration of One-dimensional Arrays – Initialization of One-dimensional Arrays – Two-dimensional Arrays – Initializing Two-dimensional Arrays – Multi-dimensional Arrays;

User-defined Functions: Elements of User-defined Functions – Definition of Functions – Return Values and their Types – Function Calls – Function Declaration – Category of Functions – No Arguments and no Return Values – Arguments with Return Values – No Arguments but Return Multiple Values – Nesting of Functions.

UNIT V

Pointers: Introduction – Understanding pointers – Accessing the Address of a Variable – Declaring Pointer Variables – Initialization of Pointer Variables – Accessing a Variable through its Pointers;

File Management in C: Introduction – Defining and Opening a File – Closing a File – Input /Output Operations on Files – Error Handling During I/O Operations – Random Access to Files – Command Line Arguments.

TEXT BOOK:

1. Programming in ANSI C, Fifth Edition, E. Balagurusamy, Tata McGraw Hill Education Private Limited, New Delhi, 2011.

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Year : I **Semester : I**
Hours / Week : 6 **Subject Code:** 13UCS/USC1CP1

Credits : 3

CORE PRACTICAL: PROGRAMMING LAB IN C

1. Write a C program to find the roots of a quadratic equation. (Use of Arithmetic operators)
2. Write a C program to find the biggest and smallest among three numbers. (Using conditional operator)
3. Write a C program to read and print the formatted integers and characters output and write the status of a character whether it is numeric / alphabet / lower case / upper case / special symbols.
4. Write a C program to accept the integers and print whether it is a palindrome number or not. (Using modulus operator)
5. Write a C program to calculate the salary of a sales representative based on his sales. Bonus and incentives to be offered to him will be based on his total sales. If his sales exceedsRs. 1,00,000/- follow the particulars of table 1 otherwise table 2. (use of if-else statement)

Table 1

Basic	= Rs. 10,000/-
HRA	= 20% of Basic
DA	= 110% of Basic
Conveyance	= Rs. 500/-
Incentive	= 10% of Sales
Bonus	= Rs. 2000/-

Table 2

Basic	= Rs. 10,000/-
HRA	= 20% of Basic
DA	= 110% of Basic
Conveyance	= Rs. 500/-
Incentive	= 10% of Sales
Bonus	= Rs. 1000/-

6. Write a C program to convert years into months, days, hours, minutes, and seconds. (Using switch-case statement)
7. Write a C program to calculate an Electricity bill by reading starting and ending meter reading. The changes are as follows:

Number of units consumed	**Rates in Rs.**
Less than 100	1.50
100 – 200	2.50
201 – 500	3.50
500 – 1000	5.00

8. Write a C program to find the given number is Prime or not. (Using while loop statement)
9. Write a C program to accept N integer numbers and sort them by using 1D Array.
10. Write a C program to print Matrix Multiplication. (Using 2D Array)
11. Write a C program to find NCR value using User-defined functions. (Function with argument with return values)
12. Write a C program to calculate interest for the given principal amount (P), number of years (N) and rate of interest (R) using User-defined function.
13. Write a C program for sorting of strings using pointers.
14. Write a C program for character oriented read/write operations on a file. (Using getc and putc)
    [Note: Enter the Input data via the keyboard character by character to the file “INPUT”. The end of the data is indicated by entering an EOF character. Then read the content and display it on the screen]
15. Write a C Program for counting tabs, number of lines, characters and blank spaces in a file.

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CORE : OBJECT ORIENTED PROGRAMMING WITH C++

Year : I **Semester : II**

Hours / Week : 4 **Subject Code :** 17UCS/USC2C02

Credits : 4

UNIT I

Object Oriented Programming Paradigram: Basic concepts — Benefits — Application — Structure of C++ program — Basic data types — User Defined Data types — Derived data types — Manipulators — Type cast operator — Conversions — Control structures

UNIT II

Functions: Function Prototyping — Call by reference — return by reference — Inline function — Default arguments.

Class & Objects: Specifying a class — Define member function — Arrays within a class - Memory allocation — Arrays of Object — Objects as function Arguments — Constructors Parameterized constructor — Copy Constructor — Dynamic constructor — Destructors.

UNIT III

Operator Overloading & type conversion: Define Operators Overloading — Overloading unary operators — Binary operators — Type conversion.

Inheritance: Defining derived class — Single inheritance — Multi level inheritance — Multiple inheritance — Hierarchical inheritance — Hybrid inheritance — Constructors in derived class.

UNIT IV

Pointers, Virtual functions and polymorphism: Pointer to Objects — this pointer — virtual functions — Pure Virtual Functions.

Files: Opening and Closing a File — Detecting end of file — File pointers and their manipulations — Command — line arguments.

UNIT V

Templates: Class templates — Function templates — Overloading of template function — Member function templates.

Exception Handling: Basics — Exception handling mechanism — Throwing mechanism — Catching mechanism — Specify Exceptions.

TEXT BOOK:

1. Object oriented programming with C++, E. Balagurusamy, Tata McGraw Hill Education Private Limited, N.Delhi, 5th Edition, 2012.

REFERENCE BOOK

Robert Lafore, Object oriented programming in C++, 4th Edition, Pearson, 9th Impression, 2013.

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CORE PRACTICAL : PROGRAMMING LAB IN C++

Year : I **Semester : II**
Hours / Week : 6 **Subject Code :** 13UCS/USC2CP2
Credit: 3

Core Practical II

1) To implement MANIPULATORS using C++ program
2) To Illustrate a CLASS using C++ program
3) To implement CONSTRUCTOR using C++ program
4) To implement FUNCTION OVERLOADING – Type 1 using C++ program
5) To implement FUNCTION OVERLOADING – Type 2 using C++ program
6) To implement SIMPLE INHERITANCE using C++ program
7) To implement MULTILEVEL INHERITANCE using C++ program
8) To implement MULTIPLE INHERITANCE using C++ program
9) To implement OPERATOR OVERLOADING using C++ program
10) To implement VIRTUAL FUNCTIONS using C++ program
11) To implement: a). Writing an Object, to Disk, and
    b). Reading an Object, from Disk using C++ program
12) To implement EXCEPTION HANDLING using C++ program

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CORE: DATABASE MANAGEMENT SYSTEM

Year : II **Semester : III**
Hours / Week : 4 **Subject Code :** 17UCS/USC3C03

Credits : 4

UNIT I:

Introduction to Database Systems: – Database System Applications, Database Systems Versus File Systems – View of Data – Data Models – Database Languages – Database Users and Administrators, Transaction Management, Database System Structure, Application Architectures, History of Database Systems. (Chapter 1, Page No.:1 - 21)- Entity-Relationship Model: - Basic Concepts – Mapping Constraints – Keys –Design Issues - Entity Relationship Diagram – Weak Entity Sets (Chapter 2, Page No.:27-49) – Design of an E-R Database Schema – Reduction of an E-R Schema to Tables. (Chapter 2, Page No.: 56-68)

UNIT II:

Relational Model: – Structure of Relational Databases – The Relational Algebra – Extended Relational Algebra Operations – Modification of the Database – Views – The Tuple Relational Calculus, The Domain Relational Calculus. (Chapter 3, Page No.: 79 – 126)

UNIT III:

SQL :– Basic Structure - Set Operations – Aggregate functions – Nested Queries – Derived Relations – Views – Modification of the database (Chapter 4, Page No.: 135-163) – Data Definition Language – Embedded SQL (Chapter 4, Page No.: 168-175) – Other SQL Features (Chapter 4, Page No.: 180-182).

UNIT IV:

Relational Database Design: - First Normal Form – Pitfalls in Relational Database Design – Normalization Using Functional Dependencies - Decomposition (Chapter 7, Page No.: 257 -279) – Normalization Using Multivalued Dependencies – Normalization Using Join Dependencies. (Chapter 7, Page No.: 289 - 293)

UNIT V:

Object Oriented Databases: – The Object Oriented Data Model – Object Oriented Languages – Persistent Programming Languages – Persistent C++ Systems.(Chapter 8, Page No.: 307 -330)- Object Relational Databases: – Nested Relations – Complex Types – Inheritance – Reference Types - Querying with Complex Types – Functions and Procedures – Comparison of Object Oriented and Object Relational Databases. (Chapter 8, Page No.: 335-357)

TEXT BOOKS:

1. A.Silberschatz, H.Korth and S.Sudarsan, Database System Concepts, TATA McGraw Hill Inc., 2002, Fourth Edition. (All Units)

REFERENCE BOOKS:

1. Bipin.C.Desai, An Introduction to Database System,West Publishing Company, 2004.
2. C.J.Date, An Introduction to Database Systems, Addition – Wesley, 2007, eighth edition

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CORE: DATA STRUCTURES AND ALGORITHMS

Year : II **Semester : III**
Hours / Week : 5 **Subject Code :** 17UCS/USC3C04
Credits : 5

UNIT I

Introduction: Over view — Creation and analyses of programs — Arrays: Basics — Representation of arrays — Sparse Matrices — Stacks: Basics — Functions — Evaluation of expressions— Multiple Stacks — Queues: Basics — Functions — Circular Queues — Multiple Queues.

UNIT II

Linked Lists: Single Linked Lists — Linked Stacks and Queues — Storage Pool —Applications — Polynomial Addition — Equivalence Relations —Double Linked Lists: Dynamic Storage Management —. Garbage collection and Compaction.

UNIT III

Trees: Basic Terminology — Binary Trees — Representation and Traversals — Threaded Binary trees — In order traversal — Binary tree representation of Trees — Sets — Union, Find algorithms — Graphs: Transitive Closure — Warshall ‘s Algorithm — Shortest path problem: Djikstra’s algorithm — Minimum Spanning Trees: Prim’s algorithm.

UNIT IV

Searching Techniques: Binary, Sequential and Fibonacci searches — Sorting Techniques:
Internal sorting sorting with tapes and disks — balanced merge sort — Polyphase merge sort.

UNIT V

Symbol Tables: Static tree and dynamic tree implementations — Hash tables — Index Techniques: Tree indexing— B trees — Trie indexing — Linked File organizations: File Organisations — Sequential, ISAM, Random — Multilists — Inverted Files — Cellular Partitions.

TEXT BOOKS:

1. Fundamentals of Data Structures, Ellis Horowitz and SartajSahni, Computer Science Press, 2002 (UNITS — I, II, III First Paragraph, IV, V).
2.Data Structures Using Pascal, Tanenbaum A. M. and Augestein M. J., Prentice hall, 2nd edition, 1996 (UNIT — III Second Paragraph).

REFERENCE BOOKS:

1. Data Structures through C, YashwantKanetkar, BPB publications, 2003.
2. Data Structures — Algorithms & Applications in C++, SartajSahni, McGraw-Hill, 1998.
3. Data Structures & Algorithm Analysis in C, Mark Allen Weiss, Addison Wesley, 1999.

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CORE: JAVA PROGRAMMING

Year : II **Semester : III**
Hours / Week : 5 **Subject Code:** 17UCS/USC3C05
Credits : 4

Unit I

Introduction to java- Introduction to Classes- Inheritance Concepts- Packages and Interfaces: Packages – Access protection Importing packages – interfaces. Exception Handling: Fundamentals – Exception types – Using Try and Catch – nested Try – statements – throw, throws, finally. (Page Number: 129-246)

Unit II

Multithreaded programming: Thread model – Creating a thread, creating multiple threads – Using Alive ( ) and join ( ) – synchronization – Inter threaded communication. String Handling: String constructors – string operations – character extraction – string comparison – searching – modification – string buffer.(Page Number: 273-297,347-376)

Unit III

I/O: File – Stream classes – Byte streams – character streams – serialization – (Page Number: 537-585) AWT: Controls- Layout manager-Menus (page Number: 735-797)

Unit IV

Applet: Basics – Architecture – Passing parameters to Applets – Skeleton – Simple Applet – Event handling: Event model –Event class –Event listener interface. (Page Number: 627-684)

Unit V

Java Beans: - Advantages – Application building tools – Using Bean Developer kit (BDK) - JAR files – Developing simple Bean using the BDK. (Page Number: 886-898)

RMI: Basics – TCP/IP client sockets – inet Address – URL – Datagram's.(Page Number: 587-629)

Text Book:

1. Herbert Schildt, The Complete Reference -java 2, TATAMcGraw Hill, 2002, Fifth Edition

Reference Books:

1. Patrick Naughton, The JAVA Hand Book, TATAMcGraw Hill, 1997
2. Harley Haim, The internet computer reference, TATAMcGraw Hill,1998, Second Edition

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CORE PRACTICAL: JAVA PROGRAMMING

Year : II **Semester : III**
Hours / Week : 4 **Subject Code:** 17UCS/USC3CP3

Credits : 3

1. Write a java program to create a package.
2. Write a java program to implement an Interface.
3. Write a java program to handle all Exceptions?
4. Write a java program for creating multiple threads.
5. Write a java program for searching and sorting strings using String class.
6. Write a java program for the following string operations using StringBuffer class: a) append, b) insert, c) reverse, 4) delete and 5) replace.
7. Write a java program to demonstrate File methods.
8. Write a java program to use FileInputStream class to read bytes from a file for Byte streams.
9. Write a java program to use FileReader and FileWriter classes to read the contents of a file for Character streams.
10. Write a java program using check boxes AWT control.
11. Write a java program using List AWT control.
12. Write a java Applet program for displaying the Human face.
13. Write a java program for handling keyboard events.
14. Write a java program for finding IP Address and Local host name using InetAddress class.
15. Write a java program to pass messages between client and server.

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CORE PRACTICAL: RDBMS LAB

Year : II **Semester : III**
Hours / Week : 4 **Subject Code:** 16UCS/USC3CP4

Credits : 3

1. Write a Oracle query creating a table and inserting and updating data in a table.
2. Write a Oracle query delete single record, all records and structure
3. Write a Oracle query illustrate security features of oracle.
4. Write a Oracle query creation of multiple types of Indexes.
5. Write a Oracle query creating a sequence
6. Write a program to illustrate exemption handling.
7. Write a program for creation of trigger.
8. Write a program to retrieve records from a table.
9. Write a program to demonstrate procedures.
10. Write a program to demonstrate cursors.
11. Write a program to display multiple tables using view.
12. Write a program to generate a report.

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CORE: .NET TECHNOLOGY (C#)

Year : II **Semester : IV**
Hours / Week : 6 **Subject Code :** 17UCS/USC4C06

Credits : 5

UNIT I

Evaluation of .Net- Overview of .Net Framework- Exploring Visual studio IDE- Basic IDE operations.
C# Fundamentals: Identifiers, Keywords, Variables, and constants, Expressions and operators- Selection statements: if, Switch-loops: While, do While, For,foreach-Jump Statement: Goto, Break, Continue.

UNIT II

Exception handling: Try..Catch..Finally and throw statements, Checking and Unchecking, Exploring name spaces, Classes and objects, Structs.
OOPS: Encapsulation, Inheritance, Polymorphism, Abstraction and Interfaces. Using Pointers, Delegates and Events.
Dynamic Data type and Dynamic Language Runtime.

UNIT III

Windows Forms: Creating and Customizing
WPF: Controls – Properties and Events
Multithreading: Creating and Scheduling a thread – Synchronizing Threads – Thread Pooling.
File Handling: Working with files – File Compression.

UNIT IV

ADO.Net: Understanding SQL and ADO.Net Entity framework – Data binding in windows forms – Data binding in ASP.Net Applications.

UNIT V

ASP.Net: Web services: Architecture – Properties – ASP.Net AJAX – Security.
Windows services: Various class and installation. Deploying windows and web applications.

TEXT BOOK:

1.C#.Net Programming Black book, Dreamtech Press, 2011.

REFERENCE BOOK:

1. E.Balagurusamy, Programming in C#:A Primer, 3rd Edition, TATA McGrew Hill Education Pvt Limited, New Delhi, 2012.
2. Kevin Hoffman. Microsoft Visual C#, Pearson Education, 2006.
3.V.K.Jain, The Complete Guide to C# Programming, Dreamtech Press, 2001.

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CORE: COMPUTER ORGANIZATION AND ARCHITECTURE

Year : II **Semester : IV**
Hours / Week : 6 **Subject Code :** 16UCS/USC4C07

Credits : 4

UNIT I

Central Processor Organization: ALU — Stack organization Instruction formats — Addressing Modes - Data transfer and manipulation — program control program interrupt — parallel processing — pipeline — memory interleaving.

UNIT II

Input/output Organization: peripheral devices — I/O Bus and interface modules — micro processor interface isolated and memory mapped I/O — asynchronous data transfer — handshaking Direct memory access.

UNIT III

Priority interrupts — parallel priority interrupt - I/O processor CPU — IOP communication INTEL 8089 I/O processor — multiprocessor system Organization.

UNIT IV

Arithmetic processor design — comparison and subtraction of unsigned binary numbers — Addition and subtraction algorithm — Multiplication algorithm — Division algorithm — Processor configuration — Design of control — Micro programmed calculator.

UNIT V

Memory Organization — Microcomputer memory — Associative memory — Virtual memory Cache memory — Memory management hardware.

TEXT BOOK:

1. Computer System Architecture, Morris Mano, Eighth Printing (Second Edition),October 1990.

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CORE: OBJECT ORIENTED MODELING AND DESIGN WITH UML AND SOAD

Year : II **Semester : IV**
Hours / Week : 5 **Subject Code :** 17UCS/USC4C08

Credits : 3

UNIT I REQUIREMENTS MODELING:
Introduction- Overview of object oriented system development – Object basics- The unified Process- Modelling concepts- Modelling as a design technique- Analysis and modelling- UML diagrams- Use case modelling- Class modelling – State modelling- Interaction modelling

Object constraint language- Inception- Evolutionary Requirements – Domain models- System sequence diagrams – Operation contracts

UNIT II DESIGN AND PRINCIPLE OF DESIGN
Requirements to design – Design patterns- Logical architecture- Package diagram- Design patterns- Model, View, Control pattern- Detailed design- Object design with GRASP pattern – Detailed class diagram with visibility

UNIT III MAPPING TO CODE
Mapping design to code- Test driven development and refactoring- UML tools and UML as blueprint.

UNIT IV MORE PATTERNS
More patterns- Analysis update- Objects with responsibilities- applying design patterns- Architectural Analysis- Logical Architecture refinement – Package design- Persistence framework with patterns

UNIT V SOAD:
Key Components of SOA – Service Oriented Enterprise Applications: Consideration, Patterns – Service -Oriented Analysis & Design (SOAD): Principles, design of Services: Activity, Data, Client, business process, CLOUD – Technologies for SOA: REST, SOAP.

TEXT BOOKS:

1. Michael Blaha and James Rumbaugh, Object oriented modeling and design with UML, Pearson, 2nd Edition ,2012
2. Craig Larman, Applying UML and patterns- An introduction to object oriented analysis and design and iterative development", Pearson Education, 3rd Edition ,2016
3. Shankar Kambhampaty, 'SOA for Enterprise & Cloud Applications', Wiley India, 2nd Edition, 2012.

REFERENCE BOOKS:

1. ERICH GAMMA, Richard Helm, Ralph Johnson, John Ulissides, Design patterns: "Elements of Reusable object oriented software Engineering, Pearson Education, 2016.

Alan Shalloway, James R.Trott, Design patterns Explained: A new perspective on object oriented design, Pearson Education, 2010.

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COLLEGE OF ARTS & SCIENCE- COIMBATORE - 641 020

CORE PRACTICAL: C#.NET LAB

Year : II **Semester : IV**

Hours / Week : 5 **Subject Code :** 16UCS/USC4CP5

Credits : 3

1. Admission to a professional course is subject to the following conditions

a) Marks in Mathematics >=60

b) Marks in Physics >=50

c) Marks in Chemistry >=40

d) Total in all 3 Subjects >=200

(or)Total in Mathematics and physics>=50

Given the marks in 3 subjects, write a program to process the applications, to list the eligible candidates.

1. A cloth showroom has announced the following seasonal discounts, on purchase of items

Purchase Amount (Rs)	Discount	
	Mill Cloth	Handloom Items
0-100	-	5%
101-200	5	7.5%
201-300	7.5%	10%
Above 300	10%	15%

Write a Program to compute the net amount to be paid by a customer.

2. a).Write a Program to reverse the digits of the given number.

a) Write a program that will read a string and rewrite it, in alphabetical order

3. a)Write a program to print the given output

1
2 2
3 3 3

4 4 4 4
5 5 5 5 5

b) Design a structure type data using a suitable name, for an inventory record containing item code, item name, item cost, and total items available.

5. The exam results of 100 students are tabulated as follows :

Roll No	Subject 1	Subject 2	Subject 3

Write a program to read the data &determine the following

a) Total marks obtained by each student
b) The highest marks in each subject and the roll number of the student who secured it
c) The student who obtained the highest total marks

6. Write a program that will read a name from the keyboard and display it on the screen. The program should throw an exception, when the length of the name is more than 15 characters. Design your own exception mechanism.

7. Define a person class with 3 data members: age, name and sex

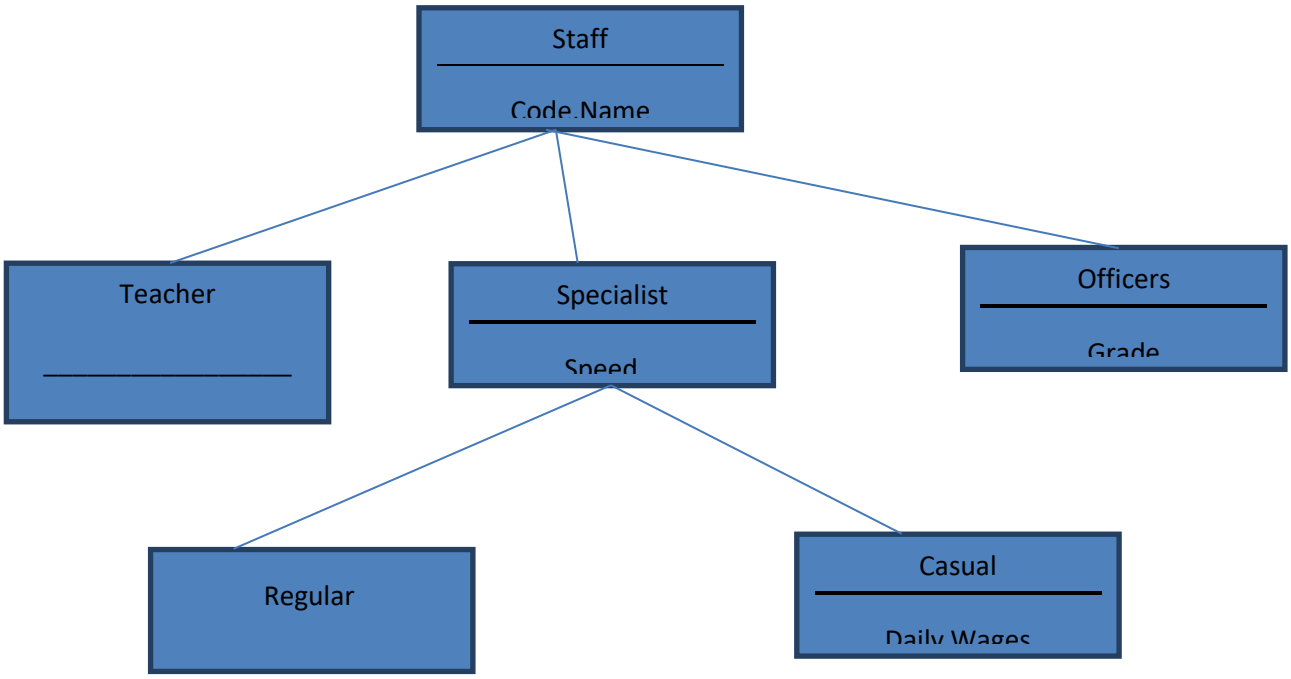
i) Derive a class called employee from the person that adds a data membercode, to store employee code.

ii) Derive another class called specialist from employee.

iii) Add a method to each derived class, to display the information about what is this

Write a driver program, to generate on array 3 ordinary employees and another array of 3 specialist and display the information about them. Also display the information of the specialist, by calling the method inherited, from employee class.

8. An educational institution wishes to maintain a database, of its employees. The database is divided into a number of classes. Minimum information required for each class, is shown in figure, specify all the classes and define the methods, to create the database, and retrieve the individual information, as and when required.



9. Write a program, to implement, scheduling of a thread using the “priority” Property.

10. Write a program to implement,synchronization of threads, using the “Sleep” and “Join” Methods.

11. Write a program to read and display the tables of data

Item name	Item code	Prize
Fan	67135	1234.50
Motor	865342	5786.70

The item name and item code must be left justified and the prize should be right justified.

12. Create and customize the login form, main detail form and processing form for the “Flight reservation system”.

13. Create and customize the login form, main detail form and processing form for the “Customer relationship system”.

14. Create and customize the login form, main detail form and processing form for the “Sales order processing system”.

15. Assuming “Flight reservation system” as a **windows application**, establish various SQL and ADO.Net commands for ensuring database updating and security.

16.Assuming “Customer relationship system” as a **windows application**, establish various SQL and ADO.Net commands, for ensuring database updating and security.

17. Assuming “Sales order processing system” as a **windows application**, establish various SQL and ADO.Net commands, for ensuring database updating and security.

18.Assuming “Flight reservation system” as a **web based application**

Create a login form, with user id and password text box controls and submit command button, upon submission of form, the application redirect to another new page, with login and other information.

19.Assuming “Customer relationship system” as a **web based application**

Create a login form, with user id and password text box controls and submit command button, upon submission of form, the application redirect to another new page, with login and other information.

20.Assuming “Sales order processing system” as a **web based application**

Create a login form, with user id and password text box controls and submit command button, upon submission of form, the application redirect to another new page, with login and other information.

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CORE: OPERATING SYSTEM

Year : III **Semester : V**
Hours / Week : 4 **Subject Code :** 16UCS/USC5C09

Credits : 4

Unit I

INTRODUCTION: What is an Operating System?-Mainframe Systems-Desktop Systems-Multiprocessor Systems-Distributed Systems-Clustered System-Real-Time Systems-Handheld Systems. Operating-System Structures:-System Components-Operating-System Services-System Calls-System Programs-System Structure-Virtual Machines.(Pages 3-19, 55-80)

Unit II

PROCESS MANAGEMENT: Process Concept-Process Scheduling-Operations on Processes-Cooperating Processes-Inter process Communication. CPU Scheduling:-Basic Concepts-Scheduling Criteria- Scheduling Algorithms-Multiple-Processor Scheduling-Real-Time Scheduling. Deadlocks:-System Model-Deadlock Characterization-Methods for Handling Deadlocks-Deadlock Prevention- Deadlock Avoidance- Deadlock Detection-Recovery from Deadlock. (Pages 95 – 109, 151-170, 243 - 264)

Unit III

STORAGE MANAGEMENT: Memory Management:-Background-Swapping-Contiguous Memory Allocation-Paging-Segmentation- Segmentation with Paging. Virtual Memory:-Background-Demand Paging-Process Creation-Page Replacement-Allocation of Frames-Thrashing. (Pages 273-309, 317 – 348)

Unit IV

File-System Implementation:-File-System Structure- File-System Implementation- Directory Implementation-Allocation Methods-Free-Space Management. Mass-Storage Structure:-Disk Structure-Disk Management-Swap-Space Management-RAID Structure-Disk Attachment-Stable-Storage Implementation-Tertiary-Storage Structure. (Pages 411 – 430, 491 – 516)

Unit V - CASE STUDIES:

Windows2000: History-DesignPrinciples-SystemComponents-Environmental Subsystems-File System-Networking-Programmer Interface. Windows XP: History-Design Principles-System Components-Environmental Subsystems-File System-Networking-Programmer Interface. (Pages 743-780, 789 – 839)

TEXT BOOK :

1. SILBERSCHATZ, GALVIN, GAGNE, OPERATING SYSTEM CONCEPTS, Wiley India Edition (sixth edition), 2007

REFERENCE BOOKS:

1. DeitelDeitelChoffnes, Operating Systems, Pearson Education (third edition), 2003.
2. Stuart E. Madnick, John J.Donovan, Operating Systems, Tata McGraw Hill (third edition),2003

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CORE: WEB TECHNOLOGY (XML, WEB SERVICES AND PHP)

Year : III **Semester : V**
Hours / Week : 4 **Subject Code :** 17UCS/USC5C10

Credits: 4

XML

Unit I

XML Document: Hello XML- Creating, saving, loading XML document- Attributes –Empty Element tags- XSL. Document type definition: DTD files- Internal and External DTDs- Element Declaration.

Unit II

CSS layouts: CSS units- The Display property- Box properties- Size – Positioning – CSS Text styles: Fonts- Color- Text- Backgrounds.

Web Services: WSDL, XML Schema and SOAP**.**

PHP

Unit III

Introduction to PHP: Creating first PHP page – variables- constants-types- Operators and Flow Control: Operators- Conditional Statements- Looping - arrays.

Unit IV

Reading Data in Web Pages: Handling Text Fields, Text Area, Checkboxes, Radio Buttons, List Boxes, Password Controls, Hidden Controls, Image Maps, File Uploads, Buttons.

Unit V

Working with Databases: Creating MYSQL Database, New Table, Putting Data into the New Database, Accessing the Database in PHP, Inserting, Deleting, Updating the Data items into a database using PHP.

TEXT BOOKS:

1. Ellistte Rusty Harold, XML1.1. Bible, IDG Books Pvt Ltd,3rd Edition, 2007. (Unit I,II)
2. Steven Holzner, The Complete Reference PHP, McGrawHill Education Private Limited, 2010. (Unit III,IV& V)
3. Sandeep Chatterjee, James Webber, Developing Enterprise Web Services, PEARSON, 2008.

REFERENCE BOOKS:

1. Heather Williamson, The Complete Reference XML, TATAMcGraw Hill, Fifth Edition, 2002.
2. VikramVaswani, A Beginner's Guide PHP, Tata McGraw Hill, Fifth Edition, 2011.

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CORE: ANDROID PROGRAMMING

Year : III **Semester : V**
Hours / Week : 4 **Subject Code :** 17UCS/USC5C11

Credits: 4

UNIT I

The History of the Android OS-Configuring Your Android App Development System-Updating Eclipse ADT-Configuring EclipseAndroid SDK Manager Repository-Android Virtual Devices- Creating the AVD

UNIT II

Android Application Development Platform:How the Android Platform is Structured–Android Runtimes-Creating Your First Android Application- Android Resources- Asset Project Folders-Creating a Custom App Launch Icon:Creating a Launch Icon for Each Screen Density-Creating Transparency-Creating Resolution Density App Launch Icons.

UNIT III

Introduction to XML:Defining an Android App, Its Design, and Constants-Android Screen Design: Writing to the Display Using Activity and View- Making Apps Interactive: Intents, Event Handling, and Menus.

UNIT IV

Android Animation: Making Your UI Designs Move-Frame Animation Concepts and Techniques-Creating Frame Animation Using XML Markup-Creating Frame Animation in MainActivity-Creating Tween Animation Using XML- MarkupHybrid Animation Using Frames with Tween

UNIT V

Digital Video: Streaming Video, MediaPlayer, and MediaController classes-Android Service Class and Threads: Background Processing- Android Content Providers: Providing Data to Applications

TEXT BOOK:

1. Wallace Jackson, Android Applications for Absolutes Beginners, Apress, 3rd Edition, 2014.

REFERENCE BOOKS:

1. W. Frank Ableson, RobiSen, Chris King, “Android in Action” , Manning Publications, 2nd Edition,2011.
2. Shawn Van Every, ‘Pro Android Media: Developing Graphics, Music, Video, and Rich Media Apps for Smartphones and Tablets ‘, Apress Publisher, 2016.

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Year : III **Semester : V**
Hours / Week : 4 **Subject Code :** 17UCS/USC5CP6
Credits : 4

CORE PRACTICAL: ANDROID PROGRAMMING LAB

1. Write the steps for installation and configuration of android in Windows OS.
2. Write a program to demonstrate usage of two textbox(EditText), Label(Textview) and Button widgets in android and perform addition of two numbers.
3. Write a program and demonstrate the graphical layout orientation.
4. Write a program to demonstrate usage of ListBox with Toast(MessageBox).
5. Write a program to demonstrate usage of ComboBox with Toast(MessageBox).
6. Write a program to demonstrate usage of Snippers with Toast(MessageBox).
7. Write a program to demonstrate usage of TextArea, with Toast
8. Write a program to demonstrate usage of CheckBox with Toast,
9. Write a program to demonstrate usage of RadioButton with Toast
10. Write a program and calculate the simple interest and compound interest using its API controls.
11. Write a simple program to demonstrate the contact manager using ContactsContract API (Insert, Delete, Edit, View).
12. Write a simple program to demonstrate working with SQLite Database

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Year : III **Semester : V**
Hours / Week : 5 **Subject Code :** 16UCS/USC5CP7

Credits : 3

CORE PRACTICAL: WEB TECHNOLOGY LAB

1. Write a HTML5 program to create student information form to get the following details.

   a. Regno
   b. Student Name
   c. Date of Birth
   d. Age
   e. Address
   f. Favorite Color

2. Write a HTML with Bootstrap program to create employee information form with following details.

   a. Employee No
   b. Employee Name
   c. Designation
   d. Salary
   e. Date of Joining
   f. Experience

3. Write a XML program to create a student resume using CSS.

4. Write a XML program to create and display hotel information (catalog) using CSS.

5. Write a XML program to demonstrate the use of DTD.

6. Write a XML program to create a table and display it using XSL

7. Write a XML program to create hotel breakfast menu information using XSL.

8. Write a program to perform arithmetic operations using HTML5 and PHP.

9. Write a PHP program to generate Fibonacci Series.

10. Write a program to find greatest of two numbers using HTML5 and PHP.

11. Write a PHP program to create and write some text in a file using file directory functions.

12. Write a PHP program to create and save staff information using MySql database.

13. Write a PHP program to view staff information from MySql database.

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CORE: SOFTWARE ENGINEERING

Year : III **Semester : VI**
Hours / Week : 5 **Subject Code :** 16UCS/USC6C12

Credits : 5

UNIT I

Introduction — software engineering the software process software process models — the linear sequential model — the proto type model — the RAD model — evolutionary software process models — component based development — the formal methods model — fourth generation techniques.

UNIT II

Requirements analysis — requirements elicitation for software — analysis principles -- software prototyping specification — the software requirements — specification — specification review.

UNIT III

Software design and software engineering — the design process — design principles — design concepts — effective modular design — design heuristics for effective modularity — the design model — design documentation.

UNIT IV

Quality concepts. — the quality movement — software quality assurance — software reviews — formal technical reviews — formal approaches to SQA — statistical software quality assurance — software reliability — mistake proofing for software — the ISO 9000 quality standards — the SQA plan.

UNIT V

Software testing fundamentals — test case design - white box testing — basis path testing — control structure testing — black box testing — unit testing — Integration testing — validation testing — system testing.

TEXT BOOK:

1. Software Engineering a Practical Approach, Roger S Pressman, McGraw Hill International Edition, Fifth Edition, 2001.

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Year : III **Semester : VI**
Hours / Week : 5 **Subject Code :** 17UCS/USC6C13

Credits : 5

CORE: PYTHON AND IOT

Unit – I

Variables – Data Types: String, Numeric, Tuples, Sets, Dictionaries,
Control Structures: if, while, for, break and continue, lists.

Unit – II

Functions: passing parameters, variable number of arguments – scope – passing functions – mapping functions in a dictionary – lambda.
Modules: standard – sys – math – time – dir.
Error Handling: Exception hierarchy – handling multiple exceptions.

Unit – III

File handling: Writing and reading / parsing binary data, text& xml files.
Object- oriented programming – inheritance, polymorphism, creating classes.
Processes and threading – delegating work.

Unit – IV

Regular expressions – character classes, grouping and capturing, assertions and flags.
Database Programming: DBM & SQL databases.
Web Programming: Building CGI applications – Django framework.

UNIT – V

IOT – Definition and Overview
Middleware: platform, communication and software
Developing IOT: Case study – Weather Monitoring System.

TEXT BOOKS:

1. Mark Summerfeld, "Programming in PYTHON3: A Complete introduction to the Python language, Addison – Wesley, 2009.
2. ArshdeepBagha, Vijay. K. Madisetti, "Internet of Things: A Hands on approach", VPT, 1st Edition, 2014.

REFERENCE BOOKS:

1. Wesley. J. Chun, "Core Python Applications Programming", Prentice Hall, 2012.
2. Allen. B. Downey, "Think python", O'Reilly, 2012.
3. Andrian McEwen, Harm Cassimally, "Designing the IOT", John Wiley, 1ST Edition, 2014.

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CORE: COMPUTER NETWORKS AND CYBER-SECURITY

Year : III **Semester : VI**
Hours / Week : 5 **Subject Code :** 17UCS/USC6C14

Credits : 5

UNIT I

Uses of Computer Networks — Applications of networks —, network structure — network architectures — ISO reference model example networks.

UNIT II

Transmission and multiplexing — analog transmission — digital transmission — X.2 1 digital interface — circuit, packet switching — terminal. handling — telephone, wireless and satellite communication systems.

UNIT III

Data link layer: Elementary data link protocols — sliding window protocols protocols efficiency and verification. Network layer: Virtual circuits and datagram's — routing algorithms — congestion.

UNIT IV

Transport and Session layers: Transport protocol design issues — interconnection of packets switching networks — session layer design issues teammate procedure call.

UNIT V

Introduction to cyber crime and law: Cyber crimes, Types of Cyber Crime, Hacking, Attack vectors, Cyberspace and Criminal Behavior, Clarification of terms, Traditional problems associated with Computer Crime, Introduction to incident response, Digital forensics, Computer language, Network language, Realms of the cyber world, A brief history of the internet, Recognizing and defining computer crime, Contemporary crimes, Computers as targets, Contaminants and destruction of data, Indian IT ACT 2000.

TEXT BOOK:

1. Andrew S. Tanenbaum,"Computer networks" , Prentice Hall of India Pvt. Ltd,Edition 5, 2015.
2. Nina Godbole and SunitBelpure, Cyber security understanding cyber crimes, Computer forensics and legal perspectives, Publication Wiley India, 2009.

REFERENCE BOOKS:

1. Vyless D. Black, Data communication networks and distributed processing.

2. Mike Shema , Anti-Hacker Tool kit, Publication Mc Graw Hill, 4th Edition, 2014.

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Year : III **Semester : VI**
Hours / Week : 5 **Subject Code :** 17UCS/USC6CP8
Credits : 3

CORE PRACTICAL: PYTHON LAB

1. Write a Python program using format function to convert the temperature from Fahrenheit to Celsius
2. Write a Python program using IF statement and ELSE-IF header to display the number of days in a month given by user
3. Write a Python program using while loop, IF statement to count the coins entered by user, to sum up to a particular amount
4. Write a Python program using FOR loop and Tuples for a password encryption/Decryption program
5. Write a Python program using functions for temperature conversion program
6. Write a Python program using tuple assignment to complete GPA(Semester and Cumulative) for a given student
7. Write a Python program using STACK module for determining whether a given string is a palindrome
8. Write a Python program for writing and reading text titles
9. Write a Python program using string methods to count the occurrences of a word in a text file
10. Write a Python program using SETS to display the files pattern given the file size, color and frequency
11. Give a Python program to demonstrate inheritance
12. Give a Python program to demonstrate encapsulation

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ELECTIVE: ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING

Year : III **Semester : V**
Hours / Week : 4 **Subject Code :** 16UCS/USC5EL1

Credits : 4

UNIT I

Introduction — definition of AI, Task domains, underlying Assumption, Criteria for success, State space (Water Jug Problem), Production systems, problem characteristics, Production system characteristics.

UNIT II

Heuristic search techniques — Generate and Test, Hill — Climbing, Best — First search, Problem Production, Constraint satisfaction, Means — end analysis.

UNIT III

Knowledge representation-Non Formal Methods: Production rules, Semantic Nets, Frames & Scripts-Formal Methods: Unification and Resolution

UNIT IV

Neural Network-Supervised Network- Back propagation Network-Unsupervised Network: ART(Adaptive Resonance Theory)-Simple Genetic Algorithm - Operators: Cross over and mutation.

UNIT V

FUZZY LOGIC - Introduction-Membership functions-Type1 and Type 2 systems.
Applications: Expert systems, Vision, Natural Language Processing, Learning

TEXT BOOKS:

1. Elaine Rich and Kevin knight, Artificial Intelligence, Tata McGraw Hill,29th Reprint, 2002.
2. Freeman Skapura, Neural Networks Fundamentals, Pearson Education, 2011
3. Introduction to Genetic Algorithms, Goldberg, Pearson Education, 1989.
4. H.J. Zimmermann, Fuzzy set theory and its applications , 4th Edition, 2nd Reprint , Springer 2010.

REFERENCE BOOK:

1. Dan.W.Patterson, Introduction to Artificial Intelligence and Expert systems, pHI,1990
2. P.H.Winston, Artificial Intelligence, Second Edition Addison Wesley,1984
3. E.Charniak, D.McDermott, Introduction to Artificial Intelligence, Addison Wesley,1985

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ELECTIVE: DISTRIBUTED COMPUTING SYSTEMS

Year : III **Semester : V**
Hours / Week : 4 **Subject Code :** 16UCS/USC5EL1

Credits : 4

UNIT I

Introduction: Goals – Types of Distributed systems – Architectu re styles – System Architecture.
Architectures Versus Middleware – Self Management in distributed systems - Processes – Threads – Virtualization – Clients – Servers – Code Migration.

UNIT II

Communication: Fundamentals - Remote Procedure Call – Stream oriented communication –
Message oriented communication – Multicast communication.Naming– Names, Identifiers, and addresses – Flat Naming - Structured Naming – Attribute based Naming.

UNIT III

Synchronization:Clock Synchronization – Logical clocks - Mutual Exclusion – Globalpositioning of nodes - Election Algorithms. Consistency and Replication: Introduction – Data centric consistency models – Client centric consistency models – Replica management – Consistency protocols.

UNIT IV

Fault Tolerance: Introduction – Process resilience – Reliable client server communication – Reliable group communication – Distributed commit -Recovery Security – Introduction – Secure channels – Access control – Security management.

UNIT V

Distributed File Systems – Distributed web based systems – Distributed object based systems.

TEXT BOOK

1.Andrew S. Tanenbaum and Maarten Van Steen, “Distributed Systems – Principles and Paradigms”, Prentice-Hall of India, Pvt. Ltd, Second edition, 2008.

REFERENCES

1.Pradeep K Sinha, “Distributed Operating Systems, Prentice-Hall of India, NewDelhi, 2001.
2.Jean Dollimore, Tim Kindberg, George Coulouris, “Distributed Systems -Concepts and Design”, Pearson Education, Fourth edition, 2005.
3.M.L. Liu, “Distributed Computing Principles and Applications”, Pearson Education, 2004.

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ELECTIVE: MANAGEMENT INFORMATION SYSTEM

Year : III Semester : V
Hours / Week : 4 Subject Code : 16UCS/USC5EL1
Credits : 4

UNIT I
Introduction
Data, Information, Intelligence, Information Technology, Information System, evolution, types based on functions and hierarchy, System Analyst – Role, Functions.

UNIT II
Systems Analysis And Design
SDLC, SSLC, Systems Analysis and System Design, Tools – DFD – ER – Object modeling, DBMS – RDBMS – OODBMS.

UNIT III
Information System

Financial, Marketing, Personnel, Production, Materials Information System, DSS, EIS, KMS, GIS, International Information System.

UNIT IV
Security And Control

Security, Testing, Error detection, Controls, IS Vulnerability, Computer Crimes, Securing the Web, Intranets and Wireless Networks, Software Audit, Ethics in IT.

UNIT V
New It Initiatives
e- business, e-governance, ERP, SCM, e-CRM, Datawarehousing and Data Mining, Business Intelligence, Pervasive Computing, CMM.

TEXT BOOKS
1. Robert Schultheis and Mary Summer, Management Information Systems – The Managers View, Tata McGraw Hill, 2008.
2. Kenneth C. Laudon and Jane Price Laudon, Management Information Systems – Managing the digital firm, PHI Learning / Pearson Education, PHI, Asia, 2002.
REFERENCES
1. Gordon Davis, Management Information System : Conceptual Foundations, Structure and Development, Tata McGraw Hill, 2000.
2. Haag, Cummings and McCubbrey, Management Information Systems for the Information Age, McGraw Hill, 2005.
3. Turban, McLean and Wetherbe, Information Technology for Management – Transforming Organisations in the Digital Economy, John Wiley, 2007.
4. Raymond McLeod and Jr. George P. Schell, Management Information Systems, Pearson Education, 2007.

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ELECTIVE : TCP/IP PROTOCOL SUIT

Year : III
Hours / Week : 4
Semester : V
Subject Code : 16UCS/USC5EL1
Credits : 4

Unit I:

Introductionand Overview. Comparison of OSI Model and TCP/IP model. Networking Technologies: LANS, WANS,Connecting Devices. Internetworking concept and Architectural model. InternetBackbones, NAP, ISP's, RFC's, InternetStandards.

Unit II:
Internet Addresses: IP address classes, subnet mask, CIDR, ARP,RARP, Internet Protocol, Routing IP Datagrams, ICMPand IGMP.

Unit III:

UDP, TCP, Sockets and socket Programming, Routing in Internet, Routing protocols- RIP, OSPF and BGP. Introductionto Multicasting and Multicast routing.

Unit IV:
Host Configuration: BOOTP, DHCP; Services: Domain Name System, FTP, TFTP and Electronic Mail: SMTP, MIME,IMAP, POP.

Unit V:
Network Management: SNMP, WWW: HTTP, Mobile IP. Multimedia : RTP, RTCP.
Middlewares : RPC, RMI. Introduction to IPv6 and ICMPv6, Internet Security:IPSec, PGP, Firewalls, SSL.

Books:
1.Internetworking and TCP/IP: Principles, Protocols and Architectures, Douglas Comer, Pearson Education. TCP/IP Protocol suite, Behrouz A. Forouzan, Third Edition, TMH.

2.Computer Networking – A Top-Down Approach Featuring the Internet, James F. Kurose, Keith W. Ross,Pearson Education, Asia.•Computer Networks: A systems approach by Larry
L. Peterson and Bruce S. Davie, 3rdEdition, MorganKaufmann Publishers

Reference Book:

1. Stevens W. R. TCP/IP Illustrated, volume 1,2,3, Pearson education.
2. Book For Practical:•"Hands-On Networking with Internet Technologies" by Douglas E. Comer, Pearson Education, Asia, 2002.

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ELECTIVE: DATA MINING AND WAREHOUSING

Year :III **Semester : VI**
Hours / Week :5 **Subject Code :** 16UCS/USC6EL2

Credits : 5

Unit I

Expanding universe of data – production factor – computer systems that can learn – data mining – data mining versus query tools – data mining in marketing – practical application. (Chapter:1, Page No.:1-10). Learning – Self Learning Computer Systems – machine learning and the methodology of science – concept learning. (Chapter:2, Page No.:11-22)

Unit II

Data warehouse – need- designing decision support systems – integration with data mining-Client/Server and data warehousing–multi-processing machines – cost justification. (Chapter:3, Page No.:25-36)

Unit III

Knowledge discovery process – data selection – cleaning – enrichment – coding – data mining – preliminary analysis of the data set using traditional query tools – visualization techniques – likelihood and distance – OLAP tools – K-nearest neighbor – Decision trees – Association rules – Neural networks – Genetic algorithms – Reporting. (Chapter:4, Page No.:37-78)

Unit IV

Different forms of knowledge – Getting started – Data Selection – Cleaning – Enrichment – Coding – Data mining - Reporting – KDD environment – Ten golden rules. (Chapter:5, Page No.:79-93)

Unit V

Customer Profiling – Predicting bid behavior of pilots – Discovering foreign key relationships-Results. (Chapter:6, Page No.:95-110) Learning as compression of data sets – The information content of message – Noise and redundancy – significance of noise – Fuzzy databases – The traditional theory of the relational database – from relations to tables – from keys to statistical development Dependencies – Denormalization – Data Mining Primitives. (Chapter:7, Page No.:111-126)

TEXT BOOK

1. Peter Adrians and DOLF Zantinge, Data Mining, Addition Wesley, 2002, Fourth Edition (All Units)

REFERENCE BOOK:

K.P.Soman, ShyamDivakar, V.Ajay, Insight into Data Mining (Theory and Practice), Prentice Hall of India, 2006, Second Edition.

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ELECTIVE: MULTIMEDIA APPLIATIONS

Year :III **Semester : VI**
Hours / Week :5 **Subject Code :** 16UCS/USC6EL2

Credits : 5

Unit I

Point-Plotting techniques-r Line drawing displays – Two dimensional Transformations: Transformation principles – Concatenation – Matrix representation – Clipping and Windowing: A Line clipping algorithm – Midpoint subdivision – Polygon clipping – Viewing transformation – Windowing transformations.

Unit II

Graphical Input Devices – Graphical Input Techniques Positioning techniques – Pointing and selection – Inking and painting – On Line character recognition – Raster graphics fundamentals : Representing a Raster Image – Scan converting line drawings – Displaying characters Three dimensional transformations and Perspective: Transformations – Three dimensional clipping – Homogeneous coordinate representations projective transformations.

Unit III

Definition – Multimedia Hardware – Multimedia Software – Multimedia Networking – Multimedia Applications – Multimedia Standards – Text Elements of text – tet technology – Fonts – Graphics Elements of graphics – Pictures and images – Raster images – Vector images – Images and Color – Bitmap, Vector, Compressed Formats – hypertext – Hyper picture – Various CD Formats.

Unit IV

Audio: Natural sound – Digital audio – Calculating the digital audio data size – Digital audio systems – Digital Representation of Sound – Time domain representation of sound – Transformation of digital sound – Video : Analog video – Digital video – Calculating the digital video data size – video file formats.

Unit V

Digital video and Image Compression: Video compression techniques –JPEG image compression standard – MPEG video compression standard. Photoshop: File types – Tool box – Importing and Exporting images – Image mode Rotate canvas – Extract – Layers – Feather – Extract –Layers – Feather – Filters – Zooming images – Navigator – Color – Styles – Channels.

TEXT BOOKS:

1. William M. Newman and Robert F Sproull, Principles of Computer Graphics, Tata McGraw Hill Company Ltd.
2. Multimedia Making it work, Toy Vaughon. 2002.

3. John F Koegel Buford, Multimedia Systems, Addison Wesley, 2002.
4. Mastering in Photoshop, 2002.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS & SCIENCE-COIMBATORE - 641 020

ELECTIVE: SOFTWARE PROJECT MANAGEMENT

Year :III **Semester : VI**
Hours / Week :5 **Subject Code :** 16UCS/USC6EL2
Credits : 5

UNIT I

Introduction to Software Project Management - Project Definition – Contract Management – Activities Covered By Software Project Management – Overview Of Project Planning – Stepwise Project Planning.

UNIT II

Project Evaluation Strategic Assessment – Technical Assessment – Cost Benefit Analysis –Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

UNIT III

Activity Planning Objectives – Project Schedule – Sequencing and Scheduling Activities –Network Planning Models – Forward Pass – Backward Pass – Activity Float – Shortening Project Duration – Activity on Arrow Networks – Risk Management – Nature Of Risk – Types Of Risk – Managing Risk – Hazard Identification – Hazard Analysis – Risk Planning And Control.

UNIT IV

Monitoring and Control Creating Framework – Collecting The Data – Visualizing Progress – Cost Monitoring – Earned Value – Prioritizing Monitoring – Getting Project Back To Target – Change Control – Managing Contracts – Introduction – Types Of Contract – Stages In Contract Placement – Typical Terms Of A Contract – Contract Management – Acceptance.

UNIT V

Managing People and Organizing Teams Introduction – Understanding Behavior – Organizational Behavior: A Background – Selecting The Right Person For The Job – Instruction In The Best Methods – Motivation – The Old man – Hackman Job Characteristics Model – Working In Groups – Becoming A Team –Decision Making – Leadership – Organizational Structures – Stress –Health And Safety – Case Studies.

TEXT BOOK

1. Bob Hughes, Mikecotterell, “Software Project Management”, Third Edition, Tata

McGraw Hill, 2004.

REFERENCES

1. Ramesh, Gopalaswamy, "Managing Global Projects", Tata McGraw Hill, 2001.

2. Royce, “Software Project Management”, Pearson Education, 1999.

3. Jalote, “Software Project Management in Practice”, Pearson Education, 2002.

SRI RAMAKRISHNA MISSION VIDYALAYA
COLLEGE OF ARTS & SCIENCE- COIMBATORE - 641 020

ELECTIVE: UNIX INTERENALS

Year :III **Semester : VI**
Hours / Week :5 **Subject Code :** 16UCS/USC6EL2

Credits : 5

UNIT I GENERAL OVERVIEW OF THE SYSTEM

History – System structure – User perspective – Operating system services – Assumptions about hardware. Introduction to the Kernel : Architecture of the UNIX operating system – Introduction to system concepts – Kernel data structures – System administration – Summary and Preview.

UNIT II BUFFER CACHE
Buffer headers – Structure of the buffer pool – Advantages and disadvantages of the buffer cache. Internal representation of files : Inodes – Structure of a regular file – Directories – Conversion of a path name to an Inode – Super block – Other file types.

UNIT III SYSTEM CALLS FOR FILE SYSTEM
Open – Read – Write – File and record locking – Adjusting the position of file I/O –LSEEK – Close – File creation – Creation of special files – Pipes – Dup – Mounting and unmounting file systems

UNIT IV THE STRUCTURE OF PROCESSES
Process states and transitions – Layout of system memory – The context of a process – Saving the context of a process. Process Control: Process creation – Signals – Process termination – Awaiting process termination – Invoking other programs – The shell – System boot and the INIT process.

UNIT V PROCESS SCHEDULING AND MEMORY MANAGEMENT POLICIES
Process Scheduling – Memory Management Policies : Swapping – A hybrid system with swapping and demand paging. The I/O Subsystem : Driver Interfaces– Disk Drivers-Terminal Drivers.

TEXT BOOK

1. Maurice J. Bach, “The Design of the Unix Operating System”, Prentice Hall of India, 2004.

REFERENCE

1. Vahalia, “Unix Internals: The New Frontiers”, Pearson Education Inc, 2003.

Programme	:B.ScComputer Science	Course Code: 13UCS/USC6CPR	
CourseTitle	: Core : Project Work		
Year	:III	Semester	:VI
Hour/Week	:5	Credits	:5

The Final Year Students are assigned to the project Supervisor and they are asked to submit an individual project report at the end semester.TheBroader areas of the project are website creation, order processing, Billing Software, Multimedia, Artificial Intelligence, and Machine Learning based projects.

The student has to approach the nearby companies to get approval from the company to undergo his project work for the period of 8 to 9 months.

The students have to submit the project Completion Letter from the organization.

The project work done by the student is periodically reviewed.

Programme: Computer Science **Course Code: 13UCS/USC4AL4**

Course: ALLIED:OPERATIONS RESEARCH **Hours / week: 6**

Year: II **Semester: IV** **Credits: 5**

UNIT I **(16 Hours)**

Linear Programming Problem: Introduction – Mathematical formulation of L.P.P. - ***Graphical solution method*** – Simplex method – Method of penalties/ Big-M method – Two phase method. (Chapter 2,3& 4, Page No. 39 - 113)

UNIT II **(14 Hours)**

Transportation problem: Introduction - ***finding initial basic feasible solution*** – moving towards optimality – the transportation algorithm. (Chapter 10, Page No. 247-281)

Assignment problem: Method for solving an assignment problem –Variation of assignment problem – Traveling salesman problem – degeneracy. (Chapter 11, Page No. 295-324)

UNIT III **(16 Hours)**

Queueing theory: Introduction - Queueing system – Characteristics of the Queueing system – Operating characteristics of a Queueing system - Classification of queues – Poisson queues- (M/M/1) : (∞/FIFO) , (M/M/1) : (N/FIFO) , (M/M/C) : (∞/FIFO) , (M/M/C) : (N/FIFO). (Chapter 21, Page No. 589-621)

UNIT IV **(16 Hours)**

Inventory: Introduction – Inventory control– Cost associated with inventories – ***Economic lot size problem*** – Problems of EOQ with shortage allowed – Purchase inventory problem with price breaks. (Chapter 19, Page No. 507-538)

Replacement problem: replacement of items that deteriorates with time – replacement of items that fail completely. (Chapter 18, Page No. 477-494)

UNIT V **(13 Hours)**

Networking scheduling by PERT/CPM: Introduction – Basic concepts - Critical path method – pert calculations – ***pert algorithm*** – construction of network – critical path analysis - ***statistical considerations in PERT*** . (Chapter 25, Page No. 763-784)

Book for study:

KantiSwarup, P.K. Gupta, Man Mohan, Operations Research, Sultan Chand & Sons, 2007, Thirteen Edition.

Books for reference:

Prof V.Sundaresan, K.S. Ganapathy Subramanian, K.Ganesan, Resource Management Techniques, A.R.Publications, 2004, Second Edition.

Handy A.Taha, Operations Research,CollierMacmillan,Third Edition.

Programme : B.Sc., Mathematics.

Course Title :ELECTIVE: WEB PROGRAMMING **Course Code :** 13UMA5EL1

Year :ThirdYear **Semester :V**

Hours/Week:4 **Credits :4**

HTML

Unit I

Introduction to HTML document – Text formatting – Using lists to organize data withtables – Table layout – Adding Images. Chapter 1 (Page Number : 83 – 193)

Unit II

Framesets – Hyperlinks and Anchors – Form Elements – Input Elements – ButtonElements – Label Elements – Select and option Element – Defining web page appearance

– Simple style sheets. Chapter 14 (Page Number : 250 –264)

Unit III

HTML properties- styles- HTML tags – Hypertext transfer protocol- Links and frames –HTML Elements- List and Links- Webpage Layout- Sample Programs.

XML

Unit IV

XML – Introduction to XML applications - Structuring data – XML Rules – XSLTransformation – XSL Templates – Rules XSL formatting objects.

Unit V

XML DTD – Internal DTD – External DTD– Xlinks – Xpointers – Namespaces.

Chapter 2 &14 (Page Number: 17-44 , 63-101,309-143)

Books for Study:

1. RiteshKumar , Learn HTML in Easy Way, Ganpati Book Centre,2019
2. Kogent Learning Solutions Inc., HTML5 Black Book Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP and JQuery, 2012 (UnitI)
3. Ellistte Rusty Harold, XML1.1. Bible, IDG Books Pvt Ltd, 3rd Edition,2007

Programme : B.Sc., Mathematics.

Course Title :ELECTIVE PRACTICAL: WEB PROGRAMMING AND C **Course Code :** 13UMA6EP1

Year :ThirdYear **Semester :VI**

Hours/Week:2 **Credits :3**

1. Solving Quadratic equation.
2. Matrix Multiplication.
3. Mean and Standard Deviation.
4. Alphabetical order ofnames.
5. Descending and Ascending ordernumbers.
6. Electricity BillPreparation.
7. Evaluation of Sin and CosSeries.
8. To Generate FibonacciSeries.
9. Calculation of NCR Values.
10. Biggest and Smallest number in theArray.
11. Write a HTML Program to format the text using all suitable HTMLtags
12. Write a HTML Program to include the image in the webpage using suitable HTMLtags
13. Write a HTML Program to include a picture as a background image with suitable HTML tags.
14. Write a HTML Program to demonstrate headingtags
15. Write a HTML Program to draw a table containing the semester marks of thestudent
16. Write a HTML Program to demonstrateframes
17. Write a HTML Program to demonstrateforms

Programme : B.Sc., Mathematics.

Course Title :ELECTIVE: INTRODUCTION TO C **Course Code :** 13UMA6EL2

Year :Third Year **Semester : VI**

Hours/Week:4 **Credits :4**

Unit – I

Overview of C: Introduction – Importance of C – Sample C programs – Basicstructure of C programs – Programming style – Executing a 'C' program.

Constants, Variables and Data types: Introduction – Character set – C tokens –Keywords and Identifiers – Constant – Variables – Data types – Declaration ofvariables – Assigning values to variables – Defining symbolic constants.

Unit-II

Operators and Expression : Introduction – Arithmetic of operators – Relationaloperators and Logical operators – Assignment operators – Increment and Decrementoperators – Special operators – Arithmetic expressions – Evaluation of expressions –Precedence of Arithmetic operators – Some computational problems – Typeconversions in expressions – operator Precedence and Associativity – Mathematical functions.

Unit – III

Decision making and branching: Introduction to Decision making – Decisionmaking with IF statement – Simple IF statement – The IF ELSE statement – Nestingof IF….ELSE statements – The ELSE IF ladder – The Switch statement – The ?:operator – The GOTO statement.Decision making and looping: Introduction, the WHILE statement, the DOstatement, jumps in loops.

Unit – IV

Arrays: Introduction to arrays – One-dimensional arrays – Two- dimensional arrays – Multi- dimensional arrays.User-Defined Functions: Introduction to User-defined functions – Need for userdefined functions -Recursion.

Unit –V

Structures and Unions: Introduction to Structures definition – Accessing structuremembers – Structure initialization – Unions – Size of structures.Pointers: Introduction to Pointers.Problems: Standard Deviation – Mean and Median – Matrix multiplication – Solvingquadratic equations – Generating Fibonacci series – Preparing Electricity bill.

Books for Study:

1. Jogamohan Medak and ParthPratimGogoi, Basics of C Programming, Kindle Edition, 2018.
2. Kamthane, Programming in C, Kindle Edition,2019.
3. Balagurusamy.E, Programming in ANSI C, McGraw Hill, 6th Edition,2012.

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(AUTONOMOUS) COIMBATORE – 641 020

Programme : B.Com Co-operation **Subject Code :**16UCO5EP1

Course Title : ElecELECTIVE PRACTICAL : COMPUTER APPLICATIONS IN BUSINESS LAB
Semester : V

Credits : 4 **Hours / Week : 5**

Year : Third Year

MS – WORD

1. Preparation of Bio-Data
2. Letters to various sectors (Banking, Insurance and etc.)
3. Preparation of Agenda, Minutes, Circular letters
4. Mail Merge
5. Designing a News paper

MS-EXEL

1. Preparation of payrolls
2. Preparation of Invoice
3. Preparation of Stock details
4. Business Analysis using various charts
5. Use of financial functions

MS-ACCESS

1. Store data in a table
2. Retrieve data from a table
3. Sorting, searching a table
4. Viewing data using forms
5. Using SQL commands
6. Preparation of Business reports

MS-POWER POINT

1. Preparation of the advertisement
2. Introducing the product in the market
3. Business preparation with animation and transition effects
4. Display Board
5. Audio and Video Presentation

INTERNET

1. E-mail Creation
2. Ordering a Product Through Online

Books Recommended:

1. R. Saravanakumar, R. Parameswaran, T. Jayalakshmi, “A text book of Information Technology”, S.Chand& Company Ltd., 2003.
2. R.K. Taxali, “PC software for Windows 98 Made Simple”, Tata McGraw Hill, 2001.
3. Alexis Leon, Mathews Leon, “Introduction to Computers”, Leon TechWorld.
4. Microsoft Office – The Complete Reference, Tata McGraw Hill.

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COIMBATORE – 641 020

B.Sc Electronics and Communication Systems

NME: JAVA PROGRAMMING

Course Code:16UEC3NM1
Year :II **Semester :III**

Hours/Week:2 **Credits :2**

UNIT 1

Fundamentals of Object – Oriented Programming: Introduction – Object Oriented Paradigm – Basic Concepts of Object – oriented Programming – Constants, Variables and Data Types : Introduction – Constants – Variables – Data Types – Declaration of variables – Giving Values to Variables – Operators – Arithmetic operators – Relational Operators – Logical Operators – Assignment Operators – Increment and Decrement Operators – Conditional Operators – Bitwise Operators – Special Operators.

UNIT II

Decision Making and Branching – Introduction – Decision Making with if statement – simple if statement – the if …else statement – nesting of if …else statements – the else if ladder – the switch statement – the ?: operator – decision making and looping : Introduction – the while statement – the do statement – the for statement – jumps in loops – labeled loops.

UNIT III

Arrays : Introduction – One dimensional array – creating an array – Two dimensional arrays – Inheritance Basic concepts – packages basic concepts – Multithreaded programming.

Reference Book

1. E.Balagurusamy, Programming with Java: A primer , 2010, Fourth Edition.

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COIMBATORE – 641 020

B.Sc Electronics and Communication Systems

NME: HTML

Course Code:16UEC4NM2

Year :II **Semester :IV**

Hours/Week:2 **Credits :2**

Unit I

Introduction to HTML document – Text formatting – Using lists to organize data with tables – Table layout – Adding Images

Unit II

Framesets – Hyperlinks and Anchors – Form Elements – Input Elements – Button Elements – Label Elements – Select and option Element – Defining web page appearance – Simple style sheets

Unit III

HTML properties- styles- HTML tags – Hypertext transfer protocol- Links and frames – HTML Elements- List and Links- Webpage Layout- Sample Programs.

TEXT BOOK:

1. Richdarnell et al., HTML – 4 Unleashed,Techmedia,1999 Second Edition, (Unit I, II)