SRI RAMAKRISHNA MISSION VIDYALAYA
COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS) COIMBATORE – 641 020.
DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science

Mapping of Course Outcomes with Programme Outcomes and Programme Specific Outcomes

B.Sc Computer Science Programme

(2018-2019 Onwards)

Program Educational Objectives:

1. To acquire a sound technical foundation in computer science and creatively apply computer related

technologies in practical problems.

2. To make the students to establish themselves as competent professionals.

3. To craft the graduates technically competent to pursue higher studies

4. To make students competent in programming languages.

5. To provide necessary mathematical and accounting knowledge to the Computer science students.

6. To know the software development process.

Program Outcomes:

1. Ability to apply the knowledge of Mathematics and Science to develop real time systems.

2. Ability to design and conduct Experiments / Practicals.

3. Ability to function on Multidisciplinary teams.

4. Ability to communicate effectively and engage in lifelong learning.

5. Students recognize the need for continuing Professional development, ethical and social issues and responsibilities.

Program Specific Outcomes:

1. Students enable to apply the fundamental concepts and methodologies of computer system

2. Students enable to write programs on their own to solve real world problems

3. Students use appropriate system design notations and apply system design Engineering process and Technologies in order to design, plan and implement software system.

4. Students enable to establish themselves as the successful entrepreneur.

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) 2018– 2019 onwards
SCHEME OF EXAMINATION

SEMESTER – I									
S.No	COURSE CODE	PART	COURSE TITILE	HRS /WK	CRE DITS	EX AM HRS	MAX MARKS		
							INT	EXT	TOT
01	18UGC1TA1	I	Tamil– I	6	3	3	25	75	100
02	18UGC1EN1	II	English – I	6	3	3	25	75	100
03	18UCS/USC1 CO1	III	Core – 1 Programming in C	4	4	3	25	75	100
04	18UCS/USC1 AL1	III	Allied-1: Mathematics – I	6	5	3	25	75	100
05	18UCS/USC1 CP1	III	Core Practical – 1 Programming Lab in C	6	3	3	40	60	100
06	18UGC1ENS	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/ WK	CRE DITS	EXA M HRS	MAX MARKS		
							INT	EXT	TOT
01	18UGC2TA2	I	Tamil– II	6	3	3	25	75	100
02	18UGG2EN2	II	English – II	6	3	3	25	75	100
03	18UCS/USC2 CO2	III	Core – 2 Object Oriented Programming with C++	4	4	3	25	75	100
04	18UCS/USC2 AL2	III	Allied-2: Mathematics – II	6	5	3	25	75	100
05	18UCS/USC2 CP2	III	Core Practical – 2 Programming Lab in	6	3	3	40	60	100

			C++						
06	18UGC2VAE	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	18UCS/USC3 CO3	III	Core– 3 Database Management System	4	4	3	25	75	100
02	18UCS/USC3 CO4	III	Core– 4 Data Structures and Algorithms	5	5	3	25	75	100
03	18UCS/USC3 CO5	III	Core – 5 Java Programming	5	4	3	25	75	100
04	18UCS/USC3 AL3	III	Allied- 3: Accounting and Business Management	6	5	3	25	75	100
05	18UCS/USC3 CP3	III	Core Practical – 3 Java Programming Lab	4	3	3	40	60	100
06	18UCS/USC3 CP4	III	Core Practical – 4 RDBMS Lab	4	3	3	40	60	100
07	18UCS/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	18UCS/USC4 CO6	III	Core – 6 **.NET Technology (C#)**	6	4	3	25	75	100
02	18UCS/USC4 CO7	III	Core – 7 Computer Organization and Architecture	6	4	3	25	75	100
03	18UCS/USC4 CO8	III	Core – 8 Android Programming	5	4	3	25	75	100
04	18UCS/USC4 AL4	III	Allied 4- Operations Research	6	5	3	25	75	100
05	18UCS/USC4 CP5	III	Core Practical – 5 **.NET TECHNOLOGY**	5	3	3	40	60	100

			LAB(C#)						
06	18UCS/USC4CP6	III	Core Practical – 6 Android Programming Lab	4	3	3	40	60	100
07	18UCS/USC4NM2	IV	Non Major Elective - 2: -----/ Basic Tamil - II	2	2	2	-	50	50
08	18UGC4NSS/4SPO	V	NSS / NCC / SPORTS		1	2	-	50	50
TOTAL – 4				**34**	**26**		**195**	**505**	**700**

SEMESTER – V

S. No	COURSE CODE	PART	COURSE TITILE	HRS /WK	CREDITS	EXAM HRS	MAX MARKS INT	EXT	TOT
01	18UCS/USC5CO9	III	Core– 9 Operating System	4	5	3	25	75	100
02	18UCS/USC5C10	III	Core – 10 Web Technology	4	4	3	25	75	100
03	18UCS/USC5C11	III	Core – 11 Object Oriented Modeling and Design with UML and SOAD	4	4	3	25	75	100
04	18UCS/USC5CP7	III	Core Practical – 7 Web Technology Lab	5	3	3	40	60	100
05	18UCS/USC5EL1	III	Elective – I (From Group A)	4	4	3	25	75	100
06	18UCS6CPR	III	PROJECT	5					
TOTAL – 5				**26**	**20**		**180**	**420**	**600**

SEMESTER – VI

S. No	COURSE CODE	PART	COURSE TITILE	HRS /WK	CREDITS	EXAM HRS	MAX MARKS INT	EXT	TOT
01	18UCS/USC6C12	III	Core– 12 Software Engineering	5	5	3	25	75	100
02	18UCS/USC6C13	III	Core – 13 PYTHON and IOT	5	5	3	25	75	100
03	18UCS/USC6C14	III	Core – 14 Computer Networks&	5	5	3	25	75	100

			Cyber-Security						
04	18UCS/USC 6EL2	III	Elective – II (From Group B)	5	5	3	25	75	100
05	18UCS/USC 6CP8	III	Core Practical -8 PYTHON Lab	5	3	3	40	60	100
06	18UCS/USC 6CPR	III	Project Work	5	5		40	60	100
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	18UEC3NM1	IV	Non Major Elective – 1 Java Programming	2	2	2	-	50	50
02	18UEC4NM2	IV	Non Major Elective – 2 HTML	2	2	2	-	50	50

18UCS/USC1C01 CORE: PROGRAMMING IN C

CO No.	CO Statement	Knowledge level
CO1	Know the logics of solving the problems	K
CO2	Understand the concepts of C programming	U
CO3	Analyze and discover bugs in the program	S
CO4	Apply the concepts and develop programs to solve real-time problems	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	M	S	M	S	M	S	S	M	L
CO2	M	S	M	S	M	S	S	M	L
CO3	S	S	M	S	M	S	S	S	S
CO4	S	S	M	S	M	S	S	S	S

18UCS/USC1CP1 CORE PRACTICAL: PROGRAMMING LAB IN C

CO Number	CO Statement	Knowledge level
CO1	Understand the fundamental programming concepts	U
CO2	Illustrate the programming technique to analyze software problems	U
CO3	Apply the concepts to find solution for the problems	S
CO4	Design and develop the simple application.	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	M	S	M	M	M	S	M	L	L
CO2	M	S	M	S	M	S	M	L	L
CO3	S	S	M	S	M	S	M	M	L
CO4	S	S	M	S	M	S	M	M	L

18UCS/USC2C02 CORE : OBJECT ORIENTED PROGRAMMING WITH C++

CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand the OOPS concepts.	U
CO2	Learn data types and control structures in C++	K
CO3	Demonstrate the Reusability by applying the types of Inheritance and know Polymorphism	S
CO4	Demonstrate the use of pointers in virtual functions.	S
CO5	Analyse the features of C++ including templates, exceptions and file handling.	S

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
CO1	**S**	**S**	**L**	**M**	**S**	**S**	**S**	**M**	**L**
CO2	**S**	**S**	**L**	**M**	**L**	**S**	**S**	**M**	**L**
CO3	**M**	**S**	**L**	**M**	**M**	**S**	**S**	**M**	**L**
CO4	**S**	**S**	**L**	**M**	**M**	**S**	**S**	**L**	**L**
CO5	**S**	**S**	**M**	**M**	**M**	**S**	**S**	**S**	**L**

18UCS/USC2CP2 CORE PRACTICAL : PROGRAMMING LAB IN C++

CO Number	**CO Statement**	**Knowledge level**
CO1	Developing programs for Mathematical problems	S
CO2	Develop the programs to implement OOPS Concept	S
CO3	Understand and implement File concepts	K
CO4	Understand and implement Exception Handling features	U

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	S	M	M	M	S	S	M	M
CO2	S	S	M	M	M	S	S	M	S
CO3	S	S	M	M	M	S	S	M	L
CO4	S	M	M	L	L	S	S	M	L

18UCS/USC3C03 CORE: DATABASE MANAGEMENT SYSTEM

CO Number	CO Statement	Knowledge Level
CO1	know and practice the data models and schemas in DBMS	K
CO2	develop the database designs and apply normalization techniques to normalize the database	S
CO3	use SQL to structure the database to handle data	U
CO4	use PL/SQL to create, secure, maintain, and query a database.	U

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	S	M	S	M	S	S	M	M	M
CO2	S	S	L	M	S	S	M	S	S
CO3	S	S	S	M	S	S	S	S	M
CO4	S	S	M	L	S	S	S	S	S

18UCS/USC3C04 CORE: DATA STRUCTURES AND ALGORITHMS

CO Number	**CO Statement**	**Knowledge Level**
CO1	Know the characteristics of various data structure.	K
CO2	Understand and develop applications using various data structures	U
CO3	Apply appropriate internal sorting methods	U
CO4	Analyze the concept of files and its various organization	S

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
CO1	S	S	L	M	M	S	S	M	L
CO2	S	S	L	M	M	S	S	M	L
CO3	S	S	L	M	M	S	S	M	L
CO4	S	S	M	S	M	S	S	S	M

18UCS/USC3C05 CORE: JAVA PROGRAMMING

CO Number	**CO Statement**	Knowledge Level
CO1.	Understand the Packages and Multithreaded applications	U
CO2.	Understand error handling and Applets	U
CO3.	apply AWT controls in the Applications	S
CO4.	Demonstrate the use of servlets	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	S	M	M	M	S	M	M	M
CO2	S	S	M	M	M	S	S	M	L
CO3	S	M	M	M	M	S	M	M	M
CO4	S	S	L	M	M	S	M	M	M

18UCS/USC3CP3 CORE PRACTICAL: JAVA PROGRAMMING

CO Number	**CO Statement**	Knowledge Level
CO1	Develop program to implement packages and interfaces	S
CO2	Apply the concepts in exception handling and multithreading	S
CO3	Understand the window based applications using applet	U
CO4	Develop the program using servlets	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	S	M	M	M	S	M	M	L
CO2	S	M	M	M	M	S	S	M	L
CO3	S	M	L	M	M	S	M	M	M
CO4	S	S	M	L	L	S	M	M	M

18UCS/USC3CP4 CORE PRACTICAL: RDBMS LAB

CO Number	CO Statement	Knowledge Level
CO1	design and implement databases for given problem domain	S
CO2	Know to write programs for exception handling and indexes	K
CO3	Develop programming using DDL, DML Statements	S
CO4	Work with the PL/SQL for windows Applications including procedures and cursors.	U

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	S	S	M	M	L	S	S	M	L
CO2	S	S	M	M	L	S	S	M	L
CO3	S	S	S	M	L	S	S	S	L
CO4	S	S	S	M	L	S	S	S	S

18UCS/USC4C06 CORE: .NET TECHNOLOGY (C#)

CO Number	**CO Statement**	Knowledge Level
CO1.	Learn the fundamental concepts in C#	S
CO2.	Develop the Windows Applications using controls	S
CO3.	Work with Object oriented concepts	U
CO4.	Develop Web Applications	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	M	M	L	M	S	M	M	L
CO2	S	M	M	M	M	S	S	M	L
CO3	S	S	M	M	M	S	S	M	L
CO4	S	S	M	L	M	S	S	S	M

18UCS/USC4C07 CORE: COMPUTER ORGANIZATION AND ARCHITECTURE

CO Number	**CO Statement**	**Knowledge level**
CO1.	know the number systems and basic logic gates	K
CO2.	understand the CPU, I/O and Memory organizations	U
CO3	Understand the input/output Organization Methods	U
CO4	Understand the concepts of memory and its storing techniques	U

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	S	M	L	M	M	S	L	M	L
CO2	M	M	M	M	M	S	L	M	M
CO3	M	M	M	M	M	S	L	M	L
CO4	M	M	L	M	M	S	L	M	M

18UCS/USC4C08 CORE: ANDROID PROGRAMMING

CO Number	CO Statement	Knowledge Level
CO1	Understand the concept of android development platform, and configuring and creating android applications.	U
CO2	create an activity, intents, different event handling methods and menus	S
CO3	know working with views, view groups and menus	K
CO4	apply the concept of graphics and animation in developing android application	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	S	S	M	L	L	S	L	L	L
CO2	S	S	M	S	M	S	M	S	L
CO3	M	S	S	S	M	S	S	M	M
CO4	M	S	S	M	M	S	M	S	S

18UCS/USC4CP5 CORE PRACTICAL: .NET TECHNOLOGY LAB (C#)

CO Number	CO Statement	Knowledge level
CO1	understand the basic concepts of C# console applications	**U**
CO2	have knowledge about Array and String Function in C# console	**K**
CO3	understand basic concepts about C# windows application with programs	**U**
CO4	Develop programs using ADO.Net	**S**

WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	S	S	M	M	L	S	S	M	L
CO2	S	S	M	M	L	S	M	L	L
CO3	S	S	M	M	L	S	M	M	L
CO4	S	S	M	S	M	M	M	M	S

18UCS/USC4CP6 CORE PRACTICAL: ANDROID PROGRAMMING LAB

CO Number	CO Statement	Knowledge level
CO1	Learn the basic concepts of Android Programming	**K**
CO2	know how to create various user interfaces with Toast messages and simple applications	**U**
CO3	Develop programs using API controls	**S**
CO4	knows working with SQLite database	**U**

WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	S	S	M	M	L	S	M	M	L
CO2	M	S	M	M	L	S	M	M	L
CO3	S	S	M	M	S	S	S	M	S
CO4	S	S	L	M	S	L	S	M	S

18UCS/USC5C09 CORE: OPERATING SYSTEM

CO Number	CO Statement	Knowledge Level
CO1	know the usage of various operating systems	K
CO2	Understand the functions of process management and file management to know the various file operations and how these files are processed	U
CO3	Understand the concept and difference between storage management and disk management	U
CO4	Apply the knowledge of the Windows2000 and Windows XP for utilizing other operating systems .	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	L	L	L	L	L	S	L	L	L
CO2	S	L	M	M	L	S	L	M	L
CO3	M	L	M	M	L	S	L	M	L
CO4	M	L	M	M	L	S	L	M	M

18UCS/USC5C10 CORE: WEB TECHNOLOGY

CO Number	**CO Statement**	**Knowledge level**
CO1.	Know the basic concepts of XML	K
CO2.	Understanding CSS and web services	U
CO3	Apply various controls in PHP	S
CO4	Develop Database applications	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	M	S	M	M	M	S	L	L	L
CO2	M	S	S	S	M	M	L	S	M
CO3	S	S	S	S	M	M	S	S	M
CO4	S	S	S	S	S	M	S	S	S

18UCS/USC5C11 CORE: OBJECT ORIENTED MODELLING AND DESIGN WITH UML AND SOAD

CO Number	**CO Statement**	**Knowledge level**
CO1	Learn design, document the requirements through use case, state, and class driven approach.	**K**
CO2	Analyze and modelling the structural and behavioural concepts of the system.	**S**
CO3	Transform the SOAD conceptual model into various scenarios and applications.	**U**

CO4	Understand the Cloud Technologies using SOA by REST and SOAP	**U**

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	S	L	M	L	S	M	S	L
CO2	S	S	M	M	L	S	M	S	L
CO3	M	M	L	M	L	M	S	M	L
CO4	M	L	L	M	L	S	M	L	L

18UCS/USC5CP7 CORE PRACTICAL: WEB TECHNOLOGY LAB

CO Number	**CO Statement**	**Knowledge level**
CO1	Know the concepts of XML	K
CO2	Apply various controls of PHP	S
CO3	Connect PHP with MYSQL	S
CO4	Ability to work with files	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	L	S	M	S	M	M	S	S	M
CO2	M	S	S	S	M	M	S	S	M
CO3	M	S	S	S	M	M	S	S	S
CO4	S	S	S	S	S	M	S	S	S

18UCS/USC6C12 CORE: SOFTWARE ENGINEERING

CO Number	CO Statement	Knowledge Level
CO1	Apply software engineering techniques.	S
CO2	Develop, maintain and evaluate software systems.	S
CO3	Identify efficient, reliable, robust and cost-effective software solutions.	K
CO4	Develop testing skills	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	S	M	S	M	L	S	M	M	L
CO2	S	S	M	M	M	S	S	M	S
CO3	S	S	M	M	M	S	S	S	M
CO4	S	M	L	S	M	S	M	S	S

18UCS/USC6C13 CORE: PYTHON AND IOT

CO Number	CO Statement	Knowledge Level
CO1	knows the various data types and control structures	K
CO2	Apply the concepts of File Handling and error handling	S
CO3	Develop database applications and web applications	S
CO4	Know about IoT Applications	K

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	M	L	M	M	S	M	M	L
CO2	S	M	L	M	L	S	S	M	L
CO3	S	M	M	M	M	S	M	M	M
CO4	S	M	M	M	M	S	M	M	M

18UCS/USC6C14 CORE: COMPUTER NETWORKS AND CYBER-SECURITY

CO Number	**CO Statement**	**Knowledge Level**
CO1.	Understand the various topologies and the importance of layers	U
CO2.	Explore Analog and Digital Transmissions and Switching techniques	U
CO3.	Apply the concepts of Routing and Congestion	S
CO4.	Understand the design issues Transport and Session layers	U
CO5.	Know about Cyber Crimes and Cyber laws	K

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	M	L	S	M	M	M	M	L
CO2	S	S	L	M	M	S	M	M	M
CO3	S	S	L	M	M	S	M	M	M
CO4	S	S	M	S	S	S	M	M	L
CO5	M	L	S	M	S	S	M	M	L

18UCS/USC6CP8 CORE PRACTICAL: PYTHON LAB

CO Number	**CO Statement**	Knowledge Level
CO1	Understand the essentials of python programming	U
CO2	Develop the simple applications using python	S
CO3	Apply to object oriented concepts	S
CO4	Explore file handling concepts	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	M	S	M	M	S	M	M	M
CO2	S	S	S	M	M	S	M	M	L
CO3	S	M	M	M	M	S	M	M	M
CO4	S	M	M	L	L	S	M	M	M

18UCS/USC5EL1 ELECTIVE: ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING

CO Number	CO Statement	Knowledge Level
CO1	Know the various characteristics of AI and Soft Computing	K
CO2	Analyze the strength and weakness of AI approaches to knowledge representation, heuristic searching techniques and applications of AI.	S
CO3	Choose the appropriate representation and appropriate reasoning algorithm, for the chosen AI problem/domain and assess the Soft Computing Components.	U
CO4	Classify the Fuzzy logic control systems	S

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	S	L	M	M	S	M	M	M
CO2	S	M	L	M	L	S	S	M	M
CO3	S	M	M	M	L	S	M	M	M
CO4	M	M	M	M	M	S	M	M	S

18UCS/USC5EL1 ELECTIVE: DISTRIBUTED COMPUTING SYSTEMS

CO Number	CO Statement	Knowledge Level
CO1	Assimilate the workability of distributed systems	K
CO2	Understand the basic communication fundamentals of distributed systems	U
CO3	Analyze the knowledge of data centric consistency models and Security management in distributed systems	S
CO4	Use the distributed environment in web based systems.	S

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	L	L	S	S	S	L	L	L	L
CO2	M	L	M	M	S	S	L	L	L
CO3	M	M	M	M	S	S	M	M	L
CO4	M	M	M	M	M	S	M	M	S

18UCS/USC5EL1 ELECTIVE: MANAGEMENT INFORMATION SYSTEM

CO Number	CO Statement	Knowledge Level
CO1	Use Various design tools	K
CO2	Apply the concept of DSS,EIS,KMS and GIS	U
CO3	Analyse the issues of Vulnerability, Computer Crimes and ethics in IT	S
CO4	Know the Concepts of E-Governance Techniques	K

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	L	L	S	S	S	L	L	L	L
CO2	M	L	M	M	S	S	L	L	L
CO3	M	M	M	M	S	S	M	M	L
CO4	M	M	M	M	M	S	M	M	S

18UCS/USC5EL1 ELECTIVE: TCP/IP PROTOCOL SUIT

CO Number	**CO Statement**	**Knowledge Level**
CO1	Know the concepts of data communication	**K**
CO2	Understand ISO - OSI model, TCP/IP model, Network Management and middelewares	**U**
CO3	Apply the IP addressing and subnetting schemes.	**S**
CO4	Analyze various routing algorithms and protocols	**S**

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	M	M	L	S	M	S	L	M	L
CO2	M	M	L	M	M	S	L	L	L
CO3	S	S	M	M	M	M	L	M	M
CO4	S	S	M	S	S	M	L	M	M

18UCS/USC6EL2 ELECTIVE: DATA MINING AND WAREHOUSING

CO Number	**CO Statement**	**Knowledge level**
CO1	Know the concepts of data mining applications	K
CO2	Apply the association rules for mining the data	S
CO3	Design and deploy appropriate Classification techniques	S
CO4	Understanding various algorithms in Data Mining	U

MAPPING WITH PROGRAMME OUTCOMES

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PS0O2	PSO3	PS04
CO1	M	M	M	S	M	S	L	L	L
CO2	M	S	M	S	M	S	S	M	L
CO3	S	S	M	S	M	S	S	M	S
CO4	S	S	M	S	M	S	S	M	S

18UCS/USC6EL2 ELECTIVE: MULTIMEDIA APPLIATIONS

CO Number	**CO Statement**	**Knowledge level**
CO1	Use basic tools of Photoshop.	**K**
CO2	Analyze various file formats for audio, video and text media	**S**
CO3	Understand basic methods of Flash Animation	**U**
CO4	Develop interactive multimedia applications	**S**

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	L	S	M	S	M	M	S	M	S
CO2	L	S	M	S	L	L	M	M	L
CO3	L	S	M	S	S	M	M	S	L
CO4	L	S	M	S	S	S	M	S	S

18UCS/USC6EL2 ELECTIVE: SOFTWARE PROJECT MANAGEMENT

CO Number	**CO Statement**	**Knowledge Level**
CO1.	Know the concept of project management and planning	K
CO2.	Analyze and implement methods to plan and control project, have a control over risks.	S
CO3.	Apply the required steps for the decision making.	S
CO4.	Understand the process of Managing the People and member of software engineering team	U

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	S	M	M	M	S	S	M	M
CO2	S	S	M	M	M	S	S	M	M
CO3	S	S	M	L	L	S	M	M	L
CO4	S	S	M	L	L	S	M	M	L

18UCS/USC6EL2 ELECTIVE: UNIX INTERENALS

CO Number	**CO Statement**	**Knowledge level**
CO1	Know the concepts of kernel and files	**K**
CO2	Use the file management and various system calls	**S**
CO3	Analyze the process architecture, process control, process scheduling and memory management	**S**

COS	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	S	M	M	M	S	S	S	M	M
CO2	S	M	M	M	S	S	S	M	S
CO3	S	M	M	M	S	S	S	M	S

Course: 18UCS/USC4AL4 ALLIED:OPERATIONS RESEARCH

CO No.	CO Statement	Knowledge Level
CO1	Know the formulation of Business Problems.	K
CO2	understanding the methods of problem solving	U
CO3	applying the mathematical calculations in Industrial Problems.	S
CO4	analyzing mathematical methods and applications.	S

MAPPING

COS	PO1	PO2	PO3	PO4	PO5		PSO1	PSO2	PSO3	PSO4	PSO5
CO1	M	L	M	M	L		L	L	L	L	L
CO2	M	M	M	L	L		M	M	L	L	L
CO3	M	M	M	M	L		L	L	L	L	L
CO4	M	M	M	M	L		L	L	L	L	L

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

CORE: PROGRAMMING IN C

Year : I **Semester** : I
Hours / Week : **4** **Subject Code:** 18UCS/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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CORE PRACTICAL: PROGRAMMING LAB IN C

Year : I **Semester** : I
Hours / Week : 6 **Subject Code:** 18UCS/USC1CP1

Credits : 3

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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 exceeds Rs. 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 :** 18UCS/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,

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CORE PRACTICAL : PROGRAMMING LAB IN C++

Year : I **Semester : II**
Hours / Week : 6 **Subject Code :** 18UCS/USC2CP2
Credit: 3

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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For candidates admitted from academic year 2018 - 2019 onwards under New CBCS

B.Sc. COMPUTER SCIENCE (UCS/USC)

CORE: DATABASE MANAGEMENT SYSTEM

Year : II **Semester : III**

Hours / Week : 4 **Subject Code :** 18UCS/USC3C03

Credits : 4

UNIT I

Introduction: – Database System Applications – purpose of database systems - View of Data – Data Models – Database Languages – Relational databases – data storage and querying – Database architecture - Database Users and Administrators – Structure of Relational databases – keys.

UNIT II

The Entity – Relationship model – Entity Relationship Diagram – Relational Database Design: Atomic Domains and First Normal Form – Decomposition using Functional Dependencies (Second Normal Form) – Boyce-Codd Normal Form – Third Normal Form – Decomposition using Multivalued Dependencies - Fourth Normal Form - More Normal Forms.

UNIT III

Interactive SQL: Table fundamentals: (Oracle Data types – create table – viewing data in the tables) – Eliminating duplicate rows when using a select statement – Inserting data into a table from another table – Delete operations – Updating the contents of a table – Modifying the structure of tables – Renaming tables – Truncating tables – Destroying tables. Data constraints – types of data constraints - defining different constraints on a table

UNIT IV

Introduction to PL/SQL Data base objects: Advantages of PL/SQL – The generic PL/SQL block – the PL/SQL execution environment - PL/SQL - The character set – Literals - PL/SQL data types – variables – constants – LOB types – logical comparisons - displaying user messages on the VDU Screen – comments – Control structures. PL/SQL transactions: oracle transactions – processing a PL/SQL block – what is a cursor?

UNIT V

PL/SQL database objects: what are procedures/ functions? Advantages of using procedure or function- procedures versus function – deleting a stored procedures or functions – oracle packages – database triggers – types of triggers.

TEXT BOOKS:

1. A.Silberschatz, H.Korth and S.Sudarsan, Database System Concepts, TATA McGraw Hill Inc, Sixth Edition, 2011.
2. Ivan Bayross, SQL, PL/SQL the programming language of ORACLE, BPB Publications, 4th revised edition, 2009

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, eighth edition, 2007.
3. Majumdar & Bhattacharya, Database Management System, TMH, 2007.
4. Gerald V.Post, Database Management System, TMH, 3rd edition, 2004. Nilesh Shah, Database Systems using Oracle, PHI , 2nd edition, 2004.

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SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

For candidates admitted from academic year 2018 - 2019 onwards under New CBCS.

B.Sc. COMPUTER SCIENCE (UCS/USC)

CORE: DATA STRUCTURES AND ALGORITHMS

Year : II **Semester : III**

Hours / Week : 5 **Subject Code :** 18UCS/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 with tapes and disks — balanced merge sort — Polyphase merge sort.

UNIT V

Symbol Tables: Static tree and dynamic tree implementations — Hash tables. File Organizations — Sequential, ISAM, Random - Linked File organizations: Multilists — Inverted Files — Cellular Partitions.

TEXT BOOKS:

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

REFERENCE BOOKS:

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

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SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

For candidates admitted from academic year 2018 - 2019 onwards under New CBCS

B.Sc. COMPUTER SCIENCE (UCS/USC)

CORE: JAVA PROGRAMMING

Year : II **Semester : III**

Hours / Week : 5 **Subject Code :** 18UCS/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.

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.

UNIT III

Input/ Output: File – Stream classes – Byte streams – character streams – **The Applet Class :** Applet Basics - Applet Architecture - Applet Skeleton-Applet Initialization and Termination-Applet Display Methods-The HTML APPLET Tag-Passing Parameters to Applets.

UNIT IV

Introduction the AWT: AWT Classes-Window Fundamentals- Creating Frame Window in an Applet- Handling Events in a Frame Window- Working with Graphics-Working with Color-Working with Fonts-**Using AWT Controls**: Control Fundamentals. **AWT Menus**: Menu Bars and Menus -Dialog Boxes **Image Fundamentals:** Creating, Loading, and Displaying.

UNIT V

J2EE Overview: Distributed Multitiered Applications-J2EE Containers -Packaging - Development Roles. **EJB:** Enterprise Bean-Session Bean- Entity Bean- Message Driven Bean-The Life Cycles of Enterprise Beans. **Servlet:** Servlet Life Cycle-Sharing Information-Initializing a Servlet-Writing Service Methods

TEXT BOOKS

1. Herbert Schildt, The Complete Reference -java 2, TATAMcGraw Hill, Fifth Edition, 2002. (Units I,II,III,IV)
2. Harley Haim, The internet computer reference, TATAMcGraw Hill, Second Edition, 1998, (Unit-V)

REFERENCE BOOKS

1. E.Balagurusamy , Programming with Java, , TATAMcGraw Hill, Third Edition
2. Patrick Naughton, The JAVA Hand Book, TATAMcGraw Hill, 1997

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B.Sc. COMPUTER SCIENCE (UCS/USC)

CORE PRACTICAL: JAVA PROGRAMMING

Year : II **Semester : III**

Hours / Week : 4 **Subject Code :** 18UCS/USC3CP3

Credits : 3

LIST OF PRACTICALS

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 Servlet class.
15. Write a java program to display page count using Servlet.

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SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE

(AUTONOMOUS) COIMBATORE – 641 020

For candidates admitted from academic year 2018 - 2019 onwards under New CBCS

B.Sc. COMPUTER SCIENCE (UCS/USC)

CORE PRACTICAL: RDBMS LAB

Year : II **Semester : III**

Hours / Week : 4 **Subject Code :** 18UCS/USC3CP4

Credits : 3

LIST OF PRACTICALS

1. Write an Oracle query creating a table and inserting and updating data in a table.
2. Write an Oracle query delete single record, all records and structure
3. Write an Oracle query illustrate security features of oracle.
4. Write an Oracle query creation of multiple types of Indexes.
5. Write an Oracle query creating a sequence
6. Write a program to illustrate exception 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.*

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE

(AUTONOMOUS) COIMBATORE – 641 020
For candidates admitted from academic year 2018 - 2019 onwards under New CBCS
B.Sc. COMPUTER SCIENCE (UCS/USC)

CORE: .NET TECHNOLOGY (C#)

Year : II **Semester : IV**
Hours / Week : 6 **Subject Code :** 18UCS/USC4C06

Credits : 4

UNIT I

Evaluation of .Net- Overview of .Net Framework- Exploring Visual studio IDE- Basic IDE operations.

C# Fundamentals: Literals- Variables- Data types – Value types – Reference Types- Declaration of variables- Initialization of variables- Default values- constant variables- scope of variables. Operators and expressions: Arithmetic operator-relational operato9r- Logical operator- Assignment operator- Increment and decrement operator- Condition operator- Bitwise operator-type conversions

UNIT II

Decision making and branching: Selection statements: if, If else, Nested If, Else if ladder, Switch statement. Decision making and looping: While, do While, For,for each -Jump Statement: Goto, Break, Continue.

UNIT III

Handling arrays: Introduction- One dimensional array- Creating an array- Two dimensional array- Variable size arrays- system array class- array list class. Manipulating strings: Creating strings- string methods- Inserting methods- Comparing strings- Finding substrings-Mutable of strings- Arrays of strings

UNIT IV

Class and objects: OOPS-Defining a class- Adding variables- Adding methods- Member access modifier- Creating objects- Accessing class members- Constructors- Overload constructors-Static members- Static constructors- private constructor- Copy constructor-Destructor- This reference. Inheritance: Classical inheritance- Defining a sub class- Multi level inheritance-Hierarchical Inheritance-Over riding methods-hiding methods- Abstract class- Abstract methods.

UNIT V

Multithreading: Creating and starting a thread- scheduling threads- thread pooling. Windows forms: Creating windows forms- Customizing form- Creating and running a windows applications- Overview of design pattrerns- Web based application on .Net

TEXT BOOK

1. E.Balagurusamy, Programming in C#:A Primer, 3rd Edition, TATA McGrew Hill Education Pvt Limited, New Delhi, 2012.

REFERENCE BOOK

1. Kevin Hoffman. Microsoft Visual C#, Pearson Education, 2006.
2.Professional Projects,Prentice Hall of India Private Limited, 2002.
3.. Herbert Schildt, C# 4.0 Complete References, 1st Edition, Tata McGraw-Hill, 2010.

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For candidates admitted from academic year 2018 - 2019 onwards under New CBCS

B.Sc. COMPUTER SCIENCE (UCS/USC)

CORE: COMPUTER ORGANIZATION AND ARCHITECTURE

Year : II **Semester : IV**

Hours / Week : 6 **Subject Code :** 18UCS/USC4C07

Credits : 4

UNIT I

Number systems: Binary Number System –Octal Numbers – Hexadecimal Numbers – Number system Conversion from one to another - The Excess-3 Code – The Gray Code. Basic logic gates: AND, OR, NOT – Universal logic gates: NOR, NAND.

UNIT II

Boolean laws and theorems - Multiplexers – Demultiplexers – Decoder – Encoders – Half-Adder – Full-Adder – half subtractor – full subtractor - RS Flip flop - JK Flip-flop.

UNIT III

Central Processing Unit - Stack organization - Instruction formats — Addressing Modes - Data transfer and manipulation — program control – parallel processing — pipelining.

UNIT IV

Input/output Organization: I/O Bus and interface modules —i/o versus memory bus - isolated and memory mapped I/O - asynchronous data transfer – strobe control - handshaking - Direct memory access.

UNIT V

Memory Organization — memory hierarchy – main memory - auxiliary memory — Associative memory — Cache memory – Virtual memory.

TEXT BOOK

1. Donald P Leach, Albert Paul Malvino, Goutam Saha, Digital Principles and Applications, Special Indian edition, 7the Edition, 2011.
2. Computer System Architecture, M. Morris Mano, Pearson Education Inc., Third Edition, 2009.

REFERENCE BOOK

1. Computer organization and architecture Designing for performance, Pearson Education, Dorling Kindersley, 10th Edition, 2016

2. David A. Patterson, John L. Hennessy, Computer Organization and design: The hardware/ Software Interface, Morgan Kaufmann, 4th Edition, 2011.

3. Nicholas P. Carter, Computer Architecture and organization, McGrawHill india, 2nd Edition, 2017.

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For candidates admitted from academic year 2018 - 2019 onwards under New CBCS

B.Sc. COMPUTER SCIENCE (UCS/USC)

CORE: ANDROID PROGRAMMING

Year : II **Semester : IV**

Hours / Week : 5 **Subject Code :** 18UCS/USC4C08

Credits : 4

UNIT I

Fundamentals of Java for Android Application Development: Introduction to Java - Need for Java for Android application development - features of java - Introducing java Dalvik Virtual Machine - Developing a Simple Java Program [using Eclipse IDE]:- writing the java program - compiling and executing the java program.

Introducing android (listing the version history of android platform - discussing android APIs - Describing the android architecture - application framework - exploring the features of android) - The Manifest file.

Downloading and installing android (downloading and installing the android SDK - setting up android virtual device - setting up android physical device)

UNIT II

Developing and executing the first android application (using eclipse IDE to create an application - running your application - exploring the application - using command line tools)

Working with Activities: Creating an activity - starting an activity - managing the lifecycle of an activity - applying themes and styles to an activity.

UNIT III

Using intents: Exploring intent objects - linking the activities using intent - obtaining results from intent - passing data using an intent object.

Working with the user interface using Views and ViewGroups: Working with View Groups - The LinearLayout layout - the RelativeLayout layout - the ScrollView layout - the TableLayout layout - the FrameLayout layout.

UNIT IV

Working with Views (Using the TextView - using EditText view - using the Button view - using the RadioButton view - using the CheckBox view - using the ImageButton view - using the ToggleButton view - using the RatingBar view)

Creating menus - the option menu - the context menu - the submenus

Notifying the user:- Creating the Toast notification - Creating the status bar notification - creating the Dialog notification.

UNIT V

Working with content providers:- Exploring the android provider package - creating user-defined content provider - consuming user-defined content provider.

Working with Graphics:- Drawing Graphics to Canvas. Working with Animations:- The Property Animation - View Animation - Drawable Animation.

TEXT BOOK

1. Pradeep Kothari, Android application development (with KitKat Support) Black Book, dreamtech press, 2018

REFERENCE BOOKS

1. Wallace Jackson, Android Applications for Absolutes Beginners, Apress, 3rd Edition, 2014.
2. W. Frank Ableson, RobiSen, Chris King, “Android in Action”, Manning Publications, 2nd Edition, 2011.
3. Shawn Van Every, ‘Pro Android Media: Developing Graphics, Music, Video, and Rich Media Apps for Smartphones and Tablets ‘, Apress Publisher, 2016.

SRI RAMAKRISHNA MISSION VIDYALAYA

COLLEGE OF ARTS AND SCIENCE

(AUTONOMOUS) COIMBATORE – 641 020

CORE PRACTICAL: .NET TECHNOLOGY LAB (C#)

Year : II **Semester : IV**
Hours / Week : 5 **Subject Code :** 18UCS/USC4CP5

Credits : 3

LIST OF PRACTICALS

1. Write a C# program using switch statement
2. Write a C# program using Nested If statement
3. Write a C# program using For-Each statement
4. Write a C# program using exception handling
5. Write a C# program for method overloading
6. Write a C# program for Fibonacci series
7. Write a C# program to demonstrate single thread
8. Write a C# program to demonstrate multiple threads
9. Write a C# program using Single inheritance
10. Write a C# program to store and retrieve employee details in MS-access database
11. Write a C# program to store and retrieve student details in My-sql database
12 Write a C# program to demonstrate generates of report

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(AUTONOMOUS) COIMBATORE – 641 020
For candidates admitted from academic year 2018 - 2019 onwards under New CBCS
B.Sc. COMPUTER SCIENCE (UCS/USC)
CORE PRACTICAL: ANDROID PROGRAMMING LAB

Year : II **Semester : IV**
Hours / Week : 4 **Subject Code :** 18UCS/USC4CP6

Credits : 3

LIST OF PRACTICALS

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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NME : Web Programming

Course code: 18USC/UCS4NM2 Hours: 2 Hrs

Credit:2 Semester : IV

1) Write a program in HTML
2) To illustrate text formatting features.
3) Print ordered and unordered list.
4) Illustrate Hyper link and Frame concepts.
5) Department Web site creation.
6) College Web site creation.
7) Illustration of style sheets.
8) Demonstrating Frame concepts.
9) Adding image to web document.
10) Preparation of class time table.
11) Using audio and video files in HTML.

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COIMBATORE – 641 020

For candidates admitted from academic year 2018-2019 onwards under New CBCS.

CORE: OPERATING SYSTEM

Year : II **Semester : V**

Hours / Week : 4 **Subject Code :** 18UCS/USC5C09

Credits : 5

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. Deitel Deitel Choffnes, 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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For candidates admitted from academic year 2018-2019 onwards under New CBCS.

CORE: WEB TECHNOLOGY

Year : III **Semester : V**
Hours / Week : 4 **Subject Code :** 18UCS/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, TATA McGraw Hill, Fifth Edition, 2002.
2. Vikram Vaswani, A Beginner's Guide PHP, Tata McGraw Hill, Fifth Edition, 2011.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

CORE: OBJECT ORIENTED MODELLING AND DESIGN WITH UML AND SOAD

Year : III **Semester : V**
Hours / Week : 4 **Subject Code :** 18UCS/USC5C11
Credits : 4

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: WEB TECHNOLOGY LAB

Year : II **Semester : V**
Hours / Week : 5 **Subject Code :** 18UCS/USC5CP7

Credits : 3

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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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COIMBATORE – 641 020

For candidates admitted from academic year 2018-2019 onwards under New CBCS.

CORE: SOFTWARE ENGINEERING

Year : III **Semester : VI**
Hours / Week : 5 **Subject Code :** 18UCS/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:

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

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CORE: PYTHON AND IOT

Year : III **Semester : VI**
Hours / Week : 5 **Code :** 18UCS/USC6C13

Credits : 5

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 PYTHON 3: A Complete introduction to the Python language, Addison – Wesley, 2009.
2. Arshdeep Bagha, 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.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

CORE: COMPUTER NETWORKS AND CYBER-SECURITY

Year: III

Semester: VI | Course code: 18UCS/USC6C14

5 Hours / week | 5 Credits

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 Sunit Belpure, 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.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

Year : III **Semester : VI**
Hours / Week : 5 **Subject Code :** 18UCS/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 :** 18UCS/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 :** 18UCS/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
Hours / Week : 4
Semester : V
Subject Code : 18UCS/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.

SRI RAMAKRISHNA MISSION VIDYALAYA
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ELECTIVE: TCP/IP PROTOCOL SUIT

Year : III
Hours / Week : 4
Semester : V
Subject Code : 18UCS/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 :** 18UCS/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:

1. 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 :** 18UCS/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.

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ELECTIVE: SOFTWARE PROJECT MANAGEMENT

Year :III **Semester : VI**
Hours / Week :5 **Subject Code :** 18UCS/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 :** 18UCS/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.Sc Computer Science	Course Code: 18UCS/USC6CPR	
Course Title	: 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. The Broader 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: 18UCS/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 : 18UMA5EL1

Year : Third Year **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 (Unit I)
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 : 18UMA6EP1

Year : Third Year **Semester : VI**

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

1. Solving Quadratic equation.
2. Matrix Multiplication.
3. Mean and Standard Deviation.
4. Alphabetical order of names.
5. Descending and Ascending order numbers.
6. Electricity Bill Preparation.
7. Evaluation of Sin and Cos Series.
8. To Generate Fibonacci Series.
9. Calculation of NCR Values.
10. Biggest and Smallest number in the Array.
11. Write a HTML Program to format the text using all suitable HTML tags
12. Write a HTML Program to include the image in the webpage using suitable HTML tags
13. Write a HTML Program to include a picture as a background image with suitable HTML tags.
14. Write a HTML Program to demonstrate heading tags
15. Write a HTML Program to draw a table containing the semester marks of the student
16. Write a HTML Program to demonstrate frames
17. Write a HTML Program to demonstrate forms

Programme : B.Sc., Mathematics.

Course Title : ELECTIVE: INTRODUCTION TO C

Course Code : 18UMA6EL2

Year : Third Year **Semester : V**

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.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE

(AUTONOMOUS) COIMBATORE – 641 020

Programme : B.Com Co-operation **Subject Code :** 18UCO5EP1

Course Title : Elective- Practical **Semester : V**

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

Year : Third Year

ELECTIVE PRACTICAL : COMPUTER APPLICATIONS AND MIS

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: 18UEC3NM1

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.

SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS) COIMBATORE – 641 020

NME: WEB PROGRAMMING LAB

Course Code: 18UCS/USC4NM2

Year : II **Semester : IV**

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

1) Write a program in HTML
2) To illustrate text formatting features.
3) Print ordered and unordered list.
4) Illustrate Hyper link and Frame concepts.
5) Department Web site creation.
6) College Web site creation.
7) Illustration of style sheets.
8) Demonstrating Frame concepts.
9) Adding image to web document.
10) Preparation of class time table.
11) Using audio and video files in HTML.