NGM COLLEGE

Vision

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

Mission

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

Department of Information Technology

Vision

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

Mission

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

DEPARTMENT OF INFORMATION TECHNOLOGY

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE

SCHEME OF EXAMINATION

UNDER CBCS PATTERN GUIDED BY UNIVERSITY AND TANSCHE

(FOR THE STUDENTS ADMITTED FROM THE 2020-2023 BATCH)

OUTCOME BASED EDUCATION (OBE)

PART	SUBJECT CODE	SUBJECT TITLE	HOURS PER WEEK	EXAMINATION				CREDITS
				EX. HRS	INT	EXT	TOTAL	
SEMESTER I								
I	20UTL101	Tamil – I	6	3	30	70	100	3
	20UHN101	Hindi – I						
	20UFR101	French – I						
II	20UEN101	English – I	5	3	30	70	100	3
		CORE PAPERS:						
III	20UIT101	Programming in 'C'	4	3	30	70	100	4
	20UIT102	Computer System Architecture	5	3	30	70	100	4
	20UIT103	Lab. I - Programming in 'C'	4	3	20	30	50	2
		ALLIED PAPERS:						
	20UIT1A1	Mathematics – I (Statistics)	4	3	30	70	100	4
IV	20UHR101	Human Rights	1	2	--	50	50	2
	20HEC101	Value Education : Human Excellence Course - Personal Values	1	2	25	25	50	1
V		Extension Activities (See Annexure – I)						
	TOTAL		**30**				**650**	**23**
SEMESTER II								
I	20UTL202	Tamil – II	6	3	30	70	100	3
	20UHN202	Hindi – II						
	20UFR202	French – II						
II	20UEN202	English – II	5	3	30	70	100	3
		CORE PAPERS:						
III	20UIT204	Object Oriented Programming with Java	4	3	30	70	100	4
	20UIT205	Data Structures	4	3	30	70	100	4
	20UIT206	Lab. II - Programming in Java	4	3	20	30	50	2
		ALLIED PAPERS:						
	20UIT2A2	Mathematics – II (Discrete Mathematics)	4	3	30	70	100	4
IV	20EVS201	Environmental Studies	2	2	--	50	50	2
	20HEC202	Value Education : Human Excellence Course - Family Values	1	2	25	25	50	1
V		Extension Activities (See Annexure – I)						
	TOTAL		**30**				**650**	**23**

PART	SUBJECT CODE	SUBJECT TITLE	Hrs/ Week	EX. HRS	INT	EXT	TOTAL	CREDITS
SEMESTER III								
		CORE PAPERS:						
III	20UIT307	Operating Systems	5	3	30	70	100	4
	20UIT308	Relational Database Management System	5	3	30	70	100	4
	20UIT309	Service Oriented Architecture	5	3	30	70	100	4
	20UIT310	Lab. III – RDBMS	4	3	40	60	100	2
	20UIT311	Lab. IV – Web Designing (HTML, CSS, JavaScript & Angular)	4	3	40	60	100	2
		ALLIED PAPERS:						
	20UIT3A3	Microprocessor and Assembly Language Programming	5	3	30	70	100	4
IV	20UIT3N1/ 20UIT3N2	Skill Based Non-Major- I (Social Networks / Hardware &Networking)	1	2	--	50	50	2
	20HEC303	Value Education: Human Excellence Course - Professional Values	1	2	25	25	50	1
V		Extension Activities (See Annexure – I)						
		MOOC Course I [Extra Credit]	-	-	-	-	-	2
	TOTAL		**30**				**700**	**23**
SEMESTER IV								
III		**CORE PAPERS:**						
	20UIT412	Data Communication and Networks	5	3	30	70	100	4
	20UIT413	Advanced Java Programming	5	3	30	70	100	4
	20UIT414	Visual Programming	5	3	30	70	100	4
	20UIT415	Lab. V – Programming in Advanced Java	6	3	40	60	100	3
	20UIT416	Lab. VI - Visual Programming	2	3	20	30	50	2
		Project Internship	-	-	10	-	-	-
		ALLIED PAPERS:						
	20UIT4A4	Software Engineering	5	3	30	70	100	4
IV	20UIT4N3/ 20UIT4N4	Skill Based Non-Major- II (Data Analytics / Computer Security)	1	2	--	50	50	2
	20HEC404	Value Education: Human Excellence Course - Social Values	1	2	25	25	50	1
V		Extension Activities (See Annexure – I)			--	50	50	1
	TOTAL		**30**				**700**	**25**

PART	SUBJECT CODE	SUBJECT TITLE	Hrs/ Week	EX. HRS	INT	EXT	TOTAL	CREDITS
SEMESTER V								
III	20UIT517	Open Source Methodologies	6	3	30	70	100	4
	20UIT518	Information Security	6	3	30	70	100	4
	20UIT5E1/ 20UIT5E2/ 20UIT5E3	Major Elective - I	6	3	30	70	100	5
	20UIT519	Lab. VII - Open Source Methodologies	5	3	40	60	100	3
	20UIT520	Lab. VIII - Software Testing Tools	4	3	20	30	50	2
IV	20GKL501	General Knowledge & General Awareness (SBE) (Online)	**SS**	2	--	50	50	2
	20UIT5S1/ 20UIT5S2	Skill Based Major Elective - Lab. I Web Programming (Python / PHP)	2	2	--	50	50	2
	20HEC505	Value Education: Human Excellence Course - National Values	1	2	25	25	50	1
V		MOOC Course II [Extra Credit]	-	-	-	-	-	2
	TOTAL		**30**				**600**	**23**
SEMESTER VI								
III	20UIT621	Computer Graphics	6	3	30	70	100	4
	20UIT6E4/ 20UIT6E5/ 20UIT6E6	Major Elective - II	6	3	30	70	100	5
	20UIT6E7/ 20UIT6E8/ 20UIT6E9	Major Elective - III	6	3	30	70	100	5
	20UIT622	Lab. IX - Graphics & Multimedia	5	3	40	60	100	3
	20UIT623	Project	4	--	30	70	100	3
IV	20UIT6S3/ 20UIT6S4	Skill Based Major Elective - Lab. II DTP Software (CorelDraw / Photoshop)	2	2	--	50	50	2
	20HEC606	Value Education: Human Excellence Course - Global Values	1	2	25	25	50	1
	TOTAL		**30**				**600**	**23**
			180				**3900**	**140**

Annexure I: List of Part – V Subjects

S. No.	SUBJECT CODE	SUBJECTS
1	20UNC401	NCC
2	20UNS402	NSS
3	20USG403	Sports And Games
4	20URO404	Rotract Club
5	20URR405	Red Ribbon Club
6	20UYR406	Youth Red Cross
7	20UCA407	Consumer Awareness Club
8	20UED408	Entrepreneurship Development Cell
9	20UCR409	Center For Rural Development
10	20USS410	Student Guild Of Service
11	20UGS411	Green Society
12	20UEO412	Equal Opportunity Cell
13	20UFA413	Fine Arts Club

List of Major Elective courses V & VI Semesters only (CBCS method)

ELECTIVE	SEMESTER	SUBJECT CODE	SUBJECTS
I	V	20UIT5E1	Data Mining and Analytics
		20UIT5E2	Cloud Computing
		20UIT5E3	Digital Image Processing
II	VI	20UIT6E4	Embedded Systems
		20UIT6E5	E-Commerce
		20UIT6E6	Artificial Intelligence
III		20UIT6E7	Mobile Computing
		20UIT6E8	Software Project Management
		20UIT6E9	Multimedia Techniques

Bloom's Taxonomy Based Assessment Pattern

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

1. Theory Examinations: 70 Marks (Part I, II, & III)

(i) Test- I & II and ESE:

Knowledge Level	Section	Marks	Description	Total
K1 & K2 (Q 1 -10)	A (Q 1 – 5 MCQ) (Q 6–10 Define/Short Answer)	10 x 1 = 10	MCQ Define	70
K3 (Q 11-15)	B (Either or pattern)	5 x 4 = 20	Short Answers	
K4 & K5 (Q 16 – 21)	C (Q -16 is Compulsory and Q 17 – 21 answer any 3)	4 x 10 = 40	Descriptive/ Detailed	

2. Theory Examinations: 50 Marks (Part IV)

Knowledge Level	Section	Marks	Description	Total
K1& K2 (Q 1 -10)	A (Q 1 – 5 MCQ) (Q 6–10 Define/Short Answer)	10 x 1 = 10	MCQ Define	50
K3 (Q 11-18)	B (Answer 5 out of 8)	5 x 8 = 40	Short Answers	

3. Practical Examinations: 100/50 Marks

Knowledge Level	Section	Marks	Total
K3	Record work & Practical	60/30	100/50
K4		40/20	
K5			

4. Components of Continuous Assessment

Components		Calculation	CIA Total
Test 1	70	$\frac{70+70+60+10}{7}$	30
Test 2 (Model)	70		
Assignment, Seminar/Tutorial, Knowledge Enhancement	3*20		
Information Acquisition	10		

Programme Outcomes

PO1 To make students as computer professionals, who can be directly employed or start his/her own work as Programmer, Web Designer, Database User, Testing professional, Designer of a System and Network administrator or implementer.

PO2 To train students to a level where they can readily compete for the higher educational degree courses like MCA, M.Sc. (CS), M.Sc. (IT), MBA, etc.

PO3 Be acquainted with the contemporary issues, latest trends in technological development and there by innovate new ideas and solutions to existing problems.

PO4 Recognize the industry and social needs have the preparation to engage independent learning for developing the applications by project work.

Programme Specific Outcomes

PSO1 Have good mathematical ability to develop algorithms and solve the logical problems.

PSO2 Have adequate knowledge about hardware and software.

PSO3 Have sufficient skills in programming languages, web-based languages, designing and managing databases.

PSO4 To fulfill the current industry needs through advanced courses.

PSO5 To develop software and industrial applications by project work.

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT101	**Title**	**Batch:**	2020 - 2023
		Programming in 'C'	**Semester:**	I
Hrs/Week:	4		**Credits:**	4

Course Objective

To cultivate programming ability on logic development, clear view on control structures, pointers (memory management), file handling, etc.

Course Outcomes

K1	CO1	To keep in mind the fundamentals of C programming.
K2	CO2	To understand the concepts of problem solving techniques.
K3	CO3	To apply concepts and techniques for implementation.
K4	CO4	To evaluate the logical thinking in program development.

Units	Content	Hrs
Unit I	Programming development methodologies - Programming style – **Problem solving techniques:** Algorithm, Flowchart, Pseudo code. Structure of a C program – C character set - Delimiters – Keywords – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring and initializing variables – Type conversion. * *Operators and Expressions.*	**12**
Unit II	**Formatted and Unformatted I/O functions. Decision statements:** If, If...Else, Nested If. Else, Break, Continue, Go to, Switch, Nested switch...case, switch...case and nested ifs statements. **Loop control statements:** For, Nested for, While, Do...while and with while loops.	**10**
Unit III	**Arrays**: Initialization, definition, characteristics, * *One dimensional*, predefined streams, two dimensional, three or multi dimensional arrays – sscanf (), sprintf (). **String**s: Declaration and initialization, displaying, standard functions and applications. **Pointers:** Futures, Declarations, arithmetic operations, pointers and arrays, two dimensional arrays, array of pointers, pointers to pointers, pointers and strings, void pointers.	**10**
Unit IV	**Functions**: Definition, declaration, return statements, types, call by value and reference, returning more multiple values, function as an argument, function with arrays and pointers. **Structure and Union:** Features of structure, Declaration and initialization of structure, Structure within structure, Array of structure, Pointer to structure, structure and functions, typedef, Bit fields, Enumerated data types, Union, union of structures.	**10**
Unit V	**Files:** Streams and file types, * *Steps for file operation*, File I/O, Structures read and write, Other file functions, searching errors in reading or writing files, low level disk I/O, Command line arguments, I/O redirection. **Preprocessor directives:** #define, #include, #ifndef, #error, #line, #pragma, and Predefined macros.	**10**
	Total Contact Hrs ***** *self study*	**52**

Power Point Presentation, Seminar, Quiz, Assignments.

Books for study

- Ashok .N. Kamthane. (2004). *PROGRAMMING AND DATA STRUCTURES*. First Indian Print. Pearson Education: ISBN 81-297-0327-0.

Books for Reference

- Balagurusamy. E. (1998). *Programming in ANSI C*. Tata McGraw-Hill.
- Pradip Dey, Manas Ghosh. (2008). *Computer Fundamentals and Programming in c*. Oxford.

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	3	1	3
CO2	3	3	3	2	3
CO3	2	3	3	2	3
CO 3	3	3	1	1	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B. Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT102	**Title**	**Batch:**	2020 - 2023
		Computer System Architecture	**Semester:**	I
Hrs/Week:	5		**Credits:**	4

Course Objective

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

Course Outcomes

K1	CO1	To remember basic building block of digital computer system
K2	CO2	To understand the execution sequence of instruction through the processor
K3	CO3	To apply interfacing of various peripheral devices used with the system
K4	CO4	To analyze functioning of various parts of the computer from hardware point of view

Units	Content	Hrs
Unit I	**Binary Systems:** Numbers – Conversions – Complements – Codes – Logic. **Canonical & Standard Forms**. **Digital Logic Gates. Simplification of Boolean Functions:** Map method – Two & Three Variable Map – Four Variable Map.	**13**
Unit II	**Basic Computer Organization and Design:** Instruction Codes - Computer Registers – Computer Instructions – Instruction Cycle – Memory Reference Instructions – * *Input Output* and Interrupt.	**13**
Unit III	**Central Processing Unit (CPU):** General Register Organization – Stack Organization - Instruction Formats – Addressing Modes – Data Transfer and Manipulation – * *Program Control*.	**12**
Unit IV	**Input – Output Organization:** **Peripheral Devices*- Input – Output Interface – Asynchronous Data Transfer - Direct Memory Access (DMA) - CPU-IOP Communication.	**13**
Unit V	**Memory Organization:** Memory Hierarchy – Main Memory - Auxiliary Memory - Cache Memory – Associative Memory - Virtual Memory.	**14**
	Total Contact Hrs ***** *self study*	**65**

Presentations, Seminar , Quiz, Assignment

Books for study

- M. Morris Mano (2013). *Digital Logic and Computer Design*. 16th Impression, Pearson Publication. (Unit I)
- M. Morris Mano. (2008). *Computer System Architecture.* 3rd Edition .PHI (Units II, III, IV, V).

Books for Reference

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

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	3	2
CO2	1	3	3	1	1
CO3	1	3	1	2	1
CO4	2	3	1	2	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B. Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT103	**Title**	**Batch:**	2020 - 2023
		LAB. I – Programming in 'C'	**Semester:**	I
Hrs/Week:	4		**Credits**:	2

Course Objective

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

Course Outcomes

K3	CO3	To apply appropriate data structure, mathematical and scientific logic
K4	CO4	To analyze a problem in different logic
K5	CO5	To verify the solutions of various problems with input and output data

Content	Hrs
SAMPLE PROGRAM LIST **Test I** 1. Create a C program to implement basic operators. 2. Create a C program to implement if, if-else, nested if. 3. Create a C program to implement switch case. 4. Create a C program to implement while loop. 5. Create a C program to implement do-while loop. 6. Create a C program to implement for loop. 7. Create a C program to implement one dimensional array. 8. Create a C program to implement multi-dimensional array. 9. Create a C program to implement strings. 10. Create a C program to implement basic pointer operations. **Test II** 11. Create a C program to implement array of pointers. 12. Create a C program to implement functions using call by value. 13. Create a C program to implement functions using call by reference. 14. Create a C program to implement structure and array of structure. 15. Create a C program to implement union. 16. Create a file to perform read and write operations using file accessing modes. 17. Create a C program to implement preprocessor directives.	**52**

20UIT103

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	2
CO2	3	2	3	2	2
CO3	3	3	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT1A1	**Title:** Mathematics – I (Statistics)	**Batch :**	2020 - 2023
			Semester :	I
Hrs/Week:	4		**Credits :**	4

Course Objective

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

Course Outcomes (CO)

K1	CO1	To remember the formula of different Means, Median, Mode, Deviations, Correlation, Regression, Probability, Chi square test, Degree of Freedom, etc.
K2	CO2	To understand the concepts Central tendency, Dispersion, Correlation and regression, Probability and Sampling theory.
K3	CO3	To solve the problems by using formula to apply the programs
K4	CO4	To evaluate the results through the program outputs

Units	Content	Hrs
Unit I	**Measures of central tendency:** Mean: **Arithmetic Mean*, Weighted Arithmetic Mean, Combined Arithmetic Mean, Geometric Mean, Harmonic Mean, Median and mode – Relation between mean, median and mode.	12
Unit II	**Dispersion:** **Range* - Mean deviation - Standard deviation - Coefficient of Variation – Quartile Deviation.	9
Unit III	**Correlation:** Karl Pearson`s Coefficient of Correlation – Rank correlation**. Regression:** Regression Equations - **Difference between correlation & Regression.*	9
Unit IV	**Probability:** Permutation and Combination- Important terms in probability- **Measurement of Probability:** Classical Approach- Relative Frequency theory of probability – Personalistic view of probability – Axiomatic Approach of probability. **Theorems of probability:** Addition – Multiplication – Odds.	12
Unit V	**Sampling Theory and Test of Significance**: Introduction – Estimation theory – Testing of hypothesis – Testing if significance for large samples and small samples. **Chi Square Test:** Introduction – x^2 test, Degrees of freedom, Test of goodness of fit, Test of Independence.	10
	Total Contact Hrs * *Self-Study*	**52**

Seminar, Assignment, Discussion.

Books for study:

- Pillai R. S. N. Bagavathi V. (2019). *Statistical Methods***.** 8th Edition, Sultan Chand and Sons & Company Ltd. New Delhi.

Books for Reference:

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

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	2	2	1
CO2	2	2	2	2	1
CO3	3	2	3	3	2
CO4	3	2	3	2	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B. Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT204	**Title**	**Batch:**	2020 - 2023
		Object Oriented Programming with Java	**Semester**:	II
Hrs/Week:	4		**Credits**:	4

Course Objective

To provide knowledge about the basic concepts of OOPs, methods, interfaces multithreads, packages and applets.

Course Outcomes

K1	CO1	To keep in mind the basic concepts of OOPs
K2	CO2	To apprehend a knowledge about how to use java for internet applications
K3	CO3	To implement file, applet, thread concepts
K4	CO4	To review the usage of packages, exceptions and string concepts.

Units	Content	Hrs
Unit I	**Fundamentals of Object Oriented Programming**: Introduction – Paradigm - Basics – Benefits – Applications. **Java Evolution**: History – Features – Difference from C/C++ - * *Internet – World wide web* – Web browsers – Hardware and software requirements – Support systems –Environment. **Overview of Java language**. **Constants, Variables and Data types**.	11
Unit II	**Classes, Objects and Methods:** Introduction – Defining – Field, Method Declaration – Creating Objects – Accessing class members – Constructors – Method Overloading - Static Members – Nesting of Methods – Inheritance – Overriding – Final Variables, Methods and Classes. Finalizer Methods – Abstract methods and classes – Methods with Varargs – Visibility control. **Arrays, Strings and Vectors:** Introduction – * *One dimensional – Creation – Two-dimensional* – Strings - Vectors – Wrapper classes – Enumerated types – Annotations. **Interfaces: Multiple Inheritance.**	10
Unit III	**Packages: Putting classes together**: Introduction – API packages – System packages – Naming Conventions – Creation – Accessing – Using – Adding a Class to a package – Hiding classes – Static import. **Multithreaded Programming** : Introduction – Creation – Extending – Stopping and blocking – Life cycle – Using thread methods – Exceptions – Priorities – Synchronization – Implementing the Runnable interface – Inter-thread communication. **Managing Errors and Exceptions.**	11
Unit IV	**Abstract Windowing Toolkit (AWT) - Applet Programming:** Introduction – Difference between Applet and other Applications - Writing and Building Applet - Life Cycle – Creating Executable applets – Designing a Web page – Applet Tag – Applet to HTML – Running Applets – Passing Parameters – Aligning the display – * *HTML tags* – Numerical Values – User input – Event Handling.	10
Unit V	**Managing Input / Output Files:** Introduction – Streams – Stream Classes – Byte Stream – Character Stream – Using Stream – Useful I/O Classes – File Classes – I/O Exceptions – File Creation – Reading Writing Characters and Bytes – Primitive Data Types – Concatenating and Buffering - Random Access File – Interactive I/O – Other Stream Classes.	10
	Total Contact Hrs * *self study*	**52**

Presentations, Seminar, Quiz, Assignment, Case study

Books for study

- E. Balagurusamy. (2019). "*Programming with JAVA – A Primer*", Tata McGraw-Hill Publishing Company Limited, 6th Edition. (Unit I, II, III, V)

- Instructional Software Research and Development (ISRD) Group. 2001. "*Introduction to Object Oriented Programming through Java*", Tata McGraw-Hill Publishing Company Limited, New Delhi. (Unit IV – AWT)

Books for Reference

- Herbert Schild**,** (2002). *Java Complete Reference*, 5th Edition, Tata McGraw Hill Pub

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	3	2	2
CO2	1	1	3	3	3
CO3	1	2	3	2	2
CO4	1	1	3	2	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B. Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT205	**Title**	**Batch:**	2020 - 2023
		Data Structures	**Semester:**	II
Hrs/Week:	4		**Credits:**	4

Course Objective

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

Course Outcomes

K1	CO1	To recollect basic concepts of data handle.
K2	CO2	To comprehend data structures like stack, queue, linked list and trees.
K3	CO3	To implement data structure techniques in problem solving
K4	CO4	To analyze space and time complexity of algorithms and to evaluate various data structures.

Units	Content	Hrs
Unit I	**Arrays:** Introduction to Linear and Non Linear Data Structures - Arrays in C – **Single Dimensional Arrays* - Array Operations. **Linked List:** Introduction to List and Linked Lists - Dynamic Memory Allocation - Basic Linked List Operations- Doubly Linked List - Circular Linked List - Atomic Node Linked List - Linked List in Arrays - Linked List versus Arrays.	**13**
Unit II	**Stacks:** Introduction to Stacks - Stack as an Abstract Data Type - Representation of Stacks Through Arrays - Representation of Stacks Through Linked List - **Applications of Stacks* - Stacks and Recursion.	**8**
Unit III	**Queues:** Introduction - Queue as an Abstract Data Type - Representation of Queues - Circular Queues - Double Ended Queues - Dequeue - Priority Queues - **Application of Queues*.	**9**
Unit IV	**Binary Trees:** Introduction to nonlinear Data Structure - Introduction to Binary Trees - **Types of Trees* - Definitions - Properties - Representation - Operations – Traversal - Reconstruction - Counting Number - Applications. **Searching**: An Introduction - Binary Search-Indexed Sequential search.	**11**
Unit V	**Graph:** Traversal – Spanning trees. **Sorting**: Sorting - An Introduction - Efficiency of sorting Algorithms - Bubble sort - Selection sort - Quick sort - Insertion sort - Merge sort - Binary Tree Sort - Radix sort - Shell sort – Heap sort. **Hashing:** An Introduction - Hash functions.	**11**
	Total Contact Hrs. * *self study*	**52**

Presentations, Seminar , Quiz, Assignment, Activity, Case study

Books for study

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

Books for Reference

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

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	3	1	2
CO2	3	3	3	2	2
CO3	2	2	3	3	3
CO4	3	3	3	2	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B. Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT206	**Title**	**Batch:**	2020 - 2023
		LAB. II – Programming in Java	**Semester:**	II
Hrs/Week:	4		**Credits**:	2

Course Objective

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

Course Outcomes

K3	CO3	To apply basic object oriented concepts
K4	CO4	To analyze the usage of packages, exceptions, thread, OOPs
K5	CO5	To verify the working of applications using AWT, frames and applet

Content	Hrs
SAMPLE PROGRAM LIST **Test I** 1. Program to create a class using constructor. 2. Program to implement method overloading. 3. Program to implement method overriding. 4. Program to implement one and multi dimensional array. 5. Program to implement multiple inheritance using interfaces. 6. Program to create packages and sub packages. **Test II** 7. Program for implementing threads. 8. Program to implement inter-thread communication. 9. Program for Exception Handling 10. Program to create shapes using applets. 11. Program to handle events. 12. Program to create a form using AWT Components. 13. Program to create files.	**52**

20UIT206

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	2
CO2	3	2	3	2	2
CO3	3	3	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT2A2	**Title:** Mathematics – II (Discrete Mathematics)	**Batch :**	2020 - 2023
			Semester :	II
Hrs/Week:	4		**Credits :**	4

Course Objective

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

Course Outcomes (CO)

K1	CO1	To remember the concepts of set theory, mathematical logic, relations and graph theory.
K2	CO2	To understand the basic terminology of discrete mathematics
K3	CO3	To execute discrete notations in the programs
K4	CO4	To evaluate the discrete concepts through programs

Unit	Content	Hrs
Unit I	**Set Theory**: Introduction-Set & its Elements-Set Description-**Types of sets*-Venn-Euler Diagrams - Set operations & Laws of set theory - Fundamental products - partitions of sets - min sets - Algebra of sets and Duality – Inclusion and Exclusion principle	**10**
Unit II	**Mathematical Logic**: Introduction - Propositional Logic –Introduction, Proofs – * *Basic logical operations* – Tautologies – Contradiction - Predicate calculus.	**10**
Unit III	**Relations**: Binary Relations – Set operation on relations -Types of Relations – Partial order relation – Equivalence relation – Composition of relations. **Functions:** Types of functions – Invertible functions – Composition of functions.	**10**
Unit IV	**Graph Theory**: Basic terminology – paths, cycle & Connectivity – Sub graphs – Types of graphs – Representation of graphs in computer memory - Trees - Properties of trees – Binary trees – Computer Representation of general trees.	**10**
Unit V	**Number Theory:** Introduction – properties of integer – Greatest Common Divisor – Euclidean algorithm – * *Least Common Multiple* – testing for Prime number. **Language and Grammar:** Introduction – The set theory of strings – Languages – Regular expressions and Regular languages – Grammar – Finite state machine.	**12**
	Total Contact Hrs * *Self-Study*	**52**

Seminar, Assignment, Discussion.

Books for study:

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

Books for Reference:

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

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	2	2	1
CO2	3	2	2	2	1
CO3	3	2	3	3	2
CO4	3	2	3	2	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT307	**Title:**	**Batch :**	2020 - 2023
		Operating Systems	**Semester :**	III
Hrs/Week:	5		**Credits :**	4

Course Objective

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

Course Outcomes (CO)

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

Units	Content	Hrs
Unit I	**Operating System-Functions and Structure:** Operating System Definition- Different services of Operating System- Uses of System Calls- Issue of Portability-Operating System Structure- Virtual machine- Booting. **Information Management:** Introduction - The File System- Introduction - Block and Block numbering scheme - **Relationship between OS and DMS* - File Directory entry - Open/Close Operations. **Device Driver (DD):** The Basics, I/O Procedure, I/O Scheduler.	13
Unit II	**Process Management:** Introduction – States – Transitions – Operations on a Process – Process Scheduling – Multithreading. **Inter Process Communication** - The Producer Consumer Problem. **Solutions to the Producer Consumer problems:** Interrupt Disabling/Enabling - Lock-flag – Primitive for mutual exclusion - Alternating Policy – Semaphores - **Classical IPC Problems*.	13
Unit III	**Deadlocks:** Introduction - Graphical Representation of Deadlock - Deadlock Prerequisites - Deadlock Strategies. **Memory Management**: Introduction - **Single Contiguous Memory Management* - Fixed Partition Memory Management - Variable Partitions - Non Contiguous Allocation General Concepts: Paging, Segmentation. **Virtual Memory Management System:** Jargon – Page Replacement Policies.	13
Unit IV	**Parallel Processing:** Introduction - Difference between Distributed and Parallel Processing - **Advantages of Parallel Processing* - Machine Architectures supporting Parallel Processing - Operating System for Parallel Processing. **Distributed Processing**: Introduction - Distributed Processing - Process Migration – RPC - Distributed Processes - Distributed File Management - Cache Management.	14
Unit V	**Windows NT/2000:** History – Programming: Native NT API – Win32 API – Registry. Structure – Booting – **Processes and Threads* – Memory Management – NTFS – Security. **Windows XP & 7**: Introduction – Design principles - Architecture.	12
	Total Contact Hrs ***** *Self Study*	**65**

Seminar, Assignment, Quiz, Discussion.

Books for study:

- Achyut s Godbole. (2005). *Operating Systems*, 2nd Edition, TMH Publications (Units I – IV).

Web References: (Unit V)

- https://www.os-book.com/OSE1/slide-dir/PDF-dir/ch16.pdf
- http://cc.ee.ntu.edu.tw/~farn/courses/OS/slides/ch22.pdf

Books for Reference:

- H. M Deitel. (2003). *Operating Systems*, 2nd Edition, Pearson Education Publication.
- John J. Donovan. (1991). *Systems Programming*, TMH Publications.
- Mark G. Sobell, (2004 Edition), *A Practical Guide to Red Hat Linux 8*, Pearson Education.
- W. Frank Ableson, Robisen, Chris king. (2011), *Android in Action*, 2nd Edition, Dream Tech Press.

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	3	3	2
CO2	3	3	3	2	2
CO3	3	3	3	3	2
CO4	3	3	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B. Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT308	**Title**	**Batch:**	2020-2023
		Relational Database Management Systems	**Semester:**	III
Hrs/Week:	5		**Credits:**	4

Course Objective

To provide better understanding of various concepts of DBMS, Oracle, normalization, data management and retrieval, PL/SQL commands, operations and Security.

Course Outcomes

K1	CO1	To keep in mind the basic concepts of database
K2	CO2	To get the idea of a database from SQL statements
K3	CO3	To execute different forms of queries using SQL and PL/SQL statements
K4	CO4	To analyze various data models which describe the structure of database

Units	Content	Hrs
Unit I	**Database Concepts:** Database – DBMS Vs RDBMS- Normalization -Introduction to Oracle-Software development tools for Oracle- Introduction to SQL. **Interactive SQL Part - I :** Table Fundamentals- Create Table- Viewing -Eliminating Duplicate Rows -Sorting - Creating a Table from a Table - Insert -Delete - Update- Modify- Rename- Truncate- Destroy- Creating Synonyms- Examining Objects.	12
Unit II	**Interactive SQL Part - II:** Data Constraints - Types-Defining Different Constraints - User Constraints- Defining Integrity Constraints - Dropping Integrity Constraints -Default value concepts. **Interactive SQL Part - III:** Computations done on Table Data- Sysdate- Oracle Functions - Date Conversion Functions - Date Functions - Miscellaneous Functions.	13
Unit III	**Interactive SQL Part - IV:** Grouping Data from Tables- Sub queries - Joins - Concatenating Data from table Columns- Union, Intersect and Minus Clause. **SQL Performance Tuning:** Indexes- Multiple Indexes - Using Rowid to delete Duplicate Rows- Using ROWNUM in SQL -Views-Clusters- Cluster Indexes- Sequences-Snapshots.	13
Unit IV	**Security Management using SQL:** Granting and Revoking Permissions - Revoking Privileges Given. **Introduction To PL/SQL:** Advantages of PL/SQL- Generic PL?SQL BLOCK - PL/SQL Execution Environment - PL/SQL - Control Structure. **SQL Transactions:** Oracle Transactions- Processing PL/SQL Block- Cursor- Cursor FOR Loops- Parameterized Cursors- Cursor within Cursor.	13
Unit V	**PL/SQL Security:** Locks- Error handling in Pl/SQL - Oracles Named Exception Handlers. **PL/SQL Database Objects:** Procedures and Functions Reside- advantages - Procedures Vs Functions- Oracle Packages - Database Triggers- Types - Deleting a Trigger- Raise Application Error Procedure.	14
	Total Contact Hrs ***** *self study*	**65**

Presentations, Seminar , Quiz, Brain storming, Case study

Books for study

- Ivan Bayross (2017), *SQL, PL/SQL the Programming Language of ORACLE*, 4th Edition, BPB Publications.

Books for Reference

- Nilesh Shah. (2009), *Database Systems Using Oracle*, 2nd Edition, PHI.
- Arun Majumdar & Pritimoy Bhattacharya. (2001). Database *Management Systems,* TMH.
- Jeffrey A. Hoffer, Joey F. George, Joseph S. Valacich, (2009). *Modern Systems Analysis and Design*. 2nd Edition. 5th Edition. Pearson Education Pub's.
- Gerald V. Post. (2005). *Database Management Systems*, 3rd Edition, TMH.

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	2	3	3
CO2	1	2	3	3	3
CO3	1	2	3	3	3
CO4	2	3	3	1	1

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT309	**Title:**	**Batch :**	2020-2023
		Service Oriented Architecture	**Semester :**	III
Hrs/Week:	5		**Credits :**	4

Course Objective

Understand the various concepts of Client/Server computing and web services, SOAP, UDDI, XML, WSDL etc.

Course Outcomes (CO)

K1	CO1	To keep in mind the various client/server concepts, middleware.
K2	CO2	To Understand the basic concepts of C/S and service architectures
K3	CO3	To apply web services in WSDL
K4	CO4	To analyze the various registries, RPC and messages in web services.

Unit	Content	Hrs
Unit I	**Distributed Information Systems**: Design of an Information system – Architecture – communications. **Middleware:** Understanding middleware -RPC and related middleware.	13
Unit II	**Middleware:** TP monitors - Object brokers - Message-oriented middleware. **Web Technologies:** Exchanging Information over the Internet-Web technologies for supporting remote clients-Application servers-Web technologies for application integration.	13
Unit III	**Web Services**: **Introduction* – **Emergence of web services**: Background-Server-side Architecture progression - Client-side Architecture progression-Service-oriented Architecture and web services. **Web Services Application Scenario**: Background - Web services Hype and the industry -Web services and the industry acceptance.	13
Unit IV	**Extensible Markup Language**: **Background – History – XML* - Validation of XML data - Advanced XML-Document Constraining. **Simple Object Access Protocol:** Background – SOAP - Interaction –Modeling – Encoding - Binding. **Web services Description Language:** Background - WSDL - Web service invocation and WSDL - Web services description details - Service Description through WSDL.	14
Unit V	**Registries: Universal Description, Discovery and Integration**- Background-UDDI – Nomenclature - Core UDDI - Service publication - Discovery. **Remote Procedure Call and Messaging:** Background-Synchronous Web services-Asynchronous web Services-Remote procedure call or messaging- **Case Study**: Industry adoption.	12
	Total Contact Hrs **Self Study*	**65**

20UIT309

Presentation, Seminar, Assignment, and Discussion

Books for study:

- Gustavo Alonso, Fabio Casati, Harumi kuno, Vijay Machiraju, (2009*), "Web Services Concepts, Architectures and Applications"*, Springer, First Reprint (Units - I & II).
- B V Kumar, S V Subrahmanya, (2009), *"Web Services – An Introduction*", Tata McGraw Hill Pub, Sixth Reprint (Units – III, IV & V).

Books for Reference:

- Neil Jenkins, et al, (1996), "*Client/Server Unleashed*" Tec Media Publications, First Edition.
- Thomas Erl, (2008), "*Service Oriented Architecture Concepts, Technology and Design*", Pearson Education, Second Impression.
- Thomas Erl, (2016), *"Service Oriented Architecture Analysis and Design for Services and Microservices"*, Prentice Hall, Second Edition.

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	2	3	3
CO2	1	3	3	3	2
CO3	2	2	2	2	3
CO4	1	3	2	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B. Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT310	**Title**	**Batch:**	2020 - 2023
		Lab. III - RDBMS	**Semester:**	III
Hrs/Week:	4		**Credits**:	2

Course Objective

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

Course Outcomes

K3	CO3	To apply appropriate queries in Oracle and various tags to the Angular JS applications.
K4	CO4	To analyze various commands in SQL and PL/SQL and tags and concepts in the application.
K5	CO5	To create various applications.

Content	Hrs
SAMPLE PROGRAM LIST **Test I** 1. DDL commands. 2. Constraints 3. DML commands. 4. Arithmetic operations on tables. 5. Where clause 6. Case structures 7. Built-in functions 8. Group functions 9. Joins and set operations 10. Sub queries **Test II** PL/SQL Block structure. 11. Control Structures in PL/SQL. 12. Embedded SQL 13. Cursors 14. Exceptions 15. PL/SQL Records and Tables. 16. Procedures and Functions 17. Packages and Triggers. 18. Use Java as Front end and connect the oracle tables.	**52**

20UIT310

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	3	2	1
CO2	1	1	3	3	3
CO3	1	3	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT311	**Title:** Lab. IV – Web Designing (HTML, CSS, JavaScript & Angular)	**Batch :**	2020 - 2023
			Semester :	**III**
Hrs/Week:	4		**Credits :**	2

Course Objective

To known the various scripting programming concepts of HTML tags, Style sheets, Angular Modules, Controllers, Scopes, Filters, Services, Events, API, Routing and Animation and JavaScript.

Course Outcomes (CO)

K3	CO3	To deploy the various HTML tags and CSS for page design
K4	CO4	To analyze the various HTML tags and concepts of JavaScript programs.
K5	CO5	To create the various Angular applications.

Content	Hrs
SAMPLE PROGRAM LIST **Test I** **HTML & CSS** 1. Webpage creation using CSS. 2. Ordered List and Un-Ordered List. 3. Table Tags. 4. Frame creation. 5. Font Attributes. 6. Style sheets **JavaScript** 1. Program to Display Digital clock. 2. onClick and onChange Event. 3. onFocus Event and onSubmit Event. **Test II** **JavaScript** 4. onMouserOver and onMouseOut example 5. Displaying Date and Time. 6. createElement and createTextNode example. 7. Redirection using location object.	**52**

Angular 1. Program to create a modules & Controllers in a file. 2. Program to implement the scopes. 3. Program to apply filters. 4. Program to create services. 5. Programs to create simple tables. 6. Program to perform events. 7. Program to create a new form. 8. Program to validate the email username & password. 9. Program to implement API. 10. Program to implement routing. 11. Program to perform animation. 12. Program to create a simple application -I. 13. Program to create a simple application - II.	
Total Contact Hrs	**52**

Mapping

PSO / CO	PS01	PS02	PS03	PS04	PS05
C03	2	2	3	3	3
C04	2	2	3	3	3
C05	2	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT3A3	**Title:** Microprocessor and Assembly Language Programming	**Batch :**	2020-2023
			Semester :	III
Hrs/Week:	5		**Credits :**	4

Course Objective

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

Course Outcomes (CO)

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

Unit	Content	Hrs
Unit I	**Introduction to Microprocessors**: * *Evolution of microprocessors* – Single- chip Microcomputer – Embedded Microprocessors – Bit - Slice processors – Microprogramming – RISC and CISC Processors – Scalar and Superscalar Processors – Vector Processors – Array Processors – Symbolic Processors – Digital Signal Processors Intel 8086 – Pin Description of Intel 8086 – Operating modes of 8086 – Register organization of 8086 – BIU and EU – Interrupts – 8086 based computer system – Addressing Modes of 8086.	14
Unit II	**8086 Instruction Set** – * *Instruction Groups* – Addressing Mode Byte – Segment Register Selection – Segment Override – 8086 Instructions. **Assembly Language Programs for 8086**: Largest Number, Smallest Number in a Data Array – Numbers in Ascending and Descending order – Block Move or Relocation – Block Move using REP instruction – Sum of a series – Multi byte Addition.	13
Unit III	**Intel 386 and 486 Microprocessors**: Intel 386 and 486 Microprocessor – 486DX Architecture – Register Organization of 486 Microprocessor – Memory Organization – Operating Modes of Intel 486 – Virtual Memory – Memory Management Unit – Gates – Interrupts and Exceptions – Addressing Modes of 80486 – Pin Configuration - Input devices – * *Output devices*.	13
Unit IV	**Other Microprocessors :** Pentium – Pentium Pro – Pentium II**,** III, IV - Alpha – Cyrix – MIPS – AMD Processors. **Advanced Core Processors:** Dual Core - Core2 Duo - i3 - i5 - i7 – i9 - Quad – Octa - Penta – Comparision. **Mobile Processors:** Introduction – Models – Architecture.	13
Unit V	**Interfacing of A/D Converter and Applications**: Introduction – Interfacing of ADC 0808 or ADC 0809 to Intel 8086 – Bipolar to Unipolar Converter – Sample and Hold Circuit, LF 398 – Microprocessor-based Measurement and Control of Physical Quantities.	12
	Total Contact Hrs **Self Study*	**65**

Seminar, Assignment, Quiz and Discussion

Books for study:

- Badri Ram. (2007). *Advanced Microprocessors and Interfacing*. Tata McGraw-Hill Publishing Company Limited, Fourteenth reprint.
- Course Materials from INTERNET (Advanced Core Processors).

Web References: (Unit IV)

- https://en.wikipedia.org/wiki/List_of_Intel_Core_i9_microprocessors
- https://images-eu.ssl-images-amazon.com/images/I/C1Ip5bIG39S.pdf
- https://www.intel.com/content/dam/www/public/us/en/documents/datasheets/8th-gen-core-family-datasheet-vol-1.pdf

Books for Reference:

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

Mapping

PSO / CO	PS01	PS02	PS03	PS04	PS05
C01	2	3	2	3	2
C02	2	3	2	3	2
C03	2	3	3	3	2
C04	2	3	2	3	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT3N1	**Title :** Skill Based Non-Major- I Social Networks	**Batch:**	2020 - 2023
			Semester:	III
Hrs/Week:	1		**Credits:**	2

Course Objective

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

Course Outcomes

K1	CO1	To keep in mind basics of Social Networks
K2	CO2	To understand the classification of Social Media
K3	CO3	To deploy various social media platforms
K4	CO4	To analyze the types of social media.

Units	Content	Hrs
Unit I	Social Networks: Introduction – Definition - History	2
Unit II	Impact of social media - Privacy and Identity : Data Sharing and Safety	2
Unit III	Types of services – Platforms - Building and Strengthening of social media.	3
Unit IV	Spamming in social networks – social aspects- Design Issues	3
Unit V	Growing Constituency through Social Media – A glance at social media Do's and Don'ts.	3
	Total Contact Hrs	13

Presentations, Group discussions, Quiz, Assignments

Online Reference Materials

1. https://www.usaid.gov/sites/default/files/documents/1866/SMGuide4CSO.pdf
2. https://www.symantec.com/content/en/us/.../the_risks_of_social_networking.pdf

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	1	3
CO2	1	3	1	1	2
CO3	1	3	1	1	2
CO4	1	3	1	1	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT3N2	**Title**	**Batch:**	2020 - 2023
		Skill Based Non-Major I - Hardware & Networking	**Semester:**	III
Hrs/Week:	1		**Credits**:	2

Course Objective

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

Course Outcomes

K1	CO1	To recollect the basics of I/O hardware
K2	CO2	To understand about working of processors
K3	CO3	To implement a network operating system
K4	CO4	To analyze different types of networks and topologies

Units	Content	Hrs
Unit I	**Processors:** Microchips, Miniaturization and Mobility - CPU and Main Memory - Microcomputer System Unit.	2
Unit II	**Input and Output Hardware:** Input Hardware - Keyboard Input- Pointing Devices - Output Hardware - Display Screens.	3
Unit III	**Communication Channels:** Electromagnetic Spectrum - Twisted Pair - Coaxial Cable - Fiber Optic Cable – Microwave and Satellite Systems - Wireless Communications - Next Generation Wireless Communications.	4
Unit IV	**Communication Networks:** Types of Networks - Network Operating System - Host and Node - Servers and Clients – Advantages of Networks.	2
Unit V	**Local Networks:** N/W Types - Types of LAN's – Components – Topology - Impact of LAN.	2
	Total Contact Hrs	**13**

Presentations, Seminar , Quiz, Assignment

Books for study

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

Books for Reference

- Course Material from Internet.

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	3	3
CO2	1	3	2	3	3
CO3	1	4	2	3	3
CO4	2	3	2	2	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT412	**Title**	**Batch:**	2020 - 2023
		Data Communication and Networks	**Semester:**	IV
Hrs/Week:	5		**Credits:**	4

Course Objective

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

Course Outcomes

K1	CO1	To remember basics of data communication and networking
K2	CO2	To comprehend various types of networks and topologies
K3	CO3	To implement routing algorithms
K4	CO4	To review different ways of accessing the internet

Units	Content	Hrs
Unit I	Introduction to Data Communications and Networking – **Information Encoding* - Analog and Digital Transmission Methods – Modes of Data Transmission and Multiplexing.	12
Unit II	**Transmission Errors**: Detection and Correction - **Transmission Media**: Guided Media, Unguided Media. **Network Topologies**: Mesh, Star, Tree, Ring, Bus topology. Switching- Circuit, Message, Packet switching. Routers and Routing – Factors affecting Routing Algorithms – Routing Algorithms – **Approaches to Routing*.	13
Unit III	Network Protocols and OSI Model – **TCP/IP* - Local Area Networks (LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN) – Integrated Services Digital Network (ISDN).	13
Unit IV	**X.25 Protocol**: Working principle-Characteristics – Packet format – operations. **Frame Relay:** Need – Working principle – Frame format-congestion & traffic control – FRAD & Features. **Asynchronous Transfer Mode:** Introduction- Packet size- Virtual circuits – Cells- **Switching, Layers*.	14
Unit V	Internetworking Concepts, Devices, Internet Basics, History and Architecture. **Ways of Accessing the Internet:** Introduction- Dial- up access- Leased lines- DSL- Cable modems.	13
	Total Contact Hrs * *self study*	**65**

Presentations, Group discussions, Seminar , Quiz, Assignment

Books for study

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

Books for Reference

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

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	2	2
CO2	3	3	3	2	2
CO3	3	3	3	3	1
CO4	1	3	3	3	3

Low – 1, Medium – 2, High – 3

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

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Programme Code:	B.Sc.	**Programme Title:**		Bachelor of Information Technology
Course Code:	20UIT413	**Title**	**Batch:**	2020 - 2023
		Advanced Java Programming	**Semester:**	IV
Hrs/Week:	5		**Credits:**	4

Course Objective

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

Course Outcomes

K1	**CO1**	To recollect the knowledge of GUI based applications, Web based applications and Database applications.
K2	**CO2**	To understand development of the Internet programming through java programming.
K3	**CO3**	To apply different powerful GUI components from existing applications to create new web pages.
K4	**CO4**	To analysis different applications for solving the real time problems in Industry.

Units	**Content**	**Hrs**
Unit I	**Swing Basic Concepts:** JFC- The Swing and the AWT - Swing Packages - Structure of A Swing Application – Top - Level Swing Containers - Lightweight Swing Container - JComponent Class - Basic Swing Components - Swing Text Components. **Exploring Swing:** Menu Components -Space Saving Lightweight Containers - Advanced Components – Virtual Desktop Components -Advanced Text Component - **New Layout Managers.*	13
Unit II	**Java Beans**: Definition - Advantages - Application Builder Tools - Using The Bean Development Kit (BDK) - JAR Files - Developing a Simple Bean Using the BDK - Using Bound Properties - Using the Bean info Interface - **Constrained Properties* - *Persistence* - *Customizers* - The Java Bean API - Using Bean Builder.	13
Unit III	**JDBC:** Architecture - **JDBC-ODBC Relationship* – Types of Drivers – Components - Interfaces and classes - Steps for Querying the Database with JDBC - Creating an ODBC Data source - Querying and updating Database Tables - passing parameters to a statement. **Servlets**: Introduction-Architecture - Designing - Servlet generating Plain Text, HTML - Handling GET Request.	13
Unit IV	**Cookies**: Overview of cookies – Servlet cookie API – Read, Use, Send cookies in a Servlet, Get client's address in a Servlet – Hit counter example. **JSP:** Introduction – Scripting elements - life cycle.	12
Unit V	**JSTL Tags**: Overview – EL Support – i18n support - Database Support (SQL Tags) – XML support. **AJAX:** Introduction – working concepts - Benefits - Role of Ajax in enhancing the user experience on the web - Rich internet application - What can Ajax do? - Impact of Ajax on user experience - on mobile - Traditional means of web application development - Web application development - Data exchange - Advantages and disadvantages - Web framework XML HTTP request object – Examples (First Program and Login Form).	14
	Total Contact Hrs ** Self Study*	**65**

Seminar, Assignment, Quiz and Discussion

Books for Study:

- ISRD Group, (2007), *Introduction to Object Oriented Programming through Java*, Tata McGraw-Hill Publishing Company Limited, New Delhi. (Units I, III)
- Herbert Schild**,** (2002). *Java Complete Reference*, 5th Edition, Tata McGraw Hill Pub (Unit II).
- S. Padma Priya, (2011), *Web Technology*, Scitech Pub (Units IV, V).

Books for Reference:

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

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	3	3	2
CO2	3	3	3	3	2
CO3	3	3	3	3	3
CO4	3	3	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT414	**Title:**	**Batch :**	2020 - 2023
		Visual Programming	**Semester :**	IV
Hrs/Week:	5		**Credits :**	4

Course Objective

Understand the various concepts of C#.Net (Data types, Statements, Properties, Inheritance, Polymorphism, Multithreading, Database Connectivity and Web Services).

Course Outcomes (CO)

K1	**CO1**	To keep in mind the various statements, data types, properties, Indexes, Interfaces, Events and Attributes, etc.
K2	**CO2**	To Understand the basic concepts of Methods, Arrays, Overloading, Threading, File Streams, and Web Services.
K3	**CO3**	To apply the concepts into the Lab. programs.
K4	**CO4**	To analyze the various controls of OOPs, Windows Applications and Web Services.

Units	Content	Hrs
Unit I	**Visual C#.Net:** Introduction - Features – Data types and console I/O. **Control Statements (if, switch, while, do…while, for, for...Each, go to)*. **Arrays:** One Dimensional, Two Dimensional, Jagged. **Methods:** (value, ref, out, params) –Overloading.	12
Unit II	**Classes and Objects:** Introduction – Definition - Data members (constant, Read-only). **Constructors: Overloading – Copy – Static*. **Properties, Indexes and Operator Overloading:** Introduction – Properties – Indexes – Operator overloading – Conversion operators**. Inheritance and Polymorphism:** Introduction – Example – Method Overriding – Accessing Base class Members and Constructors – Virtual methods – Abstract Classes and Abstract Methods – Sealed classes.	13
Unit III	**Interfaces**: Introduction – Definition and usage – Multiple implementations – Inheritance. **Namespaces and Components** – Namespaces – Components – Components and Namespaces – Access modifiers. **Delegates, Events and Attributes**. **Exception handling:** Introduction – Mechanism (Default, User – defined). Backtracking – throw statement – Custom Exception. **Multithreading:** Introduction – Usage – Thread Class and Priority – Synchronization.	14
Unit IV	**I/O Streams:** Introduction – Streams – Binary Data files – Text files – Data files – File and Directory Operations. **Windows applications** - I. **Windows applications-II**. **Database connectivity.**	13
Unit V	**Basic Web controls. Validation and list web controls:** Introduction – validation – list. **User and Custom web controls:** Introduction – **User controls* – controls and custom properties, controls. **Web services**: Introduction – concepts – creation – Creating a web service that use data source. **Case Study:** Develop a unique application using this course.	13
	Total Contact Hrs **Self Study*	**65**

Presentation, Seminar, Assignment, and Discussion

Books for study:

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

Books for Reference:

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

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	2	2	3	3
CO2	2	1	3	3	3
CO3	3	2	3	3	3
CO4	2	2	2	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT415	**Title:** Lab. V – Programming in Advanced Java	**Batch :**	2020 - 2023
			Semester :	IV
Hrs/Week:	5		**Credits :**	3

Course Objective

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

Course Outcomes

K3	**CO3**	To apply the different components of java programming.
K4	**CO4**	To analysis the concepts to enhance in the application level.
K5	**CO5**	To validate the user friendliness and desire performance implied for given input.

Contents	Hrs
Test I 1. Create JCheckBox 2. Creating a menu 3. Program for swing 4. JTabbedPane 5. Function of JTree 6. Create JScrollPane using swing **Test II** 7. Develop a Generic Servlet. 8. Implement JDBC using Servlet. 9. Create a Javabean to create Juggler Bean. 10. Generate simple property Javabean	**65**
Total Contact Hrs	**65**

20UIT415

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO3	2	2	3	2	2
CO4	1	2	3	3	3
CO5	2	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT416	**Title:** Lab. VI - Visual Programming	**Batch :**	2020 - 2023
			Semester :	IV
Hrs/Week:	3		**Credits :**	2

Course Objective

Understand the practical experience in various concepts of C#.Net (Data types, Statements, Properties, Inheritance, Polymorphism, Multithreading, and Database Connectivity and Web Services).

Course Outcomes (CO)

K3	**CO3**	To apply the concepts of web oriented programs.
K4	**CO4**	To analyze the various commands and concepts.
K5	**CO5**	To verify the results for the different input data.

Content	Hrs
Sample Program List **Test I:** 1. Switch Statement 2. Method overloading. 3. Constructor overloading 4. Implement Inheritance 5. Create User-Defined exception**.** 6. Create an application using button controls (check box, radio). 7. Generate Monthly calendar. **Test II:** 8. Create applications using controls (trackbar, panel, tree view) 9. Create applications using controls (splitter, menu dialog boxes). 10. Implement ADO.Net. 11. Generate basic manipulation using web controls. 12. Check All validation controls using web controls. 13. Creating a simple web service using controls.	39
Total Contact Hrs	**39**

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO3	2	2	3	3	3
CO4	1	2	3	3	3
CO5	1	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT4A4	**Title:**	**Batch :**	2020-2023
		Software Engineering	**Semester :**	IV
Hrs/Week:	5		**Credits :**	4

Course Objective

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

Course Outcomes (CO)

K1	CO1	To recollect the various process models, requirements, Designs, Quality, Testing.
K2	CO2	To Understand the software development phases.
K3	CO3	To apply concepts into the testing lab.
K4	CO4	To evaluate the expected result with testing output.

Unit	Content	Hrs
Unit I	**Software and Software Engineering:** The Nature of software-The Unique Nature of WebApps-Software Engineering-The software process-Software Engineering practice-**Software Myths*. **Process Models:** A Generic process model-Process Assessment and Improvement-Perspective process model-Specialized process models-The Unified process- Personal and team process models-process Technology-Product and Process. **AGILE Development**: Agility – Cost of change - Process - **Extreme programming**: Values – Process – Industry – Debate.	15
Unit II	Requirement analysis-Scenario based modeling-UML Models-Data modeling concepts-Class based modeling. **Requirements Modeling:** Flow (DFD, Activity, ER), Behavior, Patterns - and WebApps.	13
Unit III	**Design concepts:** The design process-Design concepts-Design model. **User Interface Design:** The golden rule-User Interface Analysis and Design-Interface Analysis-Interface Design Steps-WebApp Interface Design-**Design evaluation*.	12
Unit IV	**Quality Concepts:** Software Quality-Dilemma-**Achieving Software Quality*. **Software Quality Assurance:** Elements – Tasks, Goals and metrics – Statistical SQA – Software reliability – SQA plan**.**	12
Unit V	**Software Testing strategies:** Strategic Approach to Software Testing-Strategic Issues-Unit Testing-Integration Testing-Validation Testing-System Testing. **Testing conventional Applications:** Software Testing Fundamentals-Internal and External view of Testing-White Box Testing-Basis Path Testing - **Control Structure Testing*-Black Box Testing. **Case study:** Draft an ER & DFD for a unique problem.	13
	Total Contact Hrs **Self Study*	**65**

Presentation, Seminar, Assignment, and Discussion

Books for study:

- Roger S. Pressman (2010) *Software Engineering-A Practitioner's Approach*, 5th Edition, McGraw-Hill International Pub.
- Jeffrey A. Hoffer, Joey F. Georgr, Joseph S. Valacich (2000), "*Modern Systems Analysis and Design*", 2nd Edition, Pearson Education publications. (Unit II – DFD, ER)

Books for Reference:

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

Mapping

PSO / CO	PS01	PS02	PS03	PS04	PS05
C01	3	3	2	3	3
C02	3	2	3	3	3
C03	3	3	3	3	3
C04	3	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT4N3	**Title**	**Batch:**	2020 - 2023
		Skill Based Non-Major – II. Data Analytics	**Semester:**	IV
Hrs/Week:	1		**Credits:**	2

Course Objective

To bestow an understanding of various concepts of data analytics, tools, applications and career opportunities in the field of data analytics.

Course Outcomes

K1	CO1	To keep in mind the basic understanding of fundamentals of data analytics
K2	CO2	To understand the types of data analytics
K3	CO3	To apply the tools in various domain
K4	CO4	To identify career opportunities

Units	**Content**	**Hrs**
Unit I	Data analytics: Introduction – Importance - Types of analytics	2
Unit II	Common Terminologies - Tools and basic prerequisites	3
Unit III	Advanced Tools - Workflow	2
Unit IV	Applications: Industries – Business Functions	3
Unit V	Career in analytics: Data scientist - Life of a data scientist - become a data scientist - Technical skills - Career path in analytics.	3
	Total Contact Hrs	**13**

Presentations, Group discussions, Quiz, Assignments

Online Course Materials:

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

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	2	2	3	3
CO2	3	2	3	2	2
CO3	2	2	2	2	1
CO4	3	3	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT4N4	**Title**	**Batch:**	2020 - 2023
		Skill Based Non-Major – II. Computer Security.	**Semester:**	IV
Hrs/Week:	1		**Credits:**	2

Course Objective

To bestow an understanding of various concepts of data security, cryptography, substitution techniques, encryption, decryption etc.

Course Outcomes

K1	CO1	To keep in mind the basic understanding of fundamentals of data security
K2	CO2	To understand the concepts of ciphers and cryptography methods
K3	CO3	To apply the idea of encryption and decryption methods
K4	CO4	To analyze basic issues in data security

Units	Content	Hrs
Unit I	Introduction-The need for security- Security Approaches: Trusted system.	2
Unit II	Security models-Security management practices- Principles of security.	3
Unit III	Cryptography : Concepts and Techniques - Introduction-Plain text and Cipher text	2
Unit IV	Substitution Techniques : Caesar cipher-Mono Alphabetic cipher-Homophonic substitution cipher-Polygram substitution cipher	3
Unit V	Transposition Techniques: Rail fence-Simple Columnar. Encryption and Decryption	3
	Total Contact Hrs	**13**

Presentations, Group discussions, Quiz, Assignments

Books for study

- Atul Kahate. (2009). *Cryptography and Network Security*, 2nd Edition.

Books for Reference

- www.tutorialspoint.com

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	3	3
CO2	3	3	3	2	2
CO3	3	3	3	2	1
CO4	3	3	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT517	**Title:** Open Source Methodologies	**Batch :**	2020 - 2023
			Semester :	V
Hrs/Week:	6		**Credits :**	4

Course Objective

On successful completion of this subject the students should have the knowledge about Unix & Linux Operating System concepts, normal & administrative commands and Android application development.

Course Outcomes (CO)

K1	CO1	To remember the various Unix commands for directory, editor, shell programming. Android layers, components, and user interfaces.
K2	CO2	To get the idea of the Unix, Linux, and Android program commands.
K3	CO3	To execute the programs by using the various Unix, Linux commands.
K4	CO4	To review by using the commands and operations get proper output.

Unit	Content	Hrs
Unit I	**Getting Started:** Introduction – UNIX, Linux and GNU – Programming Linux-Getting help. **The VIM Editor:** History – Creating and editing a file – features. Command Mode: moving the cursor – Deleting and changing text. Input Mode - Searching and substituting – **Miscellaneous commands* – yank, put and delete commands – Reading and writing files – Setting parameters – Advanced editing techniques – Units of measure.	16
Unit II	**Shell Programming:** Usage – Philosophy – Definition – Pipes and redirection – As a programming language – Syntax – Graphical (Dialog Utility).	16
Unit III	**Working with Files:** Linux file structure – System calls and device drivers – *Low level file access – *Standard I/O file library – File and directory maintenance – Scanning directories. **Linux Environment.**	16
Unit IV	**Android:** Introduction – Features – AOS versions – Google play - Packages – ASDK – OOP – Test driving Tip calculator App in AVD – Build Apps – Development resources.	15
Unit V	**Welcome App:** Introduction – Overview – Creation – Android studio Window – Building App's GUI with layout editor – Run Welcome App – Making your App accessible – Internationalizing App.	16
	Total Contact Hrs **Self Study*	**78**

Presentation, Seminar, Assignment, and Discussion

Books for study: **20UIT517**

- Neil Matthew and Richard Stones, (2006). *Beginning LINUX Programming*, 3rd Edition, Wiley Dream Tech Publications (Units I – III).
- Paul and Harvey Deitel, (2018), *Android 6 for Programmers*, 3rd Edition, Pearson Education Pubications. (Units IV & V).

Books for Reference:

- Sumithaba Das, (2006). *Unix Concepts and Applications*, Version 4.
- Mark G. Sobell, (2004), *A Practical Guide to Red Hat Linux 8*, Pearson Education, Edition.
- Jang, (2003). *Mastering Red Hat Linux Fedora Core 5*, Wiley Pub.

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	2	3	3	3
CO2	1	2	3	3	3
CO3	2	2	3	2	3
CO4	2	1	2	3	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT518	**Title**	**Batch:**	2020 - 2023
		Information Security	**Semester:**	V
Hrs/Week:	6		**Credits:**	4

Course Objective

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

Course Outcomes

K1	CO1	To recollect basic concepts of network security
K2	CO2	To understand basic knowledge of cryptography
K3	CO3	To apply diverse security mechanisms
K4	CO4	To evaluate various security algorithms

Units	Content	Hrs
Unit I	**Security:** Introduction – Need – Approaches – Principles – **Types of attacks*. **Cryptography:** Introduction – Plain text and Cipher text – Substitution & Transposition techniques – Encryption and Decryption – Symmetric and Asymmetric key Cryptography – Steganography – Key range and Key size - Possible types of attacks.	14
Unit II	**Symmetric Key Algorithms**: Introduction - **Algorithm Types and modes* – Overview – DES– IDEA– RC4 & 5 – Blowfish – AES.	15
Unit III	**Asymmetric Key Algorithms**: Introduction – History – Overview - RSA algorithm – **Symmetric and asymmetric cryptography*. **Digital Signatures**: Introduction – Message Digests - MD5 – Secure Hash Algorithm. Knapsack algorithm – Other algorithms.	16
Unit IV	**Digital Certificates:** Introduction – Concepts – **Certification Authority* – Technical details – Creation – Cross certification – Revocations. **Private key management - PKIX model – PKCS**.	16
Unit V	**Internet Security Protocols:** Introduction – Concepts. **Secure Socket Layer** (SSL): **Transport Layer Security** (TLS) – **Secure Hyper Text Transfer Protocol** (SHTTP) – **Time Stamping Protocol** (TSP). **Secure Electronic Transaction (SET):** Introduction – Participants – Process – Internals. SSL Versus SET – 3-D secure Protocol. **Electronic Money:** Introduction – Security mechanisms – Types. **Email security**: Introduction – Privacy Enhanced Mail – Pretty Good Privacy. WAP Security - Security in GSM – Security in 3G.	17
	Total Contact Hrs ***** Se*lf Study*	**78**

Presentations, Seminar, Quiz, Assignment, Activity

Books for study

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

Books for Reference

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

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	2	3
CO2	3	3	3	2	2
CO3	3	3	1	1	1
CO4	3	3	1	2	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT5E1	**Title**	**Batch:**	2020 - 2023
		Major Elective – I Data Mining and Analytics	**Semester:**	V
Hrs/Week:	6		**Credits:**	5

Course Objective

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

Course Outcomes

K1	CO1	To keep in mind the various concepts of data mining
K2	CO2	To understand the types of data mining and analytics
K3	CO3	To execute data mining algorithms for finding hidden interesting patterns in data
K4	CO4	To evaluate various data mining algorithms and analysis of big data.

Units	Content	Hrs
Unit I	**Data mining and the data warehouse**: Introduction - Data mining -Kinds of data-functionalities- classification-Task primitives-Integration with database or warehouse-Major issues. **Mining frequent patterns, association and correlations**: Basic concepts. **Efficient and scalable frequent itemset mining methods:** Apriori Algorithm-Generating association rules.	16
Unit II	**Classification and prediction:** Definition – Issues - **classification by Decision tree* Induction – Bayesian classification-rule based classification - classification by back propagation - support vector machine.	16
Unit III	**Cluster analysis:** Definition - types of data in cluster analysis - categorization of major clustering methods - partitioning methods - hierarchical methods	15
Unit IV	Spatial data mining - multimedia data mining - text mining - mining the www - **data mining Applications.*	16
Unit V	**Big data Analytics** : Introduction - Drivers for big data-Applications-Architecture-Advanced Analytics platform-Implementation	15
	Total Contact Hrs ***** *Self Study*	**78**

Presentations, Brain storming, Activity, Case study

Books for study

- Jiawei Han and Micheline Kamber (2005) *Data Mining concepts and techniques,* Elsevier publication (Units – I, II, III & IV).
- Dr. Aravind Sathi (2012) *Big Data Analytics:Disruptive Technologies for Changing the Game*, 1st Edition, MC Press publication (Unit – V).

Books for Reference

- Margaret H. Dunham (2009), *Data Mining Introductory and Advanced Topics,* Pearson Education Publications.
- Vikram Pudi, P.Radha Krishna (2009), *Data Mining***,** Oxford University Press, 1st Edition.
- Anand Rajaraman and Jeffry David Ullman (2012), "Mining of Massive Datasets", Cambridge University Press.

Web Reference

- www.it-ebooks.info.
- https://aws.amazon.com

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	2	2	3	1	1
CO3	3	2	3	3	3
CO4	2	2	2	2	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT5E2	**Title :** Major Elective – I Cloud Computing	**Batch:**	2020 - 2023
			Semester:	V
Hrs/Week:	6		**Credits:**	5

Course Objective

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

Course Outcomes

K1	CO1	To recollect cloud networking concepts
K2	CO2	To understand and familiar with the basic concepts of cloud computing and python
K3	CO3	To apply cloud to large scale distributed systems
K4	CO4	To figure out security issues in cloud computing

Units	Content	Hrs
Unit I	**Introduction to Cloud Computing:** Characteristics – Models – **Services Examples* – Services and Applications. **Cloud concepts and technologies:** Virtualization – Load balancing – scalability and elasticity – Deployment – Replication – Monitoring – Software defined Networking – Network function virtualization – MapReduce – Identity and access management - Service level agreements – Billing.	16
Unit II	**Cloud services and Platforms:** Compute – **Storage* – Database – Application – Content Delivery – analytics – Deployment and Management – Identity and access Management – Open source Private Cloud Software. **Hadoop and MapReduce:** Apache Hadoop – MapReduce Job execution – Schedulers – Cluster setup.	15
Unit III	**Cloud Application Design:** Introduction – Design considerations – Reference Architectures – Design methodologies – Data storage approaches. **Cloud Application Benchmarking and Tuning**: Introduction – Workload Characteristics – Application Performance Metrics – Design Considerations – Benchmarking Tools – Deployment prototyping – Load Testing and Bottleneck Deduction – Hadoop Benchmarking.	15
Unit IV	**Cloud Security:** Introduction – CSA Cloud Security Architecture – Authentication – Authorization – Identity and Access Management – Data Security – Key Management – Auditing. **Cloud For Industry, Health Care and Education:** Health Care – Energy systems – Transportation systems – Manufacturing Industry – Education.	16
Unit V	**Python Basics:** Introduction – Installation – Data types and Data structures – ***Control flow* – Functions – Modules – Packages – File handling – Date/Time – Operations – Classes. **Python for Cloud:** Amazon web services – Google Platform – Windows Azure – MapReduce – Packages – Web Application Framework – Designing a RESTful Web API.	16
	Total Contact Hrs ***** *self study*	**78**

Power point Presentations, Seminar ,Quiz, Assignment

Books for study

- Arshdeep Bahga, Vijay Madisetti. (2016). *Cloud Computing – A Hands-on Approach*. Universities Press Pvt. Ltd.

Books for Reference

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

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	3	3
CO2	3	2	3	3	3
CO3	2	3	3	3	3
CO4	3	3	1	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT5E3	**Title:**	**Batch :**	2020 - 2023
		Major Elective – I Digital Image Processing	**Semester :**	V
Hrs/Week:	6		**Credits :**	5

Course Objective

To understand the concepts of algorithmic designs of digital image processing techniques, inculcate knowledge in features of MATLAB tool and implement concepts in MATLAB.

Course Outcomes (CO)

K1	CO1	To remember the various image processing tools, transformations, filtering, and conversions.
K2	CO2	To get the idea of creation and modifications of digital images.
K3	CO3	To execute the filtering and transferring images using MATLAB.
K4	CO4	To review the processed image from the existing one.

Units	Content	Hrs
Unit I	**Introduction:** Digital Image Processing - Background on MATLAB and the Image - Processing Toolbox - The MATLAB Desktop. **Fundamentals :** Digital Image Representation - **Reading Images*- Displaying Images - Writing Images- Classes - Image Types - Converting between Classes - Array Indexing - Introduction to M-Function Programming	**15**
Unit II	**Intensity Transformations and Spatial Filtering:** Intensity Transformation Functions - Histogram Processing and Function Plotting - Spatial Filtering - Image Processing Toolbox Standard Spatial Filters. **Image Restoration and Reconstruction:** A Model of the Image Degradation/Restoration Process - Noise Models - Restoration in the Presence of Noise Only—Spatial Filtering - Direct Inverse Filtering - **Wiener Filtering*	**16**
Unit III	**Color Image Processing:** Color Image Representation in MATLAB - Converting Between Color Spaces - The Basics of Color Image Processing - Color Transformations - Spatial Filtering of Color Images.	**15**
Unit IV	**Image Compression:** Background - Coding Redundancy - Spatial Redundancy - Irrelevant Information - JPEG Compression - Video Compression.	**15**
Unit V	**Morphological Image Processing:** Preliminaries - Dilation and Erosion - Combining Dilation and Erosion - Labeling Connected Components - Morphological Reconstruction - **Gray-Scale Morphology*. **Image Segmentation:** Point, Line, and Edge Detection - Thresholding - Region-Based Segmentation - Segmentation Using the Watershed Transform	**17**
	Total Contact Hrs **Self Study*	**78**

Presentation, Seminar, Assignment, and Discussion

Books for study:

- Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins, (2009), *Digital Image Processing using MATLAB*, 2nd Edition, Gatesmark Pub.

Books for Reference:

- Nick Efford, (2004), *Digital Image Processing A Practical Introducing Using Java*, 5th Edition, Pearson Education Publications.
- B. Chanda, D. Dutta Majumder, (2003), *Digital Image Processing and Analysis*, PHI Publications.

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	3	2	2
CO2	3	2	3	2	2
CO3	3	3	3	2	2
CO4	3	2	3	2	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT519	**Title:** Lab. VII – Open Source Methodologies	**Batch :**	2020 - 2023
			Semester :	V
Hrs/Week:	5		**Credits :**	3

Course Objective

To obtain the practical knowledge about Unix & Linux Operating System commands, Administrative, Normal Commands and Basic Android Applications.

Course Outcomes (CO)

K3	CO3	To apply the concepts of GNOME, shell and SDK.
K4	CO4	To analyze the various commands.
K5	CO5	To verify the results for the different input data.

Content	Hrs
Sample Program List ***Test I*** **U**sing GNOME, perform the following 1. Change the Desktop Background and mouse pointer theme. 2. Change the Root Password. 3. Add/Remove software. 4. List and view all the files using Icon. 5. Create an Archive file and Extract all Individual files from it. 6. Perform character Mapping. **U**sing Shell perform the following 7. To execute the File manipulation commands 8. To execute the Directory manipulation commands 9. To execute the Utility commands 10.To execute the Pipes & Filter commands ***Test II*** **U**sing Android SDK perform the following 11. Display the phone dialer with the given number filled in. 12. Doing a Google search using Intent. 13. Sending a text message and showing a picture (using extra attributes). 14. Launch the Music player and play a song stored in SD card. 15. Create a simple android application.	**65**
Total Contact Hrs	**65**

20UIT519

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO3	2	2	3	3	3
CO4	2	2	3	3	3
CO5	2	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT520	**Title:** Lab.-VIII Software Testing Tools	**Batch :**	2020 - 2023
			Semester :	V
Hrs/Week:	4		**Credits :**	2

Course Objective

To gain the knowledge to apply the various programming concepts of Software testing like integration, unit, functional, non-functional testing and about product metrics.

Course Outcomes (CO)

K3	CO3	To apply the testing in programming concepts.
K4	CO4	To analyze the different concepts and tools.
K5	CO5	To verify the expected result with the obtained result.

Content	Hrs
SAMPLE PROGRAM LIST **Test I** 1. Create a payroll system and test using the tool. 2. Create a ration shop management system and test using the tool. 3. Create airline reservation system and test using the tool. 4. Create Library management system and test using the tool. 5. Create Banking system and test using the tool. **Test II** 6. Create Book shop management system and test using the tool. 7. Create Electricity billing system and test using the tool. 8. Create online cinema ticket reservation system and test using the tool. 9. Create Music gallery and test using the tool. 10. Create trading system and test the tool.	**52**
Total Contact Hrs	**52**

20UIT520

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO3	2	2	3	3	3
CO4	3	2	3	3	3
CO5	2	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT5S1	**Title:** Skill Based Major Elective Lab. I – Web Programming (Python)	**Batch :**	2020 - 2023
			Semester :	V
Hrs/Week:	2		**Credits :**	2

Course Objective

To know the various programming concepts of string handling, mathematical functions, control structure and files in Python language.

Course Outcomes (CO)

K3	CO3	To deploy the list and dictionary using control structures
K4	CO4	To analyze the various string functions
K5	CO5	To create files and handle its functions

Content	Hrs
SAMPLE PROGRAM LIST 1. Create a program to read a number n and print an inverted star pattern of the desired size. 2. Create a program to search the number of times a particular number occurs in a list. 3. Create a program to read a list of words and return the length of the longest one 4. Create a program to take a string and replace every blank space with a hyphen 5. Create a program to check if a given key exists in a dictionary or not 6. Create a program to check common letters in the two input strings 7. Create a program to reverse a string using recursion. 8. Create a program to read the contents of a file. 9. Create a program to find the area of a rectangle using classes. 10. Create a program to read a string from the user and appends it into a file.	**26**
Total Contact Hrs	**26**

20UIT5S1

Mapping

CO \ PSO	PS01	PS02	PS03	PS04	PS05
C03	2	2	3	3	3
C04	3	2	3	3	3
C05	2	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT5S2	**Title:** Skill Based Major Elective Lab. I – Web Programming (PHP)	**Batch :**	2020 - 2023
			Semester :	V
Hrs/Week:	2		**Credits :**	2

Course Objective

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

Course Outcomes (CO)

K3	CO3	To deploy the tags and database to the C/S applications.
K4	CO4	To analyze the various tags in the application.
K5	CO5	To verify the output from the different input data.

Content	Hrs
SAMPLE PROGRAM LIST 1. Program to print an array. 2. Program to sort elements in an array in ascending and descending order. 3. Program to split a string as array elements based on delimiter. 4. Program to combine the array elements into a string with given delimiter. 5. Program to Program to create a Simple Calculator. 6. Programs to create simple Login and Logout using sessions. 7. Program to upload a file to the Server. 8. Program to create a New Database. 9. Program to connect to the server and selecting database. 10. Program to insert records to the table in Database. 11. Program to fetch records from the table in Database. 12. Program to Store an image in Database. 13. Program to Read image from Database. 14. Program to create a simple Registration form. 15. Contact form using PHP.	**26**
Total Contact Hrs	**26**

20UIT5S2

Mapping

PSO / CO	PS01	PS02	PS03	PS04	PS05
C03	2	2	3	3	3
C04	2	2	3	3	3
C05	2	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B. Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT621	**Title**	**Batch:**	2020 - 2023
		Computer Graphics	**Semester:**	VI
Hrs/Week:	6		**Credits**:	4

Course Objective

To offer programming ability on graphics, clear view on graphics functions, output devices, 3D and 2D transformations etc.

Course Outcomes

K1	CO1	To keep in mind basic graphics systems
K2	CO2	To understand various graphical algorithms
K3	CO3	To implement two, three dimensional and clipping algorithms
K4	CO4	To sort of visible surface detection methods

Unit	Content	Hrs
Unit I	**Overview of Graphics Systems:** Video Display Devices, Refresh Cathode ray tubes, Raster Scan displays, Random Scan Displays, Color CRT monitors, Direct view storage tubes, Flat panel Displays, 3-Dimentional viewing devices, Stereoscopic and Virtual Reality systems, Raster Scan Systems, Random Scan Systems,**Input Devices*, Graphics software.	**15**
Unit II	**Output Primitives:** Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms. **Attributes of Output Primitives:** Line Attributes – Curve attributes – Color and Grayscale Levels – **Area-fill attributes* – Character Attributes.	**15**
Unit III	**2D Geometric Transformations:** Basic Transformations – Matrix Representations – **Composite Transformations* – Other Transformations. **2D Viewing:** The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - 2D Viewing Functions – Clipping Operations – Point, Line: Cohen-Sutherland Line Clipping, Liang- Barsky Line Clipping, Polygon, Curve, Text and Exterior clippings.	**16**
Unit IV	**3D Concepts**: 3D Display Methods – 3D Graphics Packages. **3D Object Representations**: Polygon Surfaces – **Curved lines and Surfaces – Blobby Objects*. **3D Geometric Modeling and Transformations**: Translation – Rotation – Scaling – Other Transformations.	**16**
Unit V	**Visible-Surface Detection Methods:** Classification of Visible-Surface algorithms – Depth-Buffer Method – Scan- Line Method – Depth-Sorting Method – BSP-Tree Method – Area-Subdivision Method – Octree Methods – Ray-casting Methods – Curved surfaces – Wire frame Methods – Visibility-Detection functions. **Illumination Models:** Standard Primaries and the Chromaticity Diagram – Intuitive color Concepts – RGB Color Model – YIQ Color Model – CMY Color Model – HLS Color Model- **Color selection ad Applications*.	**16**
	Total Contact Hrs ***** *self study*	**78**

Presentations, Seminar, Quiz, Assignment

Books for study

- Donald Hearn, Pauline Baker, (2008). COMPUTER GRAPHICS. 2nd Edition. PHI, Indian reprint.
- Donald Hearn, Pauline Baker, Warren Carithers (2016). COMPUTER GRAPHICS. 4th Edition. Pearson Education, Indian reprint.

Books for Reference

- William M. Newman & Robert F. Sproull. (2007). *PRINCIPLES OF INTERACTIVE COMPUTER GRAPHICS*. TMH.
- Malay K. Pakhira (2008), *COMPUTER GRAPHICS*, *MULTIMEDIA AND ANIMATION*, New Delhi, Prentice Hall of India Pvt. Ltd.

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	2	2
CO2	3	3	3	2	2
CO3	3	3	3	2	1
CO4	3	2	2	1	1

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT6E4	**Title**	**Batch:**	2020 - 2023
		Major Elective – II Embedded Systems	**Semester:**	VI
Hrs/Week:	6		**Credits:**	5

Course Objective

To provide understanding of various concepts of VLSI circuit, Processor, device drivers, programming techniques, RTOS, etc.

Course Outcomes

K1	CO1	To keep in mind a broad understanding of technologies of embedded system
K2	CO2	To understand the structural design of embedded systems
K3	CO3	To apply embedded/real time operating systems
K4	CO4	To analyze the issues associated with embedded systems

Units	Content	Hrs
Unit I	**Introduction to Embedded System**: Embedded System – Processor Embedded into the System – Embedded Hardware units and Devices in a System – Embedded Software in a system – Examples of embedded system – Embedded system on chip and use of VLSI circuit - Classification of embedded systems – **Skills required for an embedded System Designer*.	15
Unit II	**Devices and buses for device networks**: I/O Types and Examples – Serial Communication devices: Synchronous, Iso-Synchronous and Asynchronous communication from serial devices – Parallel Device Ports - Timer and counting devices – Watchdog timer – **Real time clock* – Network Embedded Systems – Serial Bus Communication Protocol.	15
Unit III	**Device drivers and Interrupts servicing mechanism**: Device drivers – Interrupt servicing mechanism – Context and the periods for context-switching, dead-line and interrupt latency – Device Driver Programming: – Parallel port device drivers – Serial port device drivers – Device drivers for IPTD.	15
Unit IV	**Programming concepts and embedded programming in C and C++**: Embedded programming in C++ and in Java. **Program modeling concepts in single and multi processor systems**: Program Models – DFG Models – State Machine Programming Models for Event-controlled Program Flow – Modeling of Multiprocessor Systems.	17
Unit V	**Inter – process communication and synchronization of processes. Tasks and threads:** Multiple processes in an application – Multiple Threads Shared Data – Inter process communication. **Real time operating systems**: Operating system services – I/O subsystem – Real time operating systems – Basic Design using RTOS – RTOS Task scheduling Models, Interrupt Latency and Response of the Tasks as Performance Metrics.	16
	Total Contact Hrs ***** *self study*	**78**

Presentations, Group discussions, Brain storming, Activity, Case study

Books for study

- Raj Kamal, (2011) *Embedded Systems – Architecture, Programming and Design*, TMH.

Books for Reference

- Daniel W. Lewis, (2007), "Fundamentals of Embedded Software", 1st Edition, PHI Education Publications, ISBN: 81-7808-604-2.
- Shibu K V, (2009), "Introduction to Embedded Systems", 1st Edition, McGraw Hill Education, ISBN-13: 9780070145894.
- http://www.dauniv.ac.in/downloads/EmbsysRevEd_PPTs/Chap01Lesson_1Emsys.pdf

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	3
CO2	2	3	3	4	1
CO3	3	2	4	3	2
CO4	4	3	2	3	1

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT6E5	**Title**	**Batch:**	2020 - 2023
		Major Elective – II E-commerce	**Semester:**	VI
Hrs/Week:	6		**Credits:**	5

Course Objective

To learn E-Business revenue models, Law & taxation, online payment systems and sales.

Course Outcomes

K1	CO1	To remember basic concepts of e-commerce
K2	CO2	To understand the role of E-marketing, E-security, E-payment systems in current scenario
K3	CO3	To apply mobile payments.
K4	CO4	To analyze various portals, legal and ethical issues associated with e-commerce

Units	Content	Hrs
Unit I	**e-Commerce:** Introduction- Early Business information interchange efforts – Emergence of the internet – Milestones – **Advantages* – *Disadvantages* – Online extension of BAM model – Transition to e-commerce in India – E-transition challenges for Indian corporates. **Business Models**: Introduction – E-Business models based on the relationship of transaction parties and transaction types.	**16**
Unit II	**E-Marketing:** Traditional Marketing – Identifying web presence goals – Online marketing – E-Advertising – Internet marketing trends – Target Markets – Marketing strategies.	**15**
Unit III	**E-Security:** Information system security – **Security on the internet*. **E-Payment Systems:** Internet Banking – Digital payment requirements – Digital token based e-payment systems – Classification of new payment systems – Electronic cash – Risk and e-Payment system – Online financial services in India – Online stock trading.	**16**
Unit IV	**E-customer Relationship Management:** CRM – Typical Business Touch Points. **E-supply Chain Management:** CISCO – supply chain. **Information Systems for Mobile Commerce:** Introduction – Mobile payments – Mobile Commerce in India.	**15**
Unit V	**Portals for E-Business: ***Portals* – Requirements of intelligent websites – portals for mass collaborations – portals for Enterprise Resource Planning – ERP – Intranet Portals – HRM – Various HRIS modules. **Legal and Ethical Issues:** Ethical issues in Digital economy – cyber stalking – Phishing – Application fraud – Skimming – Copyright – Internet Gambling – Threats to children – Special Nature of Computer Ethics.	**16**
	Total Contact Hrs. ***self study**	**78**

Presentations, Group discussions, Seminar, Quiz, Assignment

Books for study

- P. T. Joseph S. J., (2017), *E - Commerce: An Indian Perspective,* 5th Edition, PHI.

Books for Reference

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

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	2	1	3	2
CO2	1	1	1	3	3
CO3	1	3	1	3	1
CO4	1	1	1	2	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT6E6	**Title**	**Batch:**	2020 - 2023
		Major Elective – II Artificial Intelligence	**Semester:**	VI
Hrs/Week:	6		**Credits:**	5

Course Objective

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

Course Outcomes

K1	CO1	To keep in mind different search strategies for a problem
K2	CO2	To understand concepts of semantic net
K3	CO3	To implement a AI problem to be solved using prolog
K4	CO4	To evaluate different knowledge representation schemes for AI problems

Units	Content	Hrs
Unit I	**Problems and search:** AI Techniques-Defining the problem as a State Space Search – Production Systems – Problem Characteristics – Production system Characteristics – Heuristic Search Techniques – Generate and test – Hill Climbing – Best-first Search – Problem Reduction – Constraint Satisfaction – **Mean-Ends Analysis*.	**15**
Unit II	**Knowledge Representation**: Representations and Mappings- Approaches to Knowledge Representation – Issues in knowledge representation – Representing simple Facts in Logic – Representing Instance and Isa Relationships- Procedural versus Declarative Knowledge – Logic Programming – **Forward versus Backward reasoning*.	**16**
Unit III	**Semantic Nets:** Frames - Conceptual Dependency - Game Playing – Overview – The minimax search procedure – Adding Alpha-Beta cutoffs.	**15**
Unit IV	**Expert System :** Definition – Characteristics of Expert System – Architecture & Description of Modules – Backward Chaining – Knowledge Acquisition facility. Knowledge Engineering – Expert System Life Cycles – **Expert System Tools*.	**16**
Unit V	**Prolog: The** Introduction-Converting English to prolog facts and rules-goals-Terminology-Variables-Control structures-Arithmetic operators-Matching in prolog-Backtracking-cuts-Recursion-Lists-Dynamic Databases-I/O Streams-Some aspects specific to LPA Prolog.	**16**
	Total Contact Hrs. ***** *self study*	**78**

Presentations, Group discussions, Brain storming, Activity, Case study

20UIT6E6

Books for study

- Elaine Rich, Kevin Knight, (2009), *Artificial Intelligence*, 3rd edition, Tata McGraw Hill Publications.

Books for Reference

- Stuart Russell, Peter Norvig, (2009), *Artificial Intelligence: A Modern Approach*, 3rd Edition, Pearson New International Edition.
- Er. Rajiv Chopra, (2005), *Artificial Intelligence: A Practical Approach*, 1st Edition, S. Chand Publications.

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	2	3	3
CO2	3	1	1	1	1
CO3	3	1	2	1	1
CO4	3	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT6E7	**Title:**	**Batch :**	2020 - 2023
		Major Elective – III Mobile Computing	**Semester :**	VI
Hrs/Week:	6		**Credits :**	5

Course Objective

Understand the various concepts and techniques of WAP, GSM, CDMA, 2G, 3G, etc...

Course Outcomes (CO)

K1	**CO1**	To keep in mind the various networks, standards, communication medium, Spread spectrum techniques.
K2	**CO2**	To Understand the basic concepts of wireless networks.
K3	**CO3**	To deploy the mobile applications to the devices.
K4	**CO4**	To analyze the various wireless networks techniques.

Units	Content	Hrs
Unit I	**Introduction**: Mobility of Bits and Bytes –Wireless The Beginning – Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Application and services - Security in mobile computing – * *Standards* _ Why is it necessary – Standard bodies. **MOBILE COMPUTING ARCHITECTURE**: Architecture for mobile computing – Three-tier architecture – Mobile computing through Internet – Making existing applications mobile enabled	15
Unit II	**MOBILE COMPUTING THROUGH TELEPHONY**: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI. **EMERGING TECHNOLOGIES:** * *Blue Tooth* – RFID – WiMAX – Mobile IP – IPv6 – Java Card.	15
Unit III	**GSM:** Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM Frequency allocations – Authentications and Security. **SMS:** Strengths – Architecture – SM MT – SM MO – VAS through SMS.	16
Unit IV	**GPRS:** GPRS and packet data network – Architecture – Network Operations – Data services – Applications - Limitations – * *Billing and Charging*. **WAP**: WAE – User agent & UAProf – WML – WSP – WTP – WDP – Gateway. **MMS**: Architecture – Transaction Flows.	15
Unit V	**CDMA and 3G**: Spread spectrum technology. **IS 95**: Speech and Channel Coding – Architecture – Channel Structure. CDMA vs. GSM – Wireless Data. **3G:** IMT & CDMA 2000 – Applications on 3G. **WIRELESS LAN:** Advantages – IEEE 802.11 standards - Types – 802.11 Architecture – Mobility – Deploying – Mobile Ad Hoc networks and sensor networks – Security – WiFi vs. 3G. **4G & 5G:** Introduction - Architecture.	17
	Total Contact Hrs **Self Study*	**78**

Presentation, Seminar, Assignment and Discussion

Books for study:

- Asoke K Talukder, Roopa R Yavagal. (2005), *Mobile Computing*, TMH.

Web References: (Unit V)

- https://www.cisco.com/c/dam/global/sk_sk/assets/expo2011/pdfs/Co_mozeme_ockavat_od_LTE_Vladimir_Settey.pdf
- https://5g-ppp.eu/wp-content/uploads/2018/01/5G-PPP-5G-Architecture-White-Paper-Jan-2018-v2.0.pdf

Books for Reference:

- Jochen Schiller, (2008), *Mobile Communication*, 2nd Edition, Pearson Education Asia.
- Christoffer Andersson (2001), *GPRS and 3G Wireless Applications*, John Wiley and son's pub.

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	2	3	3
CO2	2	3	2	3	3
CO3	3	2	3	3	3
CO4	3	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT6E8	**Title**	**Batch:**	2020 - 2023
		Major Elective – III Software Project Management	**Semester**:	VI
Hrs/Week:	6		**Credits**:	5

Course Objective

To offer management and project evaluation, effort estimation, resource allocation, contract management and software quality.

Course Outcomes

K1	CO1	To recollect the basic idea of software project
K2	CO2	To deduce software cost and effort estimations
K3	CO3	To implement resource allocation techniques
K4	CO4	To interpret the software quality

Units	Content	Hrs
Unit I	**Introduction to Software Project management:** Introduction –Importance – Meaning of a Project – Software project versus other types of project – Contract Management and technical project management – Activities covered – plans, methods, and methodologies – some ways of categorizing software projects. * *Stepwise: an overview of project planning.* **Programme Management and Project Evaluation:** Programme Management – Managing the Allocation of resources within programmes – strategic programme management – creating a programme – aids to programme management – Benefits Management – Evaluation of Individual projects – technical assessment – cost-benefit analysis - cash flow forecasting – cost-benefit evaluation techniques – risk evaluation.	16
Unit II	**Software Effort Estimation:** Estimation – Problem with over and Under-estimates – basis for software estimating – software effort estimation techniques – Expert judgment – estimating by analogy. **Activity Planning:** The objectives – planning – Project schedules – project and activities – sequencing and scheduling activities – **Network:** Planning models – formulating a network model – adding time dimension – forward pass – backward pass. **Risk Management:** Risk – Categories – Dealing with risk – Risk identification, assessment, planning and management – Evaluating risk to schedule.	15
Unit III	**Resource Allocation:** Introduction - Nature of resources – identifying the resource requirements – scheduling resources – creating critical path – * *counting the cost* – being specific – publishing the resource schedule – cost schedules – scheduling the sequence. **Monitoring and Control:** Creating framework – collecting the data – visualizing progress – cost monitoring – earned value analysis – prioritizing monitoring – getting the project back to target – change control.	15
Unit IV	**Managing Contracts:** ISO 12207 approach – supply process – types of contract – stages in contract placement, management – acceptance. **Managing People and Organizing Terms:** understanding behavior – organizational behavior – selecting the right person for the job – instruction in the best methods – Motivation – Working in groups – becoming a team – decision making – Leadership – organizational structures – dispersed and virtual teams - influence of culture – stress – health and safety.	16
Unit V	**Software Quality:** The place of software quality in project planning – importance of software quality – defining software quality – ISO 9126 - practical software quality measures – product vs process quality management – external standards – * *techniques to help enhance software quality*- quality plans. Small Projects: Introduction – Some problems with student projects – content of a project plan – conclusion.	16
	Total Contact Hrs ***** *self study*	**78**

Presentations, Group discussions, Seminar, Quiz, Assignment, Experience Discussion, Brain storming, Activity, Case study

Books for study

- Bob Hughes & Mike Cotterell, (2005). *Software Project Management*, 4th Edition, PHI Publications

Books for Reference

- Pankaj Jalote, (2002), *Software Project Management in Practice*, Pearson Education Asia.
- Kieron Conway, (2000). *Software Project Management from Concept to Deployment*, Dream Tech Press.

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	3
CO2	3	2	2	2	3
CO3	3	3	1	2	2
CO4	1	3	2	2	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT6E9	**Title:** Major Elective III Multimedia Techniques	**Batch :**	2020 - 2023
			Semester :	VI
Hrs/Week:	6		**Credits :**	5

Course Objective

Understand the Multimedia devices like hardware, software, types of authoring tools, and concepts of text, sound, animations and applications, etc.

Course Outcomes (CO)

K1	CO1	To remember the various multimedia techniques, tools, formats and applications.
K2	CO2	To understand the basic concepts of multimedia building blocks.
K3	CO3	To apply the various concepts in the lab.
K4	CO4	To analyze the various formats.

Units	Content	Hrs
Unit I	**Introduction:** Multimedia Definitions- Elements of Multimedia Systems-Stages of Multimedia project - Multimedia team. **Multimedia hardware and software:** Macintosh and windows production platforms-Connections-Interface-Memory and storage devices- * *Input Devices* - Output Hardware - Communication devices.	**15**
Unit II	**Basic software Tools:** Text Editing and word processing tools- OCR software - Painting and Drawing Tools- 3D Modeling and Animation Tools-Image editing tools- –Sound Editing Programs-Animation ,Video and Digital Movie tools. **Making Instant Multimedia:** Linking multimedia objects- **office Suites (Word, Spreadsheets, Databases and Presentation)*. **Multimedia Authoring Tools:** Types of authoring tools- Card and Page Based Tools-Icon Based authoring tools -Time based authoring tools-Cross Platform authoring notes.	**17**
Unit III	**Multimedia Building Blocks: Text:** Using text in multimedia- Font editing and design tools- Hypermedia and Hypertext. **Sound:** MIDI Vs Digital audio- Digital audio –Making MIDI Audio- Audio file Formats- -adding sound to your Multimedia Project. **Images:** Making still images: Bitmaps-Vector drawing-3d drawing and rendering- Color-image file formats-Macintosh formats-windows formats and cross Platform formats.	**16**
Unit IV	**Animation:** Principles of Animation: Animation techniques- animation File formats. **Video:** Using video –How video works- Broadcast video standards- shooting and editing video - recording formats- Digital video: Video compression. **Assembling and Delivering a project:** Planning and costing-Designing and producing-content and talent-Delivering	**16**
Unit V	**Multimedia Applications:** Multimedia in the real world-multimedia in training and education-multimedia for information and sales (Kiosks) - Multimedia and image processing –multimedia in the office- * *Multimedia in the Home.*	**14**
	Total Contact Hrs ***Self Study**	**78**

Presentation, Seminar, Assignment and Discussion

Books for study:

- Tay Vaughan. (2001). *Multimedia Making it works*. 5th Edition. Tata McGraw Hill. (Unit I, II, III, IV).
- Judith Jeffcoate.(2009), *Multimedia in practice(Technology and Applications)*. Pearson Education, 4th Impression, (Unit V).

Books for Reference:

- Ralf Steinmetz & Klara Nahrstedt. (2009). *Multimedia Computing, Communication & Applications*. Pearson Education-Sixth Impression.
- John E.Koegel Buford (2002), *Multimedia System*, New Delhi, Pearson Education.

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	3	3	3
CO2	2	2	3	3	3
CO3	2	3	3	3	3
CO 3	2	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT622	**Title**	**Batch:**	2020 - 2023
		Lab.- IX Graphics & Multimedia.	**Semester:**	VI
Hrs/Week:	5		**Credits**:	3

Course Objective

To understand about various algorithms of computer graphics using C, new innovations in multimedia by using Flash.

Course Outcomes

K3	CO1	To apply various algorithms using 'C' and animation techniques using Flash
K4	CO2	To analyze 2D and 3D transformations
K5	CO3	To verify the results for graphics algorithms

Content	Hrs
SAMPLE PROGRAM LIST **Test I** 1. Implementation of DDA algorithm. 2. Implementation of Bresenham's algorithm. 3. Implementation of Mid Point circle algorithm. 4. Implement DDA algorithm to draw a polylines. 5. Implementation of Translation, Scaling, and Rotation transformations. 6. Any three Animations using flash. **Test II** 7. Implementation of Cohen-Sutherland line clipping algorithm. 8. Implement Bresenham's algorithm to draw parallel lines. 9. Drawing a globe using circle and ellipse algorithm. 10. Creating a Bar Chart. 11. Simulate the bouncing of a ball within four walls. 12. Any three Animations using flash.	**65**

20UIT622

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	1	2	2
CO2	3	2	2	1	1
CO3	3	2	2	2	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT623	**Title**	**Batch:**	2020 - 2023
		Project	**Semester:**	VI
Hrs/Week:	4		**Credits**:	3

Course Objective

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

Course Outcomes

K3	CO1	To analyze the system requirements of the application/software
K4	CO2	To apply various tools in real time applications/software
K5	CO3	To verify the developed application with the customer

Content	Hrs
Using only the following Elective Tools **Front end, Multimedia & Web based tools:** 1. Java & Advanced Java 2. Angular & Javascript 3. PHP 5. C#.NET 6. HTML 5.0 7. Flash 8. Python **Back end tools:** 1. MySQL 2. Oracle 8i & above 3. MS Access 2007 4. SQL Server 2000 and Above • **Internship (System Study) starts from fourth semester.**	**52**
Total Contact Hrs	**52**

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	2	2	3	3	3
CO3	2	3	3	3	3

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UIT6S3	**Title**	**Batch:**	2020 - 2023
		Skill Based Major Elective Lab. - II DTP software (CorelDraw)	**Semester:**	VI
Hrs/Week:	2		**Credits**:	2

Course Objective

To learn, apply and create various designing concepts of CorelDraw.

Course Outcomes

K3	CO1	To apply basic geometric tools for designing.
K4	CO2	To analyze various editing tools.
K5	CO3	To perform manipulation of images using filters and layers.

Content	Hrs
SAMPLE PROGRAM LIST 1. Draw the Basic geometric shapes using tools. 2. Draw different type of lines using line tools. 3. Create an image and manipulate it. 4. Perform Image extraction and merging of images 5. Animate text using Text tool. 6. Create a table then insert Data and highlight it. 7. Create image and insert Text on image. 8. Draw sunflower and apply editing tools. 9. Perform image Filter operations. 10. Creating layer and modify layer properties.	**26**
Total Contact Hrs	**26**

20UIT6S3

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	2	3	3	3
CO2	1	3	3	3	2
CO3	1	3	3	2	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title :**	Bachelor of Information Technology	
Course Code:	20UIT6S4	**Title:** Skill Based Major Elective Lab. - II DTP software (Photoshop)	**Batch :**	2020 - 2023
			Semester :	VI
Hrs/Week:	2		**Credits :**	2

Course Objective

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

Course Outcomes (CO)

K3	CO3	To apply basic tools for designing photos.
K4	CO4	To analyze various editing tools.
K5	CO5	To perform manipulation of photos using filters and layers.

Content	Hrs
SAMPLE PROGRAM LIST 1. Perform Scanning and simple image editing. 2. Apply Colour change, image extraction and merging of images. 3. Create Smoothening of sharp edges. 4. Draw and Paint with Colors. 5. Placing a Photo inside Text. 6. Remove red eyes from a photo. 7. Apply Filters and layers. 8. Create a PDF-document from MS-Office-programs.	**26**
Total Contact Hrs	**26**

20UIT6S4

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO3	2	1	3	3	3
CO4	1	2	3	3	3
CO5	3	2	3	3	3

Low – 1, Medium – 2, High – 3

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

Value Added Courses (Extra Credit)

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code: 19UITVA01	Value Added Course - 1	**Title**	**Batch:**	Any
		Basics of Animation Technology (Lab.)	**Semester:**	
Hrs/Week:	2		**Credits**:	2

Units	Content	Hrs
Unit I	1. To animate the Butterfly 2. To animate the Solar system 3. To animate the flag hoisting 4. To animate any game play 5. To animate traffic control	10
Unit II	6. To animate aquarium 7. To animate walking with naturals 8. To animate any vehicle 9. To animate raining 10. To animate musical instrument play	10
Unit III	11. To animate the flight land and takeoff 12. To animate any cartoon character 13. To animate reading a book (flip) 14. To animate the wall clock/ digital clock 15. To animate the banner	10
	Total Contact Hrs	**30**

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code: 19UITVA02	Value Added Course - 2	**Title**	**Batch:**	Any
		Basics of Block Chain Architecture	**Semester:**	
Hrs/Week:	2		**Credits**:	

Units	Content	Hrs
Unit I	Block Chain – Introduction – Problems with centralized System – Overview – Fundamentals. Bitcoin- Introduction – Transaction life cycle - Block chain2.0 – Smart Contracts. Block in Block chain Architecture - Distributed Consensus - Economics behind Block Chain Consensus.	10
Unit II	The Chain and the Longest chain – Cryptocurrency to Block chain 2.0 – Permissioned model of Block chain. Cryptographic hash function – Properties – Hash pointer and Merkle tree.	8
Unit III	Digital Signature - Public Key Cryptography - A basic cryptocurrency - Creation of coins - Payments and double spending - FORTH – the precursor for Bitcoin scripting - Bitcoin Scripts - Bitcoin P2P Network - Transaction in Bitcoin Network - Block Mining - Block propagation and block relay - Why Consensus - Distributed consensus in open environments - Consensus in a Bitcoin network.	12
	Total Contact Hrs ** self study*	**30**

Advanced Learner's Courses (Extra Credit)

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UITAL501	**Title**	**Batch:**	2020 - 2023
		Big Data Analytics	**Semester:**	V
Hrs/Week:	Self Study		**Credits:**	2

Course Objective

To cultivate programming ability using Pig, clear view on Big data, Hadoop and Machine Learning, Understanding the concepts of MongoDB, Hive, Jasper report

Course Outcomes

K1	CO1	To keep in mind the fundamentals of Big Data.
K2	CO2	To understand the concepts of Hadoop and Machine Learning
K3	CO3	To apply concepts and techniques for implementing MongoDB, Hive
K4	CO4	To evaluate the logical thinking in program development using Pig and prepare Jasper report

Units	**Content**
Unit I	**Types Of Digital Data**: classification of digital data. **Introduction to Big Data**: Characteristics– Evolution – Definition – Challenges – Big Data Definition – Other Characteristics – Need of Big Data – Traditional Business Intelligence Versus Big Data – Data Warehouse Environment – Hadoop Environment – Big Data Today – Changing Realms Of Big Data. **Big Data Analytics**: Big Data Analytics – Classification Of Analytics – Greatest Challenges – Top Challenges – Importance – Kind Of Technologies to Meet The Challenges – Data Science – Data Scientist – Terminologies used in Big Data – BASE – Analytics Tools
Unit II	**The Big Data Technology Landscape**: NoSQL – Hadoop. **Introduction to Hadoop**: Introduction – Need- RDBMS Versus Hadoop – Distributed Computing Challenges – History – Overview – Use case – Distributors – HDFS – Processing Data with Hadoop – Managing Resources And Applications With Hadoop YARN – Interacting With Hadoop Ecosystem
Unit III	**Introduction to MongoDB**: MongoDB – Terms used in RDBMS and MongoDB – Data types – MongoDB query language
Unit IV	**Introduction to MapReduce Programming**: Introduction – Mapper – Reducer – combiner – Partitioner – Searching – Sorting – Compression. **Introduction to Hive**: Hive – Architecture – Data Types – File Format – HQL – RCfile Implementation – SerDe – User Defined Function. **Introduction to Pig**: Pig-Anatomy-Pig On Hadoop-Philosophy-Use case-Pig Latin Overview-Data types-Running-Execution Modes-HDFS Commands-Relational Operators-Eval Function-Complex Datatypes- PiggyBank-UserDefined Functions
Unit V	**Jasper report Using Jaspersoft**: Introduction - Connecting to MongoDB NoSQL DataBase-Connecting to Cassandra NoSQL DB. **Introduction to Machine Learning**: Introduction-Algorithms. **Few Interesting Differences**: Data Warehouse and Data Lake-RDBMS and HDFS - HDFS and HBase-Hadoop MapReduce vs. Pig-Hadoop MapReduce and Spark -Pig and Hive. **Big Data Trends**: Rise of New Age "Data Curators"- CDOs -Dark Data -IOT for ML-Edge Computing-Open Source-Hadoop is Fundamental-Chat Boards-Container(ed)Revolution-Commoditization of Visualization
	Total Contact Hrs

20UITAL501

This course is Self Study for Advanced Learners

Books for study

- Seema Acharya, Subashini Chellapan, (2019) "Big Data and Analytics" , 2nd Edition, Wiley Publications

Books for Reference

- **M. Vijayalakshmi Radha Shankarmani (2016) "**Big Data Analytics", Kindle Edition**,** Wiley Publications

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	3	1	3
CO2	3	3	3	2	3
CO3	2	3	3	2	3
CO4	3	3	1	1	2

Low – 1, Medium – 2, High – 3

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

Programme Code:	B.Sc.	**Programme Title:**	Bachelor of Information Technology	
Course Code:	20UITAL601	**Title**	**Batch:**	2020 - 2023
		Python Programming	**Semester:**	VI
Hrs/Week:	Self Study		**Credits:**	2

Course Objective

To cultivate programming ability on logic development, clear view on Functions, Strings, List, Dictionaries, Tuples, Application areas of python, etc.

Course Outcomes

K1	CO1	To keep in mind the fundamentals of Python programming.
K2	CO2	To understand the concepts of Functions
K3	CO3	To apply concepts and techniques for implementing String functions, List, Tuples, Dictionaries
K4	CO4	To evaluate the logical thinking in program development and apply on various areas

Units	Content
Unit I	**Python Basics-I**: Introduction-Basic concepts-Statements and intentation -Identifiers, keywords and variables. **Python Basics II:** Introduction-Data types-Mutable versus Immutable-Typecasting-Input to a python program –Modular Programming and python modules-Strings-Binary Literals-The Zen of python on jupyter. Operators
Unit II	**Functions –Part I:** Need-Basics-Own function and syntax. **Function Part II**: Passing variable I - function call- function arguments – Additional note on modules in python-recursions- some special functions.
Unit III	**Flow control**. **Strings**: Creating initializing and accessing elements-Traversing- Operations-Difference between functions. Methods and attribute-sting function versus string methods. **List:** Basic concept- Creating, traversing and slicing- List functions and methods- Nested list.
Unit IV	**Dictionaries:** Basics- Dictionary functions and methods – View Object. **Tuples:** Basic concepts. Numpy, SciPy: Basics- Various operations. Pandas: Basics-Working on files.
Unit V	**Applications of Python:** Collecting Information from Twitter – Managing Database using Structured Query Language- Developing Mobile Application for Android
	Total Contact Hrs

This course is Self Study for Advanced Learners

Books for study

- Anurag Gupta, G P Biswas (2020) "Python programming Problem Solving, Packages and Libraries." Tata McGraw Hill Education Publication **(UNIT I – IV)**
- Sheetal Taneja and Naveen Kumar, (2018) "Python programming A Modular Approach with Database, Mobile, and Web Applications" Pearson India Education Services**.(UNIT V)**

Books for Reference

- Chris Meyers Allen Downey, Jeffrey Elkner. (2015). *Learning with Python* DreamTech Press, Kindle Edition.

Mapping

PSO / CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	3	1	3
CO2	3	3	3	2	3
CO3	2	3	3	2	3
CO4	3	3	1	1	2

Low – 1, Medium – 2, High – 3

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