MARUDHAR KESARI JAIN COLLEGE FOR WOMEN (AUTONOMOUS)

Vaniyambadi – 635 751

PG & Research Department of Computer Science

for

Undergraduate Programme

Bachelor of Science in Computer Science

From the Academic Year 2024 – 2025

CONTENT

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK FOR UNDERGRADUATE EDUCATION

1. Preamble

Bachelor of Computer Science is a 3 – Year Undergraduate programme spread over six semesters. The course is designed to achieve a high degree of technical skills in problem solving and application development. The course develops requisite professional skills and problem solving abilities for pursuing a successful career in software industry and forms the required basics for pursuing higher studies in Computer Science.

PROGRAMME OUTCOMES (PO)

Programme	**B.Sc. Computer Science**
Programme Code	**US01**
Duration	**3 years [UG]**
Programme Outcomes	**PO1:** Acquire knowledge in Computer Science to apply the knowledge in their day-to-day life for betterment of self and society. **PO2:** Develop critical, analytical thinking and problem-solving skills. **PO3:** Develop research related skills in defining the problem, formulate and test the hypothesis, analysis, interpret, and draw conclusion from data. **PO4:** Address and develop solutions for societal and environmental needs of local, regionaland national development. **PO5:** Work independently and engage in life long learning and enduring proficient progress. **PO6:** Provoke employability and entrepreneurship among students along with ethics and communication skills. **PO7:** Understand the importance of ethical behavior in business contexts and be able to recognize and address ethical dilemmas they may encounter in their professional careers. **PO8:** Prepared for life long learning and professional development, including the ability to adapt to changes in technology, business practices, and economic conditions throughout their careers.

Programme Specific Outcomes:	**PSO1: Computer Science for Real-World Problem Solving** Demonstrate the ability to apply computer science principles, mathematical modeling, and computational techniques to analyze and solve complex real-world problems. **PSO2: Ethical and Responsible Computing** Exhibit professionalism and ethical responsibility in designing and developing computing solutions while ensuring compliance with cyber regulations, laws, and industry standards. **PSO3: Innovation and Entrepreneurship in Technology** Leverage creativity, innovation, and entrepreneurial skills to develop and implement technology-driven solutions for societal and business challenges.

Eligibility for Admission:

Candidate seeking admission to the first year of the UG Degree Course should have passed the Higher Secondary Course Examination (Academic or Vocational) conducted by the Govt. of Tamilnadu with Mathematics / Business Mathematics / Statistics / Computer Science as a subject or an Examination of any other University accepted as equivalent thereto by the Syndicate subject to such other conditions as may be prescribed. Such candidates shall be permitted to take the B.Sc. Degree Examination of this University after the completion of the Course of three Academic Years in this University / Colleges affiliated to this University and shall qualify for the B.Sc. Degree.

Methods of Evaluation and Assessment

Methods of Evaluation		
Internal Evaluation		25 Marks
External Evaluation	End Semester Examination	75 Marks
	Total	**100 Marks**
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand / Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, short summary or overview	
Application (K3)	Suggest idea/concept with examples, suggest formulae, solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, finish a procedure in many steps, Differentiate Between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Semester - III						
Code	Course Title	Hours Distribution				C
		L	T	P	S	
24UFTA31	Tamil - 3	4	1	0	0	3
24UFEN31	English - 3	4	1	0	0	3
24UCSC31	CC - 5 Programming in Java	3	1	2	0	5
24UCSC32P	CC - 6 Practical - III Programming in Java Lab	0	0	4	0	2
24UMAA32 24UPHA32	EC - 4 AL Statistical Methods and it's Applications – I Microprocessor - 8085	2	1	1	0	4
24UCSA31	EC - 5 GE Web Designing	2	0	0	0	2
24UCSS31P	SEC - 4 Web Designing Lab	1	0	1	0	2
24UAEC31	AEC – 2 Human Values and Professional Ethics	1	1	0	0	2
TOTAL					**30**	**23**

L-Lecture T-Tutorial P-Practical S-Seminar C-Credit

Semester - IV						
Code	Course Title	Hours Distribution				C
		L	T	P	S	
24UFTA41	Tamil - 4	4	1	0	0	3
24UFEN41	English - 4	4	1	0	0	3
24UCSC41	CC - 7 Database Management System	3	1	2	0	5
24UCSC42P	CC - 8 (Practical) Database Management System Lab	0	0	4	0	2
24UMAA42 24UPHA43	EC - 6 AL Statistical Methods and its Applications – II Digital Electronics and Microcontroller	2	1	1	0	4
24UMAA42P 24UPHA43P	EC - 7 AL (Practical) Statistical Methods and it's Applications I & II – Lab Microprocessor and Microcontroller Lab	1	0	1	0	2
24UCSS41	SEC - 5 Computer Networks	1	0	1	0	2
24UAEC41	AEC – 3 Environmental Studies and Disaster Management	2	0	0	0	2
TOTAL					**30**	**23**

Students must complete at least one online course (MOOC) from platforms like SWAYAM, NPTEL, or Nanmudalvan within the fifth semester. Additionally, engaging in a specified Self-learning Course is mandatory to qualify for the degree, and successful participation will be acknowledged with an extra credit of 2*.

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UCSC31	Programming in Java	CC-5	3	1	2	0	5	6	25	75	100

Learning Objectives	
LO1	To provide fundamental knowledge of object-oriented programming
LO2	To equip the student with programming knowledge in Core Java from the basics Inheritance and Packages.
LO3	To enable students to understand the Multithreading concepts.
LO4	To enable the students to use AWT controls, Event Handling and Swing for GUI.
LO5	To equip the student to learn swing components

Unit	Content	Hours
1	Introduction: Review of Object Oriented concepts – History of Java – Java buzz words – JVM architecture – Data types - Variables - Scope and life time of variables - arrays - operators – control statements - simple java program - constructors - methods – Static block - Static Data – Static Method String and String Buffer Classes	14
2	Inheritance: Basic concepts - Types of inheritance - Member access rules - Usage of this and Super key word - Method Overloading - Method overriding - Abstract classes – Packages: Definition- Access Protection –Importing Packages. Interfaces: Definition– Implementation – Extending Interfaces. Exception Handling: try – catch- throw - throws – finally – Built-in-exceptions	14
3	Multithreaded Programming: Thread Class - Runnable interface – Synchronization– Using synchronized methods– Using synchronized statement- Inter thread Communication. I/O Streams: Concepts of streams - Stream classes- Byte and Character stream - Reading console Input and Writing Console output - File Handling	14
4	AWT Controls: The AWT class hierarchy – user interface components- Labels - Button – Text Components - Check Box - Check Box Group - Choice - List Box - Panels – Scroll Pane - Menu - Scroll Bar. Working with Frame class - Color - Fonts and layout managers. Event Handling: Events - Event sources - Event Listeners - Handling Mouse and Keyboard Events - Adapter classes - Inner classes	14
5	Swing: Introduction to Swing - Hierarchy of swing components. Containers - Top level containers - JFrame - JWindow - JDialog - JPanel - JButton - JToggleButton - JCheckBox - JRadioButton - JLabel, JTextField - JTextArea - JList - JComboBox - JScrollPane.	14

CO	Course Outcomes The students will be able to
CO1	Implement the basic constructs of Core Java.
CO2	Implement inheritance, packages, interfaces and exception handling of Core Java.
CO3	Implement multi-threading and I/O Streams of Core Java
CO4	Implement AWT and Event handling.
CO5	Use Swing to create GUI.
Textbooks:	
1	Herbert Schildt, Dr.Danny Coward, Java The Complete Reference thirteenth edition, Tata McGraw Hill, 2024
2	Gary Cornell, Core Java 2 Volume I – Fundamentals, Addison Wesley, 1999
3	Herbert Schildt, The Complete Reference, Tata McGraw Hill, New Delhi, 7th Edition,2010.
Reference Books:	
1	Head First Java, O'Rielly Publications,
2	Y. Daniel Liang, Introduction to Java Programming, 7th Edition, Pearson Education India, 2010
3	P.Rizwan Ahmed, Java Programming, 3rd Edition, Margham Publications, 2017
Web resources:	
1	https://javabeginnerstutorial.com/core-java-tutorial
2	http://docs.oracle.com/javase/tutorial/
3	https://www.coursera.org/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	3	3	3	3
CO2	3	3	2	2	2	3	3	3	3	3	3
CO3	3	3	3	2	3	3	2	3	2	2	1
CO4	3	2	3	3	3	2	3	3	2	2	1
CO5	3	3	3	2	3	3	3	3	3	3	3
Total	15	14	14	12	14	14	13	15	13	13	11
Average	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**2**

3 – Strong, 2- Medium, 1- Low

2st YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UCSC32P	**Programming in Java Lab**	**CC-6**	**0**	**0**	**4**	**0**	**2**	**2**	**25**	**75**	**100**

Learning Objectives	
LO1	To provide fundamental knowledge of object-oriented programming.
LO2	To equip the student with programming knowledge in Core Java from the basics
LO3	To enable the students to know about Event Handling.
LO4	To enable the students to use String Concepts and AWT Controls.
LO5	To equip the student with programming knowledge in to create GUI.

	List of Programs	Hours
	1. Write a Java program that prompts the user for an integer and then prints out all the prime numbers up to that Integer 2. Write a Java program to multiply two given matrices. 3. Write a Java program that displays the number of characters, lines and words in a text 4. Generate random numbers between two given limits using Random class and print messages according to the range of the value generated. 5. Write a program to do String Manipulation using Character Array and perform the following string operations: a. String length b. Finding a character at a particular position 6. Write a program to perform the following string operations using String class: a. String Concatenation b. Search a substring 7. Write a program to perform string operations using String Buffer class: a. Length of a string b. Reverse a string c. Delete a substring from the given string	60

	8. Write a java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number. 9. Write a threading program which uses the same method asynchronously to print the numbers 1to10 using Thread1 and to print 90 to100 using Thread2. 10. Write a program to demonstrate the use of following exceptions. a. Arithmetic Exception b. Number Format Exception 11. Write a Java program that reads on file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes. 12. Write a program to accept a text and change its size and font. Include bold italic options. Use frames and controls. 13. Write a Java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired. (Use adapter classes). 14. Write a Java program that works has a simple calculator using grid layout to arrange button for the digits and for the +,-,*,% operations. Add a text field to display the result. Handle any possible exceptions like divided by zero. 15. Write a Java program that simulate a traffic light. The program lets the user select one of three lights: Red, Yellow or Green with radio buttons. On selecting a button, an appropriate message with “stop” or “ready”or “go”should appear above the buttons in a selected color. Initially there is no message shown.	

CO	Course Outcomes The students will be able to
CO1	Implement the basic constructs of core java
CO2	Implement inheritance, packages, interfaces and exception handling of Core Java.
CO3	Implement multi-threading and I/O Streams of Core Java
CO4	Implement AWT and Event handling.
CO5	Use Swing to create GUI.
Textbooks:	
1	Herbert Schildt, Dr.Danny Coward, Java The Complete Reference thirteenth edition, Tata McGraw Hill, 2024
2	Gary Cornell, Core Java 2 Volume I – Fundamentals, Addison Wesley, 1999
3	Herbert Schildt, The Complete Reference, Tata McGraw Hill, New Delhi, 7th Edition, 2010.
Reference Books:	
1	Head First Java, O'Rielly Publications,
2	Y. Daniel Liang, Introduction to Java Programming, 7th Edition, Pearson Education India, 2010.
Web resources:	
1	https://www.w3schools.com/java/
2	http://java.sun.com
3	http://www.afu.com/javafaq.html

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	3	3	3	3
CO2	3	3	2	2	2	3	3	3	3	3	3
CO3	3	3	3	2	3	3	2	3	2	2	1
CO4	3	2	3	3	3	2	3	3	2	2	1
CO5	3	3	3	2	3	3	3	3	3	3	3
Total	15	14	14	12	14	14	13	15	13	13	11
Average	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**2**

3 – Strong, 2- Medium, 1- Low

2st YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UMAA32	**Statistical Methods and It's Applications-I**	EC-4 AL	2	1	1	0	4	4	**25**	**75**	**100**

Learning Objectives

LO1	Scope and diagrammatic representation of data
LO2	To know about Measures of Location
LO3	To gain knowledge on Measures of Dispersion
LO4	To understand the concept of Skewness
LO5	To understand the relationship between variables and forecasting the future values

Unit	Content	Hours
1	Introduction - Scope and Limitations of Statistical Methods –Classification of Data –Tabulation of Data- Diagrammatic and Graphical Representation of Data. **Chapter:1,2,6** **Pages:1-3,12-15,17,50-53,66-70,81-93,100-111**	**12**
2	Measures of Location: Arithmetic Mean, Median, Mode, and their Properties. **Chapter:9 Pages:124-173**	**12**
3	Measures of Dispersion : Range, Quartile Deviation, Mean Deviation, Standard Deviation. **Chapter: 10** **Pages:244-267**	**12**
4	Measures of Skewness: Karl Pearson's, Bowley's, and Kelly's and Coefficient of Skewness. **Chapter: 11** **Pages:338-355**	**12**
5	Correlation: Karl Pearson– Spearman's Rank Correlation **Chapter: 12** **Pages:396-410,417-421**	**12**

CO	Course Outcomes
CO1	Work on Diagrammatic representation of data.
CO2	Calculate the problems on Measures of location -Mean, Median, Mode
CO3	Calculate the problems on Measures of dispersion -Range, Quartile deviation, Standard deviation.
CO4	Work on Measures of Skewness.
CO5	Interpret Correlation coefficients.
Textbooks:	
1	PillaiR.S. N.and Bagavathi.V.(2005),Statistics, S.Chand & Company Ltd.,NewDelhi.
Reference Books:	
1	Gupta S.P.(2001),Statistical Methods,Sultan Chand & Sons,NewDelhi.
2	Gupta. S.C. and Kapoor.V.K. Fundamentals of Applied Statistics,Sultan Chand & Sons, NewDelhi
3	Fundamental of Mathematical Statistics - S. C. Gupta & V. K. Kapoor – Sultan Chand
4	Sancheti D.C.and Kapoor. V.K(2005),Statistics (7thEdition),Sultan Chand & Sons, New Delhi.
5	AroraP. N, Comprehensive Statistical Methods, Sultan Chand & Sons, NewDelhi
Web resources:	
1	https://nptel.ac.in/courses/111107105

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	3	3	2	3	2	2	3	3	2
CO2	3	3	3	3	3	2	3	3	3	3	3
CO3	3	3	2	3	2	3	2	3	2	3	2
CO4	2	3	3	3	3	3	3	3	3	3	3
CO5	2	2	3	3	3	3	2	2	3	3	2
Total	13	13	14	15	13	14	12	13	14	15	12
Average	2.6	2.6	2.8	3	2.6	2.8	2.4	2.6	2.8	3	2.4

3 – Strong, 2- Medium, 1- Low

2st YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UPHA32	Microprocessor-8085	Core	2	1	1	0	4	4	25	75	100

Learning Objectives	
LO1	To get the knowledge and basic details of microprocessor 8085
LO2	To learn the different types of addressing modes and instructions.
LO3	To write the simple assembly language programs for arithmetic operations and to learn about the instruction cycles
LO4	To analyse the functions of I/O interfaces
LO5	To expose the idea of pin function, working and interacting of peripheral devices with microprocessor

Unit	Content	Hours
1	**8085 Microprocessor:** Evolution of Microprocessor-Applications of Microprocessors of Different Generations.– INTEL 8085 architecture – register organization –pin configuration of 8085.	12
2	**Instructions & Addressing Modes:** Data transfer/ copy Instructions-Arithmetic, Logical- Two examples each instructions-Branch instructions-Unconditional and conditional jump- Call and Return instructions-Stack and Stack related instructions- I/O and Machine control instructions- Addressing modes.	12
3	**Assembly Language Programming** –Programmes for addition (8-Bit), subtraction (8-Bit), multiplication (8- Bit), division (8- Bit) – largest and smallest number in an array.	12
4	**I/O Interfaces:** serial communication interface (8251-USART) – programmable peripheral interface (8255-PPI) - keyboard and display (8279), DMA controller (8237).	12
5	**Peripheral Devices & Applications:** Hand shake signals-Single Handshake I/O and Double Handshake I/O- Pin function and Block diagram and working of 8255-Pin function and Block diagram and working of 8279- LED Interface-Temperature Controller.	12

CO	Course Outcomes
CO1	Know the evolution of microprocessor, pin and architecture of 8085 microprocessor in detail
CO2	Describe different types of instructions like data transfer, arithmetic, logical and branching instructions with examples and it will be used for writing the assembly language programs.
CO3	Write assembly language programs for simple arithmetic operations and hence they can apply it for interfacing applications.
CO4	Learn the memory interface and peripheral interface devices.
CO5	The interface the peripheral device with microprocessor 8085 and they are able to write the programs for LED and Temperature control interface system.
Textbooks:	
1	Fundamental of Microprocessor - 8085 - Architecture, Programming and interfacing – V. Vijyendran, S. Viswanathan, Pvt. Ltd., 2003.
2	A. NagoorKani, 8085 Microprocessor and its Applications, Tata McGraw Hill, New Delhi, 2013.
Reference Books:	
1	R.S. Goankar , Microprocessor Architecture, Programming and Applications with the 8085, 3rdEdn. Prentice Hall,
2	B.Ram, Fundamentals of Microprocessors and Microcomputers,DhanpatRai Publications, New Delhi.
Web resources:	
1	https://www.tutorialspoint.com/microprocessor/microprocessor_8085_pin_configuration.htm
2	https://www.tutorialspoint.com/microprocessor/microprocessor_8085_instruction_set
3	http://www.psnacet.edu.in/courses/ECE/Microcontroller%20and%20Microprocessor/lecture4.pdf

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	3	3	3	3
CO2	3	3	2	2	2	3	3	3	3	3	3
CO3	3	3	3	2	3	3	2	3	2	2	1
CO4	3	2	3	3	3	2	3	3	2	2	1
CO5	3	3	3	2	3	3	3	3	3	3	3
Total	15	14	14	12	14	14	13	15	13	13	11
Average	**3**	2.8	2.8	**2.4**	2.8	2.8	2.6	**3**	2.6	2.6	**2.2**

3 – Strong, 2- Medium, 1- Low

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UCSA31	Web Designing	EC-5 GE	2	0	0	0	2	2	25	75	100

Learning Objectives	
LO1	To Understand the basics of HTML and its components
LO2	To study about the Graphics in HTML
LO3	To Understand and apply the concepts of XML and DHTML
LO4	To Understand the concept of JavaScript
LO5	To identify and understand the goals and objectives of the Ajax

Unit	Content	Hours
1	HTML: HTML-Introduction-tag basics- page structure-adding comments working with texts, paragraphs and line break. Emphasizing test- heading and horizontal rules-list-font size, face and color- alignment links-tables-frames	6
2	Forms & Images Using Html: Graphics: Introduction-How to work efficiently with images in web pages, image maps, GIF animation, adding multimedia, data collection with html forms textbox, password, list box, combo box, text area, tools for building web page front page.	6
3	XML & DHTML: Cascading style sheet (CSS)-what is CSS-Why we use CSS-adding CSS to your we pages-Grouping styles-extensible markup language (XML).	6
4	Dynamic HTML: Document object model (DCOM)- Accessing HTML & CSS through DCOM Dynamic content styles & positioning-Event bubbling-data binding. JavaScript: Client-side scripting, Develop JavaScript, Create simple JavaScript, variables, functions, conditions, loops and repetition.	6
5	Advance script, Java Script and objects, Java Script own objects, the DOM and web browser environments, forms and validations.	6

CO	Course Outcomes The Students will be able to
CO1	Develop working knowledge of HTML
CO2	Develop and publish Web pages using Hypertext Markup Language (HTML).
CO3	Optimize page styles and layout with CascadingStyle Sheets (CSS) and XML
CO4	Develop a java script
CO5	Design web application using Ajax.
Textbooks:	
1	Pankaj Sharma, "Web Technology", Sk Kataria& Sons Bangalore 2011. .(UNIT I, II, III & IV).
2	Mike Mcgrath, "Java Script", Dream Tech Press 2006, 1st Edition. . (UNIT V: JAVASCRIPT)
3	Achyut S Godbole & AtulKahate, "Web Technologies", 2002, 2nd Edition.
Reference Books:	
1	Laura Lemay, RafeColburn , Jennifer Kyrnin, "Mastering HTML, CSS &Javascript Web Publishing", 2016.
2	DT Editorial Services (Author), "HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery)", Paperback 2016, 2nd Edition.
Web resources:	
1	https://onlinecourses.nptel.ac.in/ (NPTEL & MOOC courses titled Web Design and Development.)
2	https://www.geeksforgeeks.org

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	3	2	1	3	1	3	3	2	1
CO2	3	3	3	2	3	3	2	2	3	3	2
CO3	3	3	2	3	3	2	2	3	3	3	2
CO4	3	2	3	2	2	3	3	2	3	2	3
CO5	3	2	2	2	3	3	2	2	3	2	2
Total	15	12	13	11	12	14	10	12	15	12	10
Average	3	2	3	2	2	2	2	2	3	2	2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UCSS31P	**Web Designing Lab**	**SEC-4**	**1**	**0**	**1**	**0**	**2**	**2**	**25**	**75**	**100**

Learning Objectives	
LO1	To Understand the basics of HTML and its components
LO2	To study about the Graphics in HTML
LO3	To Understand and apply the concepts of XML and DHTML
LO4	To Understand the concept of Java Script
LO5	To identify and understand the goals and objectives of the Ajax

	List of Programs	**Hours**
	1. Define the basic Structure to create a simple hello world page using HTML. 2. Implement the Heading Element and insert image in HTML. 3. Write a program to create GIF animation and adding multimedia effects in HTML. 4. Write a program to implement Formatting text in HTML. 5. Write an XML file which will display the Book information which includes the following: • Title of the book, Author Name, ISBN number, Publisher name, Edition, Price 6. Write HTML for demonstration of cascading style-sheets. a. Embedded style-sheets. b. External style-sheets. c. Inline styles. 7. Write a program to implement Lists in HTML. 8. Develop a web page for creating session and cookies. 9. Write JavaScript to validate the following fields of the above registration page. • Name (Name should contains alphabets and the length should not be less than 6 characters). • Password (Password should not be less than 6 characters length). • E-mail id (should not contain any invalid and must follow the standard pattern (name@domain.com) • Phone number (Phone number should contain 10 digits only). 10. Write a javascript program to validate USER LOGIN page	30

CO	Course Outcomes The Students will be able to
CO1	Develop working knowledge of HTML
CO2	Develop and publish Web pages using Hypertext Markup Language (HTML).
CO3	Optimize page styles and layout with Cascading Style Sheets (CSS) and XML.
CO4	Develop a java script
CO5	Design web application using Ajax.
Textbooks:	
1	Pankaj Sharma, "Web Technology", Sk Kataria& Sons Bangalore 2011. .(UNIT I, II, III & IV).
2	Mike Mcgrath, "Java Script", Dream Tech Press 2006, 1st Edition. . (UNIT V: JAVASCRIPT)
3	Achyut S Godbole & AtulKahate, "Web Technologies", 2002, 2nd Edition.
Reference Books:	
1	Laura Lemay, RafeColburn , Jennifer Kyrnin, "Mastering HTML, CSS &Javascript Web Publishing", 2016.
2	DT Editorial Services (Author), "HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery)", Paperback 2016, 2nd Edition.
Web resources:	
1	https://onlinecourses.nptel.ac.in/ (NPTEL & MOOC courses titled Web Design and Development.)
2	https://www.geeksforgeeks.org

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	1	2	1	2	1	2	3	2	1
CO2	3	3	2	2	3	3	2	2	3	3	2
CO3	3	3	2	3	3	2	2	3	3	3	2
CO4	3	2	3	2	2	3	3	2	3	2	3
CO5	3	2	2	2	3	3	2	2	3	2	2
Total	15	12	10	11	12	13	10	11	15	12	10
Average	3	2	2	2	2	2	2	2	3	2	2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UAEC31	Human Values and Professional Ethics	AEC - 2	1	1	0	0	2	2	25	75	100

Learning Objectives	
LO1	To make them know the concept of Values and their significance
LO2	To sensitize them on the importance of family and social values in life.
LO3	To identify and analyze the effects of mass media on youth and children.
LO4	To apply constitutional and social justice principles to contemporary societal challenges
LO5	To focus on professional ethics, which help citizens to discern desirable and undesirable actions.

Unit	Content	Hours
1	**Introduction to Value based Education** Meaning and Classification - Characteristics, Components and Contents - Value crises in social life, economic life - need and importance of value education.	6
2	**Harmony in the Family, Society and Nature:** Family as a basic unit of human interaction and values in relationships - Affection, care, guidance, reverence, glory, gratitude, and love **Harmony in society**: Justice preservation - Production Work, - Exchange Storage **Harmony in nature**: Four orders in nature- The holistic perception of harmony inexistence.	6
3	**Values and Mass Media** **Mass media**: Meaning, functions and characteristics – Effects and Influence on youth and children **Media Power** – socio, cultural and political consequences of mass mediated culture - Consumerist culture – Globalization – New media- Prospects and challenges – Role of media in value building	6
4	**Social Issues, and Social Justice** **Social issues** : Cyber crime- -Dowry-Drug addiction-Domestic violence Untouchability- Female infanticide-Atrocities against women- How to tackle them. **Social Justice**: Definition and need – Factors responsible for social injustice: Caste and gender – Contributions of social reformers.	6

5	**Professional Ethics in Education** Understanding about Professional Integrity - Respect - Equality – Privacy - Building-Trusting Relationships –concepts - Positive co-operation Dedication to work and duty – Commitment to the Profession - Respecting the competence of other professions- Taking initiative and Promoting the culture of openness - Depicting Loyalty towards Goals and objectives.	6

CO	**Course Outcomes** **Students will be able to**
CO1	Students will be recognize the need for value education in today's world and its importance in shaping responsible, ethical, and compassionate citizens.
CO2	Students will gain the importance of family and social values in building a strong and ethical society
CO3	Students to evaluate the ethical and moral responsibilities of media in value-building and social development
CO4	Students will understand constitutional values, key social issues, and the need for social justice.
CO5	Students will develop a clear understanding of professional ethics in the field of education
Textbooks:	
1	Bhandari, R.S. (2003). *Value Education.* New Delhi: Abhishek Publications.
2	Ismal, Thamarasseri. (2013). *Value Education.* New Delhi: APH Publishing Corporation
3	R. R. Gaur, R. Sangal, and G. P. Bagaria – *A Foundation Course in Human Values and Professional Ethics*, Excel Books, 2019.
4	Textbook on The Knowledge System of Bhārata by Bhag Chand Chauhan,
5	Smarak Swain, S. (2011). Social issues of India. New Vishal publications
6	Sushil Kumar Saxena, Satish Mittal, 2012, Sociology of Family, Raj publications
Reference Books:	
1	Venkataiah, N. (2007). *Moral Education.* Delhi: APH Publishing Corporation
2	Venkataiah, N., and Sandhya, N. (2004). *Research in Value Education.* New Delhi: APH Publishing Corporation
3	Dhananjay, Joshi. (2006). *Value Education in Global Perspectives.* Delhi: Lotus Press.
Web resources:	
1	https://www.yourarticlelibrary.com/essay/value-education-definition-and-the-concept-of value-education- with-example/
2	https://www.researchgate.net/publication/257197506_Students'_Families_and_Family_Values
3	https://soaneemrana.org/onewebmedia/Professional%20Ethics%20and%20Human%20Values%20b y%20R.S%20NAAGARAZAN.pdf
4	https://www.msuniv.ac.in/images/academic/centre%20academic%20affairs/revised%20syllabus/2023-24-Batch/UG-Part-IV/PartIV_4sem.pdf

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	3	3	2	3	2
CO2	2	3	3	3	2	3	3	2	2	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	3	3	3	3	2	2	2
CO5	3	2	3	3	3	3	3	2	2	3

3–Strong, 2–Medium,1-Low

Mapping with Programme Specific Outcomes

CO/PO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	2	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weight age	15	15	15	14	15
Weighted percentage Of Course Contribution to Pos	3.0	3.0	3.0	2.8	3.0

2nd YEAR: FOURTH SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UCSC41	**Database Management System**	**CC-7**	**3**	**1**	**2**	**0**	**5**	**6**	**25**	**75**	**100**

Learning Objectives	
LO1	To enable the students to learn the data base Concepts and the relational model of data.
LO2	To understand the concepts of Relational Database model and ER Diagram
LO3	To learn and understand to write queries using SQL.
LO4	To learn about SQL Operators and Virtual Tables
LO5	To understood the concepts of SQL,NOSQL and MongoDB

Unit	Content	Hours
1	**D**atabase Concepts: Database Systems - Data vs Information - Introducing the database -File system - Problems with file system – Database systems. Data models - Importance - Basic Building Blocks - Business rules - Evolution of Data models - Degrees of Data Abstraction	16
2	**Design Concepts:** Relational database model - logical view of data-keys - Integrity rules - relational set operators - data dictionary and the system catalog - relationships -data redundancy revisited -indexes - codd's rules. Entity relationship model - ER diagram- The Extended Entity Relationship Model - Entity Clustering	18
3	**Normalization of Database Tables**: Database tables and Normalization – The Need for Normalization –The Normalization Process – Higher level Normal Form. **Introduction to SQL**: Data Definition Commands – Data Manipulation Commands – SELECT Queries – Additional Data Definition Commands – Additional SELECT Query Keywords – Joining Database Tables.	18
4	**Advanced SQL**: **SQL Join Operators**: Cross Join – Natural Join – Join USING Clause – JOIN ON Clause – Outer Join. **Sub Queries and Correlated Queries**: WHERE – IN – HAVING – ANY and ALL – FROM. **SQL Functions:** Date and Time Function – Numeric Function – String Function – Conversion Function **Relational SET Operators:** UNION – UNION ALL – INTERSECT - MINUS. **Virtual Tables:** Creating a View - Updatable Views	18
5	**SQL:** Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit Cursors, Explicit Cursors and Attributes – Cursor FOR loops –SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Trigger – Exceptions – Types of Exceptions. **Why NoSql :**The Value of Relational Databases, Getting at Persistent Data, Concurrency, Integration, Impedance Mismatch, Application and Integration Databases, Attack of the Clusters, The Emergence of NoSQL, **MongoDB:** Create DB – Collection – Insert – Update – Delete	20

CO	Course Outcomes The Students will be able to
CO1	Understand the various basic concepts of Data Base Management System.
CO2	Define the integrity constraints. Understand the basic concepts of Relational Data Model, Entity Relationship Model.
CO3	Create Database through SQL Queries & Normalization concepts .
CO4	Classify the different SQL Sub Queries ,SQL Operators and SQL functions
CO5	Learn to design Data base operations and implement using SQL, NoSQL and MongoDB programs.
Textbooks:	
1	Shio Kumar Singh , "Database Systems ",Pearson publications ,II Edition- Unit 1,2,3
2	Abraham Silberschatz, Henry F.Korth and S.Sudarshan,"Database System Concepts", McGraw Hill International Publication ,VI Edition – Unit 4,5
3	Sadalage, P. & Fowler, NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence, Wiley Publications,1st Edition ,2019.
4	Rajiv Chopra , "Database Management System (DBMS)A Practical Approach"Fifth Edition
Reference Books:	
1	Coronel, Morris, Rob, "Database Systems, Design, Implementation and Management", Ninth Edition
2	Nilesh Shah, "Database Systems Using Oracle", 2nd edition, Pearson Education India,2016
Web resources:	
1	Web resources from NDL Library, E-content from open-source libraries
2	https://www.geeksforgeeks.org
3	https://www.w3schools.com/mongodb/mongodb_mongosh_create_database.php

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	3	3	3	3
CO2	3	3	2	2	2	3	3	3	3	3	3
CO3	3	3	3	2	3	3	2	3	2	2	1
CO4	3	2	3	3	3	2	3	3	2	2	1
CO5	3	3	3	2	3	3	3	3	3	3	3
Total	15	14	14	12	14	14	13	15	13	13	11
Average	3	2.8	2.8	2.4	2.8	2.8	2.6	3	2.6	2.6	2.2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: FOURTH SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UCSC42P	**Database Management System Lab**	**CC-8**	**0**	**0**	**4**	**0**	**2**	**4**	**25**	**75**	**100**

Learning Objectives	
LO1	To enable the students to learn the designing of data base systems, foundation on the relational model of data .
LO2	To understood the concepts of data base management system, design simple Database models
LO3	To learn and understand to write queries using SQL, PL/SQL.
LO4	To enable the students to learn the basics of MongoDB
LO5	To Design simple Database models

	List of Programs	**Hours**
	I. SQL ***1.*** Create DDL commands of SQL for Employee details □ Create table □- Alter table -□ Drop Table 2. Develop a DML commands of SQL for Customer Online Service Insert □- Update □- Delete 3. Develop a TCL commands of SQL for Transaction details of employee ***II. PL/SQL*** 4. Write a PL/SQL program to generate the Fibonacci series up to n terms using a loop structure. 5. Write a PL/SQL function or procedure to compute the **factorial** of a given number using recursion or iteration. 6. Develop a PL/SQL program to **reverse a given string** without using built-in reverse functions. 7. Create a **trigger** in PL/SQL that performs a specific action (e.g., log changes, prevent deletion, auto-update timestamp). 8. Create Basic CRUD Operation for student Database collection using MongoDB ***III. CURSOR*** 9. Write a program using an **explicit cursor** to retrieve and analyze student marks from a table 1. Fetch each student's marks 2. Calculate total and average 3. Display result classification (e.g., pass/fail, grade) ***IV. APPLICATION*** 10. Design and develop a Mini Project for Library Management system.	60

CO	Course Outcomes The Students will be able to
CO1	Implement a SQL Commands and perform various Operations
CO2	Define the integrity constraints and Understand the basic concepts of Relational Data Model, Entity Relationship Model.
CO3	Learn PL/SQL Command ,Recursion and iteration
CO4	Learn to design Data base operations and implement using PL/SQL programs. Learn basics of PL/SQL and develop programs using Cursors, triggers ,Exceptions
CO5	Learn to design and develop the Scenario for Various UseCase
Textbooks:	
1	Abraham Silberschatz, Henry F.Korth and S.Sudarshan,"Database System Concepts", McGraw Hill International Publication ,VI Edition
2	Rajiv Chopra , "Database Management System (DBMS)A Practical Approach"Fifth Edition
3	Shio Kumar Singh , "Database Systems ",Pearson publications ,II Edition
Reference Books:	
1	Coronel, Morris, Rob, "Database Systems, Design, Implementation and Management", Ninth Edition
2	Nilesh Shah, "Database Systems Using Oracle", 2nd edition, Pearson Education India,2016
Web resources:	
1	Web resources from NDL Library, E-content from open-source libraries

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	3	2	1	3	1	3	3	2	1
CO2	3	3	3	2	3	3	2	2	3	3	2
CO3	3	3	2	3	3	2	2	3	3	3	2
CO4	3	2	3	2	2	3	3	2	3	2	3
CO5	3	2	2	2	3	3	2	2	3	2	2
Total	15	12	13	11	12	14	10	12	15	12	10
Average	3	2.4	2.6	2.2	2.4	2.8	2	2.4	3	2.4	2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: FOURTH SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UMAA42	Statistical Methods and Its Applications -II	EC-6 AL	2	1	1	0	4	4	25	75	100

Learning Objectives

LO1	Understand basic concepts of regression, regression lines and curve fitting
LO2	Knowledge related to Sample Space in probability
LO3	Knowledge of standard discreate distributions
LO4	Understand about Test of Significance
LO5	Acquire knowledge about Analysis of variance (ANOVA)

Unit	Content	Hours
1	Regression- Regression lines, Simple problems. Curve fitting by the methods of least squares $y = a + bx$, $y = a + bx + c\,x^2$, $y = ae^{bx}$ **Chapter: 9 Pages 9.1-9.9** **Chapter: 10 pages 10.1-10.10**	12
2	Sample Space -Events- Probability-Addition and Multiplication Theorem Conditional probability - Baye's Theorem – Applications **Chapter :18 pages 737-750**	12
3	Standard distributions: Binomial, Poisson and Normal distribution - Simple problems and fitting of Binomial and Poisson. **Chapter :19 pages 769 -790**	12
4	Test of Significance: Large sample test based on mean and standard deviation, small sample: 't'-test, Chi-square test **Chapter :20 pages 823 – 840, 847 - 854**	12
5	F-test, Analysis of Variance: One-way classification, Two-way classification and Applications. **Chapter: 26 pages 26.1-26.29**	12

CO	Course Outcomes The Students will be able to
CO1	Learn the basics of curve fitting methods
CO2	Basic knowledge of Sample Space in probability
CO3	Be familiar with the concept of standard distribution and fitting of distributions
CO4	Acquire knowledge about important inferential aspects like test of significance
CO5	Solve problems in applications of ANOVA
Textbooks:	
1	Dr.P.R.Vittal, Mathematical Statistics, Margham Publications, Chennai. (Unit – 1 & 5),2002
2	R.S.N.Pillai & Bagavathi (2012) Statistics :Theory and Practice, S.Chand & Company Ltd. New Delhi. (Unit- 2,3 & 4)
Reference Books:	
1	S.C.Gupta & V.K.Kapoor, Fundamental of Mathematical Statistics, Sultan Chand & Sons
2	Dr.S.P.Gupta, Statistical Methods, Sultan Chand & Sons.
3	V.K. Rohatgi, An Introduction to Probability Theory and Mathematical Statistics, 1984.
4	Dr.T.K.V. Iyengar, Dr.B.Krishna Gandhi, S.Ranganantham and Dr.M.V.S.S.N. Prasad Probability and Statistics, S.Chand and Co, 2020.
5	Prof S.G.Vekatachalapathy and Dr.H.Premraj, Statistical Methods, Margham Publications, 2018.
Web resources:	
1	https://stattrek.com/statistics/resources
2	e-books, tutorials on MOOC/SWAYAM courses on the subject
3	www.khanacademy.org/math/statistics-probability/random-variables-statslibrary
4	https://thisisstatistics.org/students/
5	https://oli.cmu.edu/courses/probability-statistics-open-free/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	2	2	2	3	2	3	3	3	3
CO2	3	3	2	2	3	2	3	3	3	2	2
CO3	3	3	2	3	2	3	2	3	3	2	3
CO4	3	2	3	2	3	2	3	3	2	3	2
CO5	3	2	2	2	3	2	3	2	2	2	3
Total	15	12	11	11	13	12	13	14	13	12	13
Average	3	2.4	2.2	2.2	2.6	2.4	2.6	2.8	2.6	2.4	2.6

3 – Strong, 2- Medium, 1- Low

2nd YEAR: FOURTH SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UPHA43	**Digital Electronics and Microcontroller**	**EC-6 AL**	2	1	1	0	4	4	25	75	100

Learning Objectives	
LO1	To learn all types of number systems, Boolean algebra and identities
LO2	To understand the decoder and encoder circuits for addition and subtraction, flip- flops.
LO3	To get the knowledge of counters and memory circuits
LO4	To introduce 8051 architecture and instruction sets of microcontroller 8051
LO5	To provide the knowledge of writing programme of 8051

Unit	Content	Hours
1	**Number Systems and Boolean Algebra:** decimal, binary, octal, hexadecimal numbers systems and their conversions – codes: BCD, gray and excess-3 codes –code conversions –complements (1's, 2's,) –binary addition, binary subtraction using 1's & 2's complement methods – Boolean laws – De-Morgan's theorem –basic logic gates -universal logic gates (NAND & NOR)	12
2	**Encoder and Decoder circuits:** adders,half &full adder – subtractors,half &full subtractor –parallel binary adder – magnitude comparator **Flip-flops:** S-R Flip-flop , J-K Flip-flop, T and D type flip-flops.	10
3	**Counters and Memory Circuits:** asynchronous counters -mod-8, mod-10, synchronous - 4-bit &ring counter – general memory operations, ROM, RAM (static and dynamic), PROM, EPROM, EEPROM, EAROM.	11
4	**Microcontroller Hardware:** Introduction Pin-out 8051, Central Processing Unit (CPU), internal RAM, Internal ROM, Register set of 8051 – Memory organization of 8051 – Input/Output pins, Ports and Circuits – External data memory and program memory	12
5	**Instruction Set and Assembly Language Programming:** Instructions to Access external data memory, external ROM / program memory, PUSH and POP instructions, Data exchange instructions – Logical instructions: byte and bit level logical operations, Rotate– Arithmetic instructions: Flags, Incrementing and decrementing, Addition, Subtraction, Multiplication and division,– Jump and CALL instructions: Jump and Call program range, Jump, Call and subroutines.	15

CO	Course Outcomes The Students will be able to
CO1	Understand the number systems, Boolean algebra and identities
CO2	Analyse the encoder and decoder circuits for addition, subtraction and flip-flops.
CO3	Understand the functions of counters and memory circuits
CO4	Get knowledge of architecture and working of 8051 Microcontroller
CO5	Write simple assembly language programs for 8051 Microcontroller.
Textbooks:	
1	Dr Vijeyendran, "Digital electronics 3rd Edition S.Visvanathan Pvt, Ltd.
2	S.Salivahana& S. Arivazhagan-Digital circuits and design
3	B.Ram, Fundamentals of Microprocessors & Microcontrollers, DhanpatRai publications New Delhi (2016).
Reference Books:	
1	Herbert Taub and Donald Schilling. "Digital IntegratedElectronics" . McGraw Hill. 1985.
2	Douglas V. Hall, Microprocessors and Interfacing programming and Hardware, Tata Mc Graw Hill Publications (2008)
Web resources:	
1	http://www.circuitstoday.com/8051-microcontroller
2	https://www.elprocus.com/8051-assembly-language
3	http://www.psnacet.edu.in/courses/ECE/Microcontroller%20and%20Microprocessor/lecture4.pdf

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	3	3	3	3
CO2	3	3	2	2	2	3	3	3	3	3	3
CO3	3	3	3	2	3	3	2	3	2	2	1
CO4	3	2	3	3	3	2	3	3	2	2	1
CO5	3	3	3	2	3	3	3	3	3	3	3
Total	15	14	14	12	14	14	13	15	13	13	11
Average	**3**	2.8	2.8	**2.4**	2.8	2.8	2.6	**3**	2.6	2.6	**2.2**

3 – Strong, 2- Medium, 1- Low

2nd YEAR: FOURTH SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UMAA42P	**Statistical methods and its applications - I & II Lab**	**EC-7 AL**	**1**	**0**	**1**	**0**	**2**	**2**	**25**	**75**	**100**

Learning Objectives	
LO1	To understand the various type of Diagrams and Graphs.
LO2	To acquire the knowledge on Measures of location, dispersion and Skewness.
LO3	To understand the correlation between the variables and Regression analysis
LO4	To understand the method of curve fitting and fitting of distribution
LO5	To acquire the knowledge in test of significance of large sample, small sample and ANOVA

	List of Programs	**Hours**
	1.Diagrams and Graphs 2. Measures of Location 3. Measures of Dispersion 4. Skewness 5. Correlation 6. Regression 7. Curve Fitting: $y = a + bx$, $y = a + bx + c\,x^2$ 8. Fitting of distributions- Binomial, Poisson, Normal 9. Test of significance of small sample and large sample. 10. One-way, two-way classification using ANOVA	30

CO	Course Outcomes The Students will be able to
CO1	Understand various type of Diagrams and Graphs.
CO2	Understand the concepts Measures of location, dispersion and Skewness
CO3	Understand correlation between the variables and Regression analysis
CO4	Understand the method of curve fitting and fitting of distribution
CO5	Test the significance of large sample, small sample and ANOVA
Textbooks:	
1	S.C. Gupta & V.K. Kapoor, Fundamental of Mathematical Statistics, Sultan Chand & Sons
2	R.S.N. Pillai & V. Bagavathi, Statistics: Theory and Practice, S. Chand & Company Ltd. New Delhi, 2012.
Reference Books:	
1	E.B. Mode, Elements of Statistics, Prentice Hall.
2	Dr.S.P. Gupta, Statistical Methods, Sultan Chand &Sons.
3	V.K. Rohatgi, An introduction to probability theory and mathematical statistics, 1984.
4	Dr.T.K.V. Iyengar, Dr.B. Krishna Gandhi, S.Ranganantham and Dr.M.V.S.S.N Prasad, Probability and Statistics, S.Chand and Co, 2020.
5	Prof S.G. Vekatachalapathy and Dr.H. Premraj, Statistical Methods, Margham Publications, 2018.
Web resources:	
1	https://stattrek.com/statistics/resources
2	www.khanacademy.org/math/statistics-probability/random-variables-statslibrary

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	2	3	2	3	3	3	3
CO2	3	3	2	3	3	3	2	3	2	3	3
CO3	3	2	2	3	2	2	2	3	2	2	2
CO4	2	3	3	3	2	3	2	3	3	3	3
CO5	3	2	2	3	3	2	2	3	2	2	2
Total	14	13	14	15	12	13	10	15	14	13	13
Avera	2.8	2.6	2.8	3	2.4	2.6	2	3	2.8	2.6	2.6

3 – Strong, 2- Medium, 1- Low

2nd YEAR: FOURTH SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UPHA43P	Microprocessor and Microcontroller Lab	EC-7 AL	0	0	2	0	2	2	25	75	100

Learning Objectives

LO 1	To understand the working of Microprocessor
LO 2	To use microprocessor in different applications
LO 3	To Understand about the Verification of Basics Logic Gates
LO 4	To Understand about the Half adder and Full adder concepts using Gates
LO 5	To understand the working of Microcontroller and their applications

Unit	Content	Hours
	1. Microprocessor 8085-ALP for 8 bit addition and Subtraction **2.** Microprocessor 8085-ALP for 8 bit Multiplication and Division **3.** Microprocessor 8085- ALP Largest/Smallest Number in an array **4.** Microprocessor 8085 – square (8 bit only) **5.** Microprocessor 8085 – square root (8 bit only) **6.** Verification of Basic Logic Gates: OR AND and NOT gates **7.** Verification of NAND and NOR as universal building blocks **8.** Verification of DeMorgan's Laws. **9.** Half adder and Full adder - using NAND gate. **10.** Half subtractor and Full subtractor- using NAND gate. **11.** RS, Clocked RS, and D Flip Flops using NAND gate. **12.** Microcontroller 8051-ALP for 8 bit addition and Subtraction **13.** Microcontroller 8051-ALP for 8 bit Multiplication and Division **14.** Microcontroller 8051- ALP Largest/Smallest Number in an array **15.** Ascending/ descending order - using microcontroller 8051	30

CO	Course Outcomes Students will be able to
CO 1	Construct circuit and demonstrate the microprocessor programmes
CO 2	Build the microprocessor 8085 in 8 bit
CO 3	Understand gate-level design and abstraction.
CO 4	Construct and analyze Half and Full Adders/Subtractors.
CO 5	Construct circuit and demonstrate the microcontroller programmes.
Textbooks:	
1	Dr. Srinivasan, Practical Physics Book, Chand & Co
2	S.Salivahana& S. Arivazhagan-Digital circuits and design
3	B.Ram, Fundamentals of Microprocessors & Microcontrollers, Dhanpat Rai publications New Delhi (2016).
Reference Books:	
1	Herbert Taub and Donald Schilling. “Digital Integrated Electronics” . McGraw Hill. 1985.
2	Douglas V. Hall, Microprocessors and Interfacing programming and Hardware, Tata Mc Graw Hill Publications (2008)
Web Resources:	
1	http://www.circuitstoday.com/8051-microcontroller
2	https://www.elprocus.com/8051-assembly-language

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	3	3	3	3
CO2	3	3	2	2	2	3	3	3	3	3	3
CO3	3	3	3	2	3	3	2	3	2	2	1
CO4	3	2	3	3	3	2	3	3	2	2	1
CO5	3	3	3	2	3	3	3	3	3	3	3
Total	15	14	14	12	14	14	13	15	13	13	11
Average	**3**	2.8	2.8	**2.4**	2.8	2.8	2.6	**3**	2.6	2.6	**2.2**

3 – Strong, 2- Medium, 1- Low

2nd YEAR: FOURTH SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UCSS41	**Computer Networks**	**SEC-5**	**1**	**0**	**1**	**0**	**2**	**2**	**25**	**75**	**100**

Learning Objectives	
LO1	To learn the basic concepts of Data communication and Computer network
LO2	To learn about wireless Transmission
LO3	To learn about the data link layer and Multiple Access Protocols.
LO4	To study about Network communication & Transport layer .
LO5	To learn the concept of Network Security and Cryptography

Unit	Content	Hours
1	**Introduction:** Computer Networks – OSI and TCP/IP Models – Example Networks: Internet, ATM, Ethernet and Wireless LANs - Physical Layer – Theoretical Basis for Data Communication - Guided Transmission Media.	6
2	**Physical Layer:** Wireless Transmission - Communication Satellites – Telephone System: Structure, Local Loop, Trunks and Multiplexing and Switching. Data Link Layer: Design Issues – Error Detection and Correction.	6
3	**Data Link Layer:** Elementary Data Link Protocols - Sliding Window Protocols – Data Link Layer in the Internet - Medium Access Layer – Channel Allocation Problem – Multiple Access Protocols – Bluetooth.	6
4	**Network Layer:** Design Issues - Routing Algorithms & Congestion Control Algorithms – IP Protocol – **Transport Layer:** Services & Elements– Internet Transport Protocols (ITP) UDP & TCP – **Application Layer:** Electronic Mail.	6
5	**Network Security:** Cryptography – Symmetric-Key Algorithms – Public-Key Algorithms – Digital Signatures – Management of Public Keys – Communication Security – Authentication Protocols–E-Mail Security – Web Security.	6

CO	Course Outcomes The Students will be able to
CO1	Understand the basics of Computer Network architecture, OSI and TCP/IP reference
CO2	Gain knowledge on Telephone systems using wireless network
CO3	Access the Different Network Layers and Protocols
CO4	Analyze the characteristics of Routing and Congestion control algorithms
CO5	Explore Communication Security threats and Authentication problems
Textbooks:	
1	A. S. Tanenbaum, "Computer Networks", 4th Edition, Prentice-Hall of India, 2008.
Reference Books:	
1	B. A. Forouzan, "Data Communications and Networking", Tata McGraw Hill, 4th Edition, 2017
2	F. Halsall, "Data Communications, Computer Networks and Open Systems", Pearson Education, 2008
3	D. Bertsekas and R. Gallagher, "Data Networks", 2nd Edition, PHI, 2008.
4	Lamarca, "Communication Networks", Tata McGraw- Hill, 2002
Web resources:	
1	https://en.wikipedia.org/wiki/Computer_network
2	https://citationsy.com/styles/computer-networks

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	3	3	3	3
CO2	3	3	2	2	2	3	3	3	3	3	3
CO3	3	3	3	2	3	3	2	3	2	2	1
CO4	3	2	3	3	3	2	3	3	2	2	1
CO5	3	3	3	2	3	3	3	3	3	3	3
Total	15	14	14	12	14	14	13	15	13	13	11
Average	3	2.8	2.8	2.4	2.8	2.8	2.6	3	2.6	2.6	2.2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: FOURTH SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24UAEC41	Environmental Studies and Disaster Management	AEC- 3	2	0	0	0	2	2	25	75	100

Learning Objectives	
LO1	To provide basic knowledge of Environmental Science and Sustainability
LO2	To understand the Fundamentals of Disaster Management
LO3	To create awareness about Natural Disaster and Management
LO4	To familiarize students with Manmade Disaster and Management
LO5	To promote community participation and technological applications in disaster risk reduction

Unit	Content	Hours
1	**Environmental Science and Sustainability** Ecosystem: structure, types, and functions - Biodiversity: importance and conservation strategies - Environmental pollution: types (Air & Water), causes, effects, and control measures - Climate change and global warming	5
2	**Fundamentals of Disaster Management** Concepts: disaster, hazard, vulnerability, risk, resilience - Types of disasters: natural and man-made - Disaster management cycle: prevention, mitigation, preparedness, response, recovery.	5
3	**Natural Disasters and Management** Earthquakes, floods, Oil spill disaster, cyclones, Tsunami, droughts, landslides, Heat wave - Causes, consequences, and case studies - Community and government measures for preparedness and mitigation. Role of Government in Disaster Management – NDMA, SDMA & DDMA. Community Based Disaster Management	8
4	**Man-Made Disasters and Management** Industrial accidents, fires, chemical and nuclear hazards, Biological hazards, transport accidents - Impacts on society, economy, and environment - Disaster preparedness and management strategies - Case studies: Bhopal Gas Tragedy, Vizag Gas Leak, urban disasters.	7
5	**Sustainable Development and Disaster Risk Reduction** Principles of sustainable development and Sustainable Development Goals (SDGs) - Climate change and disaster interlinkages - Disaster risk reduction strategies: early warning systems, resilient infrastructure, policy framework. Role of technology, education, and media in environmental sustainability and disaster management	5

CO	Course Outcomes The Students will be able to
CO1	Describe the importance of ecosystems, biodiversity, and methods of controlling pollution.
CO2	Understand the basic concepts of disaster management, hazards, risks, and resilience.
CO3	Explain the causes, effects, and control measures of major natural disasters.
CO4	Identify different types of man-made disasters and suggest safety and preparedness
CO5	Recognize the role of sustainable development and disaster risk reduction strategies in
Textbooks:	
1	Government of India – Disaster Management Act, 2005
2	P.C. Mishra – Disaster Management and Mitigation
Reference Books:	
1	Erach Bharucha – Textbook of Environmental Studies
2	IGNOU Study Material – Disaster Management
Web resources:	
1	https://ndma.gov.in/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	2	2	3	3	3	3
CO2	3	3	3	3	3	2	3	3	3	3	2
CO3	3	3	3	3	3	2	3	3	3	3	2
CO4	3	2	3	3	3	2	3	3	3	3	2
CO5	3	2	3	3	3	2	3	3	3	3	2
Total	15	13	15	14	15	10	14	15	15	15	11
Average	3	2.6	3	2.8	3	2	2.8	3	3	3	2.2

3 – Strong, 2- Medium, 1- Low