



**MARUDHAR KESARI JAIN COLLEGE FOR WOMEN
(AUTONOMOUS)**

Vaniyambadi – 635 751

PG Department of Computer Applications

for

Undergraduate Programme

Bachelor of Computer Applications

From the Academic Year 2024-25

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LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK FOR UNDERGRADUATE EDUCATION

1. Preamble

The Department of Computer Applications started a programme as Specialization on BCA-1998 MCA-2002. As College is granted academic autonomy in the year 2024 it has the privilege of restructuring the syllabus and introducing new career oriented industry ready programs. Keeping an eye on the industry and to modernize the curriculum, the Board of Studies of the Department of Computer Applications, has initiated an industry collaboration to impart Bachelor of Computer Application, specialized in Mobile Applications and Cloud Technology. This programme comprises complementary course Mathematics and vocational course Cloud Technology. The main objective of this programme is to inculcate and horn up the skills of young minds in new generation technologies to compete in the knowledge era. This programme is designed in such a way that students can have a detailed knowledge of subjects as well as the knowledge of IT related applications. Throughout this programme the students will go through the IT scenario, its scope, career and the essentials of the IT world. This unique programme provides dual career options for the students in the latest and fast growing technology sectors of Mobile Applications and Cloud Technology. The syllabus aims to focus on enabling the students to familiarize with the new technologies, and at the same time enhance and strengthen the fundamental knowledge in Computer Applications, and related fields.

PROGRAMME OUTCOMES (PO)

Programme	B.C.A
Programme Code	UA07
Duration	3 Years
Programme Outcomes	PO1: Disciplinary knowledge: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate Programme of study. PO2: Communication Skills: Ability to express thoughts and ideas effectively in writing and orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and write accurately, and present complex information in a clear and concise manner to different groups. PO3: Critical thinking: Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development. PO4: Problem solving: Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one's learning to real life situations. PO5: Analytical reasoning: Ability to evaluate the liability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples and addressing opposing viewpoints. PO6: Research-related skills: A sense of inquiry and capability for asking relevant/appropriate questions, problem arising, synthesizing and articulating; Ability to recognize cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation. PO7: Cooperation / Teamwork: Ability to work effectively and respectfully with diverse teams ; facilitate cooperative or coordinated effort on the part of a group, and act together as a group or a team in the interests of a common cause

	and work efficiently as a member of a team. PO8: Scientific reasoning: Ability to analyse, interpret and draw conclusions from quantitative/qualitative data ; and critically evaluate ideas, evidence, and experiences from an open-minded and reasoned perspective.
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Programme Specific Outcomes:	PSO1– Placement: To prepare the students who will demonstrate respectful engagement with others’ ideas, behaviors, and beliefs and apply diverse frames of reference to decisions and actions. PSO2-Entrepreneur: To create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skills that will facilitate startups and high potential organizations. PSO3 –Research and Development: Design and implement HR systems and practices grounded in research that comply with employment laws, leading the organization towards Growth and development.
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Eligibility for Admission:

Candidates for admission to the first year of the Bachelor of Computer Applications course shall be required to have passed the Higher Secondary Course Examination (Academic or Vocational) by the Government of Tamilnadu with Mathematics / Business Mathematics / Statistics / Computer Science / Commerce / Accountancy as a subject.

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 – I						
Code	Course Title	Hours Distribution				C
		L	T	P	S	
24UFTA11	Tamil – 1	4	1	0	0	3
24UFEN11	English – 1	4	1	0	0	3
24UCAC11	CC – 1-Programming in C	3	1	2	0	5
24UCAC12P	CC – 2 Practical 1- C Lab	0	0	4	0	3
24UMAA12	EC - 1 AL Statistical Methods and its Applications	3	1	0	0	3
24UCAS11	SEC – 1 Computer Basis	1	0	1	0	2
24UCAS12	SEC – 2 Fundamental of Information Technology	1	0	1	0	2
24UCAF11	FC-Digital Fundamental Computing	1	1	0	0	2
					30	23

Semester - II						
Code	Course Title	Hours Distribution				C
		L	T	P	S	
24UFTA21	Tamil – 2	4	1	0	0	3
24UFEN21	English – 2	4	1	0	0	3
24UCAC21	CC – 3 Programming in C++	3	1	1	0	4
24UCAC22	CC - 4 Data Structure	3	1	1	0	4
24UMAA23	EC - 2 (Statistical Methods and Its Applications II)	3	1	0	0	3
24UMAA23P	EC - 3 Practical II- (Statistical Methods and its Applications Lab)	0	0	2	0	2
24UCAS21P	SEC – 3 Practical III- (Data Structure using C++ Lab)	0	0	2	0	2
24UAEC21	AEC – 1 LIFE SKILL FOR YOGA	1	1	0	0	2
					30	23

Semester – III						
24UFTA31	Tamil – 3	4	1	0	0	3
24UFEN31	English – 3	4	1	0	0	3
24UCAC31	CC – 5 Java Programming	3	1	2	0	5
24UCAC32P	CC – 6 Practical IV- Programming in Java Lab	0	0	4	0	2
24UCAE31 / 24UCAE32	EC - 4 Web Technology/ Open Source Software	3	1	0	0	4
24UCAE33P / 24UCAE34P	EC - 5 AL Practical V- Web Technology Lab/ Open Source Software Lab	0	0	2	0	2
24UCAS31	SEC -4 Multimedia Systems	1	0	1	0	2
24UAEC31	AEC – 2 Human Values and Indian Knowledge System	1	1	0	0	2
					30	23

Semester – IV						
	Tamil – 4	4	1	0	0	3
	English – 4	4	1	0	0	3
	CC – 7 Python Programming	3	1	2	0	5
	CC - 8 Practical VI-Python Lab	0	0	4	0	2
	EC - 6 AL RDBMS	3	1	0	0	4
	EC - 7 AL Practical VII- RDBMS Lab	0	0	2	0	2
	SEC – 5 Data Mining	1	0	1	0	2
	AEC – 3 Environmental Studies	1	1	0	0	2
					30	23

Semester – V						
	CC -9 Operating System	4	1	0	0	4
	CC- 10 Practical VIII- Operating System Lab	0	0	4	0	4
	CC – 11 Mobile Application Development	2	1	1	0	4
	CC - 12 Practical IX- Mobile Application Development Lab	0	0	3	0	2
	EC – Mobile Computing/ Big Data Analytics	4	1	0	0	4
	EC – 9 Full Stack Development/ Software Project Management	4	1	0	0	4
	AEC – 4 Social Responsibilities And Upliftment	1	1	0	0	2
	Internship				2	2
					30	26

Semester – VI						
	CC – 13 Machine Learning	4	1	0	0	4
	CC - 14 Practical X-Machine Learning lab	0	0	5	0	3
	CC - 15 – Project	0	0	0	5	4
	EC – 10 IOT and its Applications/ Enterprise Resource Planning	4	1	0	0	4
	EC – 11 Cloud Computing/ Natural Language Processing	4	1	0	0	4
	PEC – 1 Value Education	1	1	0	0	2
	SLC – 1 Cyber Forensics				3	2
					30	23
					141+2*	

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
24UCAC31	Java Programming	Core	3	1	2	0	5	6	25	75	100
Learning Objectives											
LO1	Learn about the history and evolution of Java and its core features.										
LO2	Implement Inheritance, method overloading and method overriding, polymorphism and Importing Packages.										
LO3	Understand the concept of streams and their role in input/output operations.										
LO4	Explore the events and their role in interactive GUI applications using AWT.										
LO5	Explore the hierarchy of Swing components and their relationship with AWT.										
Unit	Content										Hours
1	Introduction: Review of Object Oriented concepts – History of Java – Java buzzwords 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 - Colour - 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- On completion of this course, students will be
CO1	Understand the basic Object-oriented concepts. 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, The Complete Reference, Tata McGraw Hill, New Delhi, 7th Edition, 2010
2	Gary Cornell, Core Java 2 Volume I – Fundamentals, Addison Wesley, 1999
3	"Java: How to Program" – Paul Deitel & Harvey Deitel, Pearson Education
4	"Java Programming for Beginners" – Mark Lassoﬀ, LearnToProgram Media
5	"Head First Java" – Kathy Sierra & Bert Bates, O'Reilly Media 2017

Reference Books:

--1	Y. Daniel Liang, Introduction to Java Programming, 7th Edition, Pearson Education India, 2010
2	P.Rizwan Ahmed, Java Programming, 3rd Edition, Margham Publications, 2017
3	"Core Java Volume I – Fundamentals"&"Core Java Volume II – Advanced Features" Cay S. Horstmann, Pearson Education
4	"Java Network Programming" (4th Edition) Elliotte Rusty Harold, O'Reilly Media
5	"Java Performance: The Definitive Guide", Scott Oaks, O'Reilly Media

Webresources:

1	https://javabeginnerstutorial.com/core-java-tutorial
2	http://docs.oracle.com/javase/tutorial/
3	https://www.coursera.org/
4	https://docs.oracle.com/en/java/
5	https://www.programiz.com/java-programming

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	3	2	1	2	1	1	3	1	2
CO2	3	3	3	2	2	2	1	2	3	2	3
CO3	2	3	3	3	2	1	2	2	2	3	3
CO4	2	2	3	2	2	1	1	3	2	2	2
CO5	2	3	3	3	3	2	1	3	3	3	3
Total	12	13	15	12	10	8	6	11	13	11	13
Average	2	3	3	2	2	2	1	2	3	2	3

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
24UCAC32P	Programming in Java Lab	Practical-IV	0	0	4	0	2	4	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 up.										
LO3	To enable the students to know about Event Handling.										
LO4	To enable the students to use String Concepts.										
LO5	To equip the student with programming knowledge in to create GUI using AWT controls.										
Unit	Content										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										60
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										
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.										
	Write a Java program that handles all mouse events and shows the event name at the										

13	center of the window when a mouse event is fired. (Use adapter classes).	
14	Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -, *, % operations. Add a text field to display the result. Handle any possible exceptions like divide by zero.	
15	Write a Java program that simulates 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-On completion of this course, students will be
CO1	Understand the basic Object-oriented concepts. 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, The Complete Reference, Tata McGraw Hill, New Delhi, 7th Edition, 2010
2	Gary Cornell, Core Java 2 Volume I – Fundamentals, Addison Wesley, 1999
3	"Java: How to Program" – Paul Deitel & Harvey Deitel, Pearson Education
4	"Java Programming for Beginners" – Mark Lassoﬀ, LearnToProgram Media
5	"Head First Java" – Kathy Sierra & Bert Bates, O'Reilly Media 2017
Reference Books:	
1	Y. Daniel Liang, Introduction to Java Programming, 7th Edition, Pearson Education India, 2010
2	P.Rizwan Ahmed, Java Programming, 3rd Edition, Margham Publications, 2017
3	"Core Java Volume I – Fundamentals"&"Core Java Volume II – Advanced Features" Cay S. Horstmann, Pearson Education
4	"Java Network Programming" (4th Edition) Elliotte Rusty Harold, O'Reilly Media
5	"Java Performance: The Definitive Guide", Scott Oaks, O'Reilly Media
Web resources:	
1	https://javabeginnerstutorial.com/core-java-tutorial
2	http://docs.oracle.com/javase/tutorial/
3	https://www.coursera.org/
4	https://docs.oracle.com/en/java/
5	https://www.programiz.com/java-programming

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	2	1	2	3	1	2
CO2	3	3	3	2	2	2	1	2	3	2	3
CO3	2	3	3	3	2	1	2	3	2	3	3
CO4	2	2	3	2	2	1	1	3	2	2	2
CO5	2	3	3	3	3	2	1	3	3	3	3
Total	12	13	15	12	10	8	6	13	13	11	13
Average	2	3	3	2	2	2	1	3	3	2	3

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
24UCAE31	Web Technology	Elective -IV	3	1	0	0	4	4	25	75	100
Learning Objectives											
LO1	Understand the basic concepts of the Internet, web technologies, and client-server architecture.										
LO2	Learn the structure and syntax of HTML and CSS for creating and styling web pages.										
LO3	Develop interactivity using client-side scripting languages like JavaScript.										
LO4	Gain knowledge of server-side programming concepts using PHP (or similar).										
LO5	Learn to define custom tags, attributes, and elements using XML and purpose of XML in web technologies.										
Unit	Content										Hours
1	Introduction to Internet and Web Technologies: History and evolution of the Internet and World Wide Web, Understanding URLs, web pages, and web browsers. Overview of web protocols: HTTP, FTP, SMTP, etc, Client-server architecture and web server basics, Search engines and their functionalities.										12
2	HTML and CSS: HTML basics: tags, elements, attributes, and document structure, Creating forms, tables, and lists in HTML. Introduction to Cascading Style Sheets (CSS), CSS Basics: Syntax, Comments, Selectors, Declarations, Types and Comments, Linking Style Sheet to HTML. Creating CSS File. CSS Box Model.										12
3	Client-Side Scripting with JavaScript: JavaScript syntax and data types, Variables, operators, and control structures, Functions and event handling, Form validation techniques. Introduction to Document Object Model (DOM) manipulation.										12
4	Server-Side Scripting (e.g., PHP): Basics of server-side scripting languages, Handling form data on the server, Session management and cookies, Connecting to databases and performing CRUD operations, Security considerations in server-side scripting.										12
5	XML: Introduction to XML, XML Specification , XML Syntax, Defining XML tags, their attributes and values, Structure of XML, XML Elements, Naming Rules XML Element Content Models, XML DTD (Document Type Declaration), XML Schema.										12

CO	Course Outcomes- On completion of this course, students will be
CO1	Describe the functioning of the Internet, web protocols, and client-server model.
CO2	Design structured and visually styled web pages using HTML and CSS.
CO3	Implement interactive features in web pages using JavaScript.
CO4	Develop dynamic websites with server-side scripting and database connectivity.
CO5	Design XML documents with appropriate elements, attributes, and hierarchical structure.
Textbooks:	
1	Thomas A. Powell: HTML & XHTML”Fourth Edition, The Complete Reference
2	Ivan Bay ross:Web enabled commercial application development using HTML,JavaScript,DHTMLandPHP”4 th Edition
3	Robert W.Sebesta: Programming the World WideWeb,Eighth Edition, Pearson education,2015.
4	Dayley Brad, Dayley Brendan,”AngularJS,JavaScript,and jQuery All in One”,Sams Teach Yourself 1 st Edition,Kindle Edition,2015.
5	Deitel,nieto,Lin,Sandhu-“XML How to program”-Pearson.
Reference Books:	
1	M. Srinivasan:Web Programming Building Internet Applications,3 rd Edition,Wiley India,2009.
2	JeffreyC.Jackson:Web Technologies-A Computer Science Perspective, Pearson Education,7 th Impression,2012.
3	Chris Bates: Web Technology Theory and Practice,Pearson Education,2012.
4	Raj Kamal: Internet and Web Technologies, McGraw Hill Education.
5	Ryan Benedetti, Ronan Cranley, Head First jQuery- A Brain-Friendly Guide,O'ReillyMedia
Web resources:	
1	https://www.studocu.com/in/document/mangalore-university/web-technology/unit-1-part-a/92991233/
2	https://www.studocu.com/in/document/anna-university/web-technologies/wt-unit-ii-web-technologies-notes/102028957/download/wt-unit-ii-web-technologies-notes.pdf/
3	https://www.studocu.com/in/document/anna-university/internet-programming/unit-iii-server-side-programming-final/92812518/download/unit-iii-server-side-programming-final.pdf/
4	https://www.studocu.com/in/document/anna-university/internet-programming/cs8651-ip-notes-unit-4/41046757/
5	https://www.studocu.com/in/document/anna-university/web-technology/unit-v-introduction-to-angular-and-web-applications-frameworks/67820610

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	3	2	1	2	1	2	3	1	2
CO2	3	3	3	2	2	2	2	2	3	2	3
CO3	2	3	3	3	2	1	2	3	2	3	3
CO4	2	2	3	2	3	2	1	3	2	2	3
CO5	2	3	3	3	3	1	2	3	3	3	3
Total	12	13	15	12	11	8	8	13	13	11	14
Average	2	3	3	2	2	2	2	3	3	2	3

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
24UCAE33P	Web Technology Lab	Practical-V	0	0	2	0	2	2	25	75	100
Learning Objectives											
LO1	To understand the concepts of ADTs										
LO2	To learn linear data structures-lists, stacks, queues										
LO3	To learn Tree structures and application of trees										
LO4	To learn graph structures and application of graphs										
LO5	To understand various sorting and searching										
Unit	Content										Hours
1	Create a web page having suitable background color and text color with title “My First Web Page” using all the attributes of the Font tag.										20
2	Create a web page with Frames and Tables										
3	Create HTML for demonstration of cascading style sheets. A. Embedded style sheets. B. External style sheets. C. Inline styles.										
4	Create a personal portfolio web page Using HTML for structure and CSS for styling.										
5	Writing scripts for form validation using JavaScript. Example: Check if email, phone number, and password fields are correctly filled.										
6	Build a simple calculator using JavaScript.										
7	Create a PHP program to check whether given number is String palindrome or not.										
8	Create a simple dynamic web page using PHP. Accept form data and display output (e.g., feedback form processing).										
9	Create an external Document Type Definition to validate XML for CUSTOMER DETAILS.										
10	Design an XML document and validate it using XML Schema.										

CO	Course Outcomes
CO1	Construct a basic web site using HTML and Cascading Style Sheets
CO2	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.

CO3	Develop server side programs using Servlets and JSP.
CO4	Construct simple web pages in PHP and to represent data in XML format.
CO5	Develop interactive web applications.
Textbooks:	
1	Deitel and Deitel and Nieto, Internet and World Wide Web-How to Program, Prentice Hall, 5th Edition, 2011.
2	Jeffrey C and Jackson, Web Technologies A Computer Science Perspective, Pearson Education, 2011.
3	Angular 6 for Enterprise-Ready Web Applications, Doguhan Uluca, 1st edition, Packt Publishing
Reference Books:	
1	Stephen Wynkoop and John Burke "Running a Perfect Website", QUE, 2 nd Edition, 1999.
2	Chris Bates, Web Programming–Building Intranet Applications, 3 rd Edition, Wiley Publications, 2009.
3	Gopalan N.P. and Akil and eswari J., "Web Technology", Prentice Hall of India, 2011.
4	Uttam K. Roy, "Web Technologies", Oxford University Press, 2011.
5	Angular: Up and Running: Learning Angular, Step by Step, Shyam Seshadri, 1 st edition, O'Reilly
Web resources:	
1	https://mrcet.com/pdf/Lab%20Manuals/WT%20LAB%20MANUAL.pdf
2	https://www.studocu.com/in/document/anna-university/web-technologies/wt-unit-ii-web-technologies-notes/102028957/download/wt-unit-ii-web-technologies-notes.pdf
3	https://www.studocu.com/in/document/anna-university/internet-programming/unit-iii-server-side-programming-final/92812518/download/unit-iii-server-side-programming-final.pdf
4	https://www.studocu.com/in/document/anna-university/internet-programming/cs8651-ip-notes-unit-4/41046757
5	https://www.studocu.com/in/document/anna-university/web-technology/unit-v-introduction-to-angular-and-web-applications-frameworks/67820610

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	1	2	2	3	1	2
CO2	3	3	3	2	2	2	2	2	3	2	3
CO3	2	3	3	3	2	1	1	3	2	3	3
CO4	2	2	3	2	3	2	2	3	2	2	3
CO5	2	3	3	3	3	3	2	3	3	3	3
Total	12	13	15	12	11	9	9	13	13	11	14
Average	2	3	3	2	2	2	2	3	3	2	3

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
24UCAE32	Open Source Software	Elective- IV	3	1	0	0	4	4	25	75	100
Learning Objectives											
LO1	Understand the basic structure and functionality of HTML and HTML5.and also Applies CSS for styling web pages, including layout, colors and fonts.										
LO2	Understand essential Linux commands for system navigation and management.										
LO3	To Learn about the fundamentals of JavaScript and MySQL.										
LO4	Learn the fundamentals of PHP and its syntax.										
LO5	To Learn the fundamentals and background of Perl.										
Unit	Content										Hours
1	Unit-1:INTRODUCTION TO HTML, HTML5, CSS: Need and Applications of Open Source -Introduction to HTML-HTML Tags and Structure-Dynamic Web Content -Introduction to HTML5-HTML5 Canvas-HTML5 Audio and Video-Introduction to CSS-CSS Rules and Selectors-CSS Style Types and Colors										12
2	Unit-2:LINUX: Linux Essential Commands-Kernel Model and User Mode-File System Concepts-The Linux Security Model-Vi Editor Basics-Shell Introduction- -Managing Processes -Installing Applications in Linux										12
3	Unit-3:JAVASCRIPT AND MYSQL: JavaScript: Introduction of JavaScript - JavaScript Syntax-Data Types and Variables-Arrays-Operators and Expressions-Loops-Functions-Dialog Boxes MySQL: Introduction to MySQL-SHOW Databases and Tables-USE Command-Creating Databases and Tables-Describing Tables-SELECT, INSERT, UPDATE, and DELETE Statements										12
4	Unit-4:PHP: Introduction to PHP-PHP Syntax and Scripting- -PHP Variables, Operations, and Expressions-Control Statements -Basic Form Processing-File and Folder Access-Cookies and Sessions-Database Access with PHP										12
5	Unit 5 PERL: Introduction to Perl and Its Background-Perl Features-Perl Parsing Rules-Variables and Data Types-Statements and Control Structures-Subroutines, Packages, and Modules-Working with Files in Perl-Data Manipulation in Perl										12

CO	Course Outcomes- On completion of this course, students will be
CO1	To Understand about the Design structured web pages using HTML and HTML5.Create responsive designs using CSS techniques.
CO2	Apply knowledge of the Linux file system for system organization.
CO3	Implement JavaScript-based dynamic content with MySQL databases.
CO4	Implement PHP operations, expressions, and control structures.
CO5	Understand about basic concept of PERL
Textbooks:	
1	"TheCompleteReferenceLinux",Peterson,TataMcGrawHILL–2010
2	"Perl:TheCompleteReference",MartinC.Brown,TataMcGrawHillPublishingCompanyLimited, Indian Reprint 2009.
3	"MYSQL:TheCompleteReference",VikramVaswani,2 nd Edition,TataMcGrawHillPublishing Company Limited, Indian Reprint 2009
4	"PHP:TheCompleteReference",StevenHolzner,2 nd Edition, TataMcGrawHillPublishingCompany Limited, Indian Reprint 2009.
5	"CompleteReferenceHTML",T.A.Powell,3 rd Edition,TataMcGrawHillPublishingCompany Limited, Indian Reprint 2002.
Reference Books:	
1	"Fundamentals of OpenSourceSoftware",byM.N.Rao,PHIpublishers.
2	"MySQLBible",SteveSuchring,JohnWiley,2002
3	"The LinuxKernelBook",RemyCard,EricDumasandFrankMevel,WileyPublications, 2003
4	IvanByRoss,HTML,DHTML,Javascript,Perl,BPBPublishing,"PHP: The Complete Reference" – Steven Holzner
5	" Learning Perl" – Randal L. Schwartz, Tom Phoenix, Brian D. Foy,"Programming Perl" – Larry Wall, Tom Christiansen, Jon Orwant,"Perl Cookbook" – Tom Christiansen, Nathan Torkington
Web resources:	
1	https://www.w3schools.com/html/ , https://www.w3schools.com/css/
2	https://www.geeksforgeeks.org/linux-tutorial/
3	https://developer.mozilla.org/en-US/docs/Web/JavaScript , https://www.w3schools.com/MySQL/default.asp
4	https://www.w3schools.com/php/
5	https://www.tutorialspoint.com/perl/index.htm

Mapping with Programme Outcomes

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

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
24UCAE34 P	Open Source Software Lab	Practical- V	0	0	2	0	2	2	25	75	100
Learning Objectives											
LO1	To understand the basic HTMLTags.										
LO2	To understand the types of CSS.										
LO3	To learn Javascript functions.										
LO4	To know about PHP form elements.										
LO5	To learn PHP with MYSQL database connectivity.										
Unit	Content										Hours
1	Create a web page with Frames and Tables.										20
2	Create a webpage in Corporating CSS(Cascading Style Sheets).										
3	Develop a shell program to find the factorial of an integer positive number.										
4	Develop a shell program to find the details of a user session.										
5	Create a simple calculator in JavaScript										
6	Develop a JavaScript program to scroll your name in the scrollbar.										
7	Develop a program and check message passing mechanism between pages										
8	Application for Email Registration and Login using PHP and MySQL.										
9	Program to Create a File and write the Data into it using PHP										
10	Program to perform the String Operation using Perl										

CO	Course Outcomes- On completion of this course, students will be
CO1	The student will be able to design static web pages.
CO2	The student will be able to link common style to the web pages using CSS.
CO3	The student will be able to validate form controls using javascript.
CO4	The student will be able to design dynamic web pages using tags.
CO5	The student will be able to develop PHP program with MYSQL database connection.
Textbooks:	

1	“TheCompleteReferenceLinux”,Peterson,TataMcGrawHILL–2010
2	“Perl:TheCompleteReference”,MartinC.Brown,TataMcGrawHillPublishingCompanyLimited, Indian Reprint 2009.
3	“MYSQL:TheCompleteReference”,VikramVaswani,2ndEdition,TataMcGrawHillPublishing Company Limited, Indian Reprint 2009
4	“PHP:TheCompleteReference”,StevenHolzner,2ndEdition,TataMcGrawHillPublishingCompany Limited, Indian Reprint 2009.
5	“CompleteReferenceHTML”,T.A.Powell,3rdEdition,TataMcGrawHillPublishingCompany Limited, Indian Reprint 2002.
Reference Books:	
1	“FundamentalsofOpenSourceSoftware”,byM.N.Rao,PHIpublishers.
2	“MySQLBible”,SteveSuchring,JohnWiley,2002
3	“The LinuxKernelBook”,RemyCard,EricDumasandFrankMevel,WileyPublications, 2003
4	IvanByross,HTML,DHTML,Javascript,Perl,BPBPBpublication,"PHP: The Complete Reference" – Steven Holzner
5	" Learning Perl" – Randal L. Schwartz, Tom Phoenix, Brian D. Foy, "Programming Perl" – Larry Wall, Tom Christiansen, Jon Orwant, "Perl Cookbook" – Tom Christiansen, Nathan Torkington
Web resources:	
1	https://www.w3schools.com/html/ , https://www.w3schools.com/css/
2	https://www.geeksforgeeks.org/linux-tutorial/
3	https://developer.mozilla.org/en-US/docs/Web/JavaScript , https://www.w3schools.com/MySQL/default.asp
4	https://www.w3schools.com/php/
5	https://www.tutorialspoint.com/perl/index.html/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	2	3	-	2	-	2	3	2	2
CO2	2	2	-	3	-	2	-	2	2	2	3
CO3	2	2	2	3	2	2	2	-	2	2	3
CO4	3	3	3	3	-	3	3	2	3	3	3
CO5	2	3	3	3	3	2	3	2	3	3	3
Total	12	12	10	15	5	11	8	8	13	12	14
Average	2	2	2	3	1	2	2	2	3	2	3

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
24UCAS31	Multimedia Systems	SEC-IV	1	0	1	0	2	2	25	75	100
Learning Objectives											
LO1	Understand the fundamental concepts of multimedia and its various components.										
LO2	Explore tools and techniques for an integrating multimedia elements such as text, images, audio, video, and animation.										
LO3	Apply design principles to develop multimedia content for practical applications .										
LO4	Gain hands-on experience with industry-standard multimedia software.										
LO5	Understanding the concept of cost involved in multimedia, planning, designing, and producing.										
Unit	Content										Hours
1	Introduction to Multimedia: Definition and elements of multimedia, Types of multimedia : Linear vs. Non-linear, Multimedia applications (education, entertainment, business), Multimedia system architecture and requirements.										6
2	Text and Image in Multimedia: Types of text and fonts, Image file formats: BMP, JPEG, PNG, GIF. Basics of image editing: cropping, resizing, layers. Tools: Adobe Photoshop / GIMP.										6
3	Audio and Video Technology: Characteristics of sound: frequency, amplitude. Audio file formats: WAV, MP3, OGG. Basics of video: frame rate, resolution, aspect ratio.Video formats: AVI, MP4, MOV. Tools: Audacity (audio), Adobe Premiere Pro / Shotcut (video).										6
4	Animation in Multimedia: Principles of animation (keyframes, tweening, morphing). Types: 2D vs. 3D animation. Animation tools: Adobe Animate / Blender. Applications of animation: advertising, web, games.										6
5	Multimedia Authoring and Tools: Types of authoring tools: Icon-based, Time-based, Card-based. Multimedia project planning and design. Integrating text, images, audio, and video. Building multimedia presentations (e.g., in Adobe Flash, PowerPoint).										6

CO	Course Outcomes- On completion of this course, students will be
CO1	Understand the concepts, importance, application and the process of developing multimedia
CO2	To have basic knowledge and understanding about Image related processing's
CO3	To understand the framework of frames and bit Images to animations
CO4	Speaks about the multimedia projects and stages of Requirement in phases of project
CO5	Understanding the concept of cost involved in multimedia planning, designing, and producing.
Textbooks:	
1	TayVaughan,"Multimedia:MakingItWork",8thEdition,Osborne/McGraw-Hill, 2001.
2	Fundamentals of multimedia Book by Ze-Nian Li, 2004
3	Introduction to Multimedia and its Applications, V.K.Jain, Khanna Publishing House,2012
Reference Books:	
1	Ralf Steinmetz & Klara Nahrstedt"Multimedia Computing, Communication& Applications", Pearson Education, 2012.
Web resources:	
1	https://www.geeksforgeeks.org/multimedia-systems-with-features-or-characteristics/
2	https://www.geeksforgeeks.org/multimedia-tutorial/
3	https://www.javatpoint.com/Planning/-tutorial
4	https://www.tutorialspoint.com/Designing_and_producing/index.html
5	https://www.tutorialspoint.com/software_needs/.html

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	2	2	2	3	-	2	2	2	2	-
CO2	2	2	2	3	2	2	1	2	3	2	2
CO3	2	2	3	3	2	2	1	3	2	-	3
CO4	2	2	3	3	2	3	2	3	3	2	3
CO5	2	2	3	3	2	2	3	3	3	3	3
Total	11	10	13	14	11	9	9	13	13	9	11
Average	2	2	3	3	2	2	2	3	3	2	2

3 – Strong, 2- Medium, 1- low