HAJEE KARUTHA ROWTHER HOWDIA COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai.)
Re-Accredited with A++ Grade by NAAC (3rd Cycle)
Uthamapalayam - 625 533.

DEPARTMENT OF INFORMATION TECHNOLOGY

PART IV - INFORMATION TECHNOLOGY

SYLLABUS

Choice Based Credit System – CBCS

(As per TANSCHE)

With

Outcome Based Education (OBE)

(Academic Year 2023 -2026)

Semester - I

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UCTSE11	Basics of Internet (NME)	2	25	75	100	2
	23UCTFN11	Fundamentals of Computers	2	25	75	100	2

Semester - II

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UCTSE21	Introduction to HTML (NME)	2	25	75	100	2
	23UCTSE2P	Office Automation Lab	2	40	60	100	2

Semester - III

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UCTSE3P	Advanced Excel Lab	1	40	60	100	1
	23UCTSE3Q	Multimedia Lab	2	40	60	100	2
	23UGEVS41	Environmental Studies	1	-	-	-	-

Semester - IV

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UCTSE4P	Web Designing Lab	2	40	60	100	2
	23UCTSE41	Biometrics	2	25	75	100	2
	23UGEVS41	Environmental Studies	1	25	75	100	2

Semester - V

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UGVED51	Value Education	2	25	75	100	2
	23UCTIS51	Internship / Industrial Training	-	-	-	-	2

Semester - VI

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UCTSE61	Quantitative Aptitude	2	25	75	100	2

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCTSE11	BASICS OF INTERNET (NME)	NME	2	2	25	75	100

Learning Objectives		
L1	Knowledge of Internet medium	
L2	Internet as a mass medium	
L3	Features of Internet Technology,	
L4	Internets source of infotainment	
L5	Study of internet audiences and about cyber crime	
UNIT	Contents	No. of Hours
I	The emergence of internet as a mass medium–the world of_ world wide web‘.	6
II	Features of internet as a technology.	6
III	Internet as a source of infotainment – classification based on content and style.	6
IV	Demographic and psychographic descriptions of internet _audiences‘ – effect of internet on the values and life-styles.	6
V	Present issues such as cybercrime and future possibilities.	6
	Total	30

Course Outcomes		Knowledge Level
CO	On completion of this course, students will	
1	Knows the basic concept in HTMLConcept of resources in HTML	K1,K2,K3,K4
2	Knows Design concept.Concept of Meta Data Understand the concept of save the files.	K1,K2,K3,K4,K5,K6
3	Understand the page formatting. Concept of list	K1,K2,K3,K4,K5,K6
4	Creating Links. Know the concept of creating link to email address	K1,K2,K3,K4,K5,K6
5	Concept of adding images Understand the table creation.	K1,K2,K3,K4,K5

Textbooks	
1	-Mastering HTML5 and CSS3 Made Easy**||**, TeachUComp Inc., 2014.
2	Thomas Michaud, “Foundations of Web Design: Introduction to HTML & CSS”
Reference Books	
1.	The Internet as Mass Medium - Morris - 1996 - Journal of Computer-Mediated Communication - Wiley Online Library
2.	11.2 The Evolution of the Internet – Understanding Media and Culture
Web Resources	
1.	https://www.teachucomp.com/samples/html/5/manuals/Mastering-HTML5-CSS3.pdf
2.	https://www.w3schools.com/html/default.asp

Mapping with Programme Outcomes:

CO /PO	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	1	2
CO2	3	3	3	2	3
CO3	3	1	2	2	3
CO4	3	2	2	3	3
CO5	3	2	1	3	3

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	3	2	2	3
CO2	1	3	3	3	3
CO3	2	2	3	3	3
CO4	3	3	1	2	3
CO5	3	3	3	3	3

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCTFN11	FUNDAMENTALS OF COMPUTERS	FC	2	2	25	75	100

Learning Objectives		
L1	To analyze a problem with appropriate problem solving techniques.	
L2	To understand the main principles of imperative, functional and logic oriented programming languages.	
L3	To increase the ability to learn new programming languages.	
UNIT	**Contents**	**No. of Hours**
I	**Introduction:** Characteristics of Computers-Evolution of Computers **Basic Computer Organization:** I/O Unit-Storage Unit-Arithmetic Logic Unit-Control Unit -Central Processing Unit	6
II	**Computer Software:** Types of Software-System Architecture **Computer Languages:** Machine Language-Assembly Language-High Level Language- Object Oriented Languages	6
III	**Problem Solving Concepts:** Problem Solving in Everyday life –Types of Problems-Problem solving with computers-Difficulties with Problem Solving	6
IV	**Problem Solving concepts for the computer:** Constant Variables –Data Types-Functions -Operators-Expressions and Equations **Organizing the Solution:** Analyzing the problem-Algorithm-Flow chart-Pseudo code	6
V	**Programming Structure:** Structuring a solution - Modules and their function - Local and Global variables - Parameters - Return values –Sequential Logic Structure-Problem solving with Decision-Problem Solving with Loops	6
	Total	**30**
Course Outcomes		**Knowledge Level**
CO	**On completion of this course, students will**	
1	Outline the Computer fundamentals and various problem solving concepts in computers	K1,K2,K3,K4
2	Describe the basic computer organization, software, computer languages, software development life cycle and the need of structured programming in solving a computer problem	K1,K2,K3,K4,K5,K6
3	Identify the types of computer languages, software, computer problems and examine how to set up	K1,K2,K3,K4,K5,K6

	expressions and equations to solve the problem.	
4	Choose most appropriate programming languages, constructs and features to solve the problems in diversified domains.	K1,K2,K3,K4,K5,K6
5	Analyze the design of modules and functions in structuring the solution and various organizing tools in problem solving.	K1,K2,K3,K4,K5
Textbooks		
1	Pradeep K.Sinha and Priti Sinha,(2004)—***Computer Fundamentals‖*** ,Sixth Edition, BPB Publications.(Unit I:Chapter 1 & 2,Unit II: Chapter 10 & 12)	
2	Maureen Sprankle and Jim Hubbard, (2009) —***Problem Solving and Programming Concept***,Ninth Edition,Prentice Hall.(Unit III: Chapter1,2 & 3)Unit IV : Chapter 3, Unit V : Chapter4,5 ,6,7 &8)	
Reference Books		
1	R.G.Dromey, (2007),—***How to Solve it by Computer‖***, Prentice Hall International Series in Computer Science.	
2	C.S.V.Murthy, (2009), —***Fundamentals of Computers‖,*** Third Edition, Himalaya Publishing House.	
NOTE: Latest Edition of Textbooks May be Used		
Web Resources		
1	http://www.tutorialspoint.com/computer_fundamentals/	
2	http://www.comptechdoc.org/basic/basictut/	
3	http://www.homeandlearn.co.uk/	
4	http://www.top-windows-tutorials.com/computer-basics/	
5	https://www.programiz.com/article/flowchart programming(Algorithm and flow chart)	

Mapping with Programme Outcomes:

CO /PO	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	3	3
CO2	3	3	3	2	3
CO3	2	3	2	3	1
CO4	3	2	3	3	2
CO5	3	2	3	3	3

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	3	3
CO2	3	3	3	2	3
CO3	2	3	2	3	1
CO4	3	2	3	3	2
CO5	3	2	3	3	3

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCTSE21	INTRODUCTION TO HTML (NME)	NME	2	2	25	75	100

Learning Objectives		
L1	Insert a graphic within a web page.	
L2	Create a link within a web page.	
L3	Create a table within a web page.	
L4	Insert heading levels within a web page.	
L5	Insert ordered and unordered lists within a web page. Create a web page.	
UNIT	**Contents**	**No. of Hours**
I	**Introduction:** Web Basics: What is Internet–Web browsers–What is Webpage – HTML Basics: Understanding tags	6
II	**Tags for Document structure** (HTML, Head, and Body Tag). Block level text elements: Headings paragraph(<p> tag) – Font style elements:(bold, italic, font, small, strong, strike, big tags)	6
III	**Lists:** Types of lists: Ordered, Unordered– Nesting Lists– Other tags: Marquee, HR, BR- Using Images –Creating Hyperlinks.	6
IV	**Tables:** Creating basic Table, Table elements, Caption–Table and cell alignment– Row span, Col span–Cell padding.	6
V	**Frames:** Frameset– Targeted Links– No frame– Forms: Input,Text area, Select, Option.	6
	Total	30

Course Outcomes		Knowledge Level
CO	On completion of this course, students will	
1	Knows the basic concept in HTMLConcept of resources in HTML	K1,K2,K3,K4
2	Knows Design concept. Concept of Meta Data. Understand the concept of save the files.	K1,K2,K3,K4,K5,K6
3	Understand the page formatting.Concept of list	K1,K2,K3,K4,K5,K6
4	Creating Links. Know the concept of creating link to email address	K1,K2,K3,K4,K5,K6
5	Divide browser window sections with frames retrieve user input with forms	K1,K2,K3,K4,K5

Textbooks	
1	Mastering HTML5 and CSS3 Made Easy**||**, TeachUComp Inc., 2014.
2	Thomas Michaud, "Foundations of Web Design: Introduction to HTML & CSS"
Reference Books	
1.	Julie C Meloni, "HTML, CSS and Java Script".
2.	John Duckett, "HTML and CSS".
Web Resources	
1.	https://www.teachucomp.com/samples/html/5/manuals/Mastering-HTML5-

	CSS3.pdf
2.	https://www.w3schools.com/html/default.asp

Mapping with Programme Outcomes:

CO /PO	PO1	PO2	PO3	PO4	PO5
CO1	2	3	3	3	1
CO2	3	3	2	3	2
CO3	2	3	3	1	3
CO4	3	1	3	3	3
CO5	3	3	3	2	3

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	3	2	3
CO2	3	2	2	1	3
CO3	2	3	3	3	1
CO4	1	3	3	3	2
CO5	3	2	1	2	3

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCTSE2P	**OFFICE AUTOMATION LAB**	**SEC**	**2**	**2**	**40**	**60**	**100**

Learning Objectives		
L1	Understand the basics of computer systems and its components.	
L2	Understand and apply the basic concepts of a word processing package.	
L3	Understand and apply the basic concepts of electronic spreadsheet software.	
L4	Understand and apply the basic concepts of database management system.	
L5	Understand and create a presentation using PowerPoint tool.	
UNIT	**Contents**	**No. of Hours**
I	**Introductory concepts:** Memory unit– CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems & its features: DOS–UNIX–Windows. Introduction to Programming Languages.	6
II	**Word Processing:** Open, Save and close word document; Editing text–tools, formatting, bullets; Spell Checker-Document formatting – Paragraph alignment, indentation, headers and footers, numbering; printing–Preview, options, merge.	6
III	**Spreadsheets:** Excel–opening, entering text and data, formatting, navigating; Formulas–entering, handling and copying; Charts–creating, formatting and printing, analysis tables, preparation of financial statements, introduction to data analytics.	6
IV	**Database Concepts:** The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of data files; Understanding Programming environment in DBMS; Developing menu drive applications in query language(MS–Access).	6
V	**Power point:** Introduction to Power point-Features–Understanding slide type casting & viewing slides–creating slideshows. Applying special object–including objects & pictures–Slide transition–Animation effects, audio inclusion, timers.	6
	Total	**30**
Course Outcomes		**Knowledge Level**
CO	**On completion of this course, students will**	
1	Possess the knowledge on the basics of computers and its components	K1,K2,K3,K4
2	Gain knowledge on Creating Documents, spreadsheet and presentation.	K1,K2,K3,K4,K5,K6
3	Learn the concepts of Database and implement the Query in Database.	K1,K2,K3,K4,K5,K6

4	Demonstrate the understanding of different automation tools.	K1,K2,K3,K4,K5,K6
5	Utilize the automation tools for documentation, Calculation and presentation purpose.	K1,K2,K3,K4,K5
Textbooks		
1.	Peter Norton, — ***Introduction to Computers‖***–Tata Mc Graw-Hill.	
Reference Books		
1.	Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, -***Microsoft 2003‖***, Tata Mc Graw Hill.	
Web Resources		
1.	https://www.udemy.com/course/office-automation-certificate-course/	
2.	https://www.javatpoint.com/automation-tools	

Mapping with Programme Outcomes:

CO /PO	PO1	PO2	PO3	PO4	PO5
CO1	2	3	2	2	1
CO2	3	3	3	2	2
CO3	3	3	2	3	2
CO4	3	2	3	2	1
CO5	2	3	2	2	1

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	2	2	2
CO2	3	3	2	2	2
CO3	2	3	2	3	2
CO4	3	2	3	2	1
CO5	2	2	2	2	1

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCTSE3P	ADVANCED EXCEL LAB	SEC	1	1	40	60	100

Learning Objectives		
L1	Create and protect worksheet in excel.	
L2	Filtering, sorting, and grouping data or subsets of data.	
L3	Presenting data in the form of charts and graphs.	
L4	Create pivot tables and charts.	
UNIT	**Contents**	**No. of Hours**
I	Basics of Excel-Protecting and un-protecting worksheets and cells- Writing conditional expressions - logical functions - lookup and reference functions **Exercises:** • Protect a worksheet • Encrypt a workbook with a password • Perform logical operations by using AND, OR, and NOT functions • Look up data by using the VLOOKUP function	3
II	Specifying a valid range of values - Specifying data validations based on formula - Sorting and Filtering Data - Filtering data for selected view **Exercises:** • Configure data validation • Sort data by multiple columns and Change sort order • Filter duplicate record	3
III	Date and time functions - Text functions - Database functions - Using conditional formatting option for rows, columns and cells **Exercises:** • Reference the date and time by using the NOW and TODAY functions • Format text by using UPPER, LOWER, PROPER and CONCATENATE functions, • Create conditional formatting rules that use formulas • Use database functions DMIN, DMAX, DAVERAGE	3
IV	Charts - Formatting Charts- 3D Graphs- Bar and Line Chart together **Exercises:** • Create a new chart • Format and Resize charts • Add and modify chart elements • Apply chart layouts and styles	3
V	Creating Pivot tables Formatting and customizing Pivot tables- advanced options of Pivot tables- Pivot charts	3

	Exercises: • Create Pivot Tables • Format data • Create Pivot Charts • Apply styles to Pivot Charts	
	Total	**15**
Course Outcomes		**Knowledge Level**
CO	**On completion of this course, students will**	
1	Describe about the workbook, worksheet and its basic operations.	K1,K2,K3,K4
2	Identify the significance of Data validation.	K1,K2,K3,K4, K5,K6
3	Focus on the importance of function and formulas.	K1,K2,K3,K4, K5,K6
4	Compare various charts in Excel.	K1,K2,K3,K4, K5,K6
5	Correlate different types of pivot table.	K1,K2,K3,K4, K5
Textbooks		
1.	Greg Harvey. (2018). ***Excel. All-in-One for Dummies***.	
2.	Bill Jelen. & Michael Alexander. (2019). ***Microsoft Excel 2019 Pivot Table Data Crunching***. Pearson Education	
3.	Stephen Moffat. (2011). ***Excel 2010 Advanced*** . The Mouse training Company & Ventus Publishing.	
Reference Books		
1.	Albert Chipman. (2021).***Microsoft Office 365 User Guide: A Complete User Manual for Beginners and Pro with Useful Tips & Tricks to Master the Microsoft Office 365 New Features for Easy Navigation Paperback***.	
Web Resources		
1.	https://docs.microsoft.com/en-us/learn/certifications/courses/55270	
2.	https://www.tutorialspoint.com/advanced_excel/advanced_excel_external_data_connection	
3.	https://www.ablebits.com/office-addins-blog/2015/06/10/excel-date-functions/	

Mapping with Programme Outcomes:

CO /PO	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**
CO 1	3	3	2	3	3
CO 2	1	2	3	1	3
CO 3	2	1	1	2	2
CO 4	3	3	3	2	1
CO 5	1	3	2	1	3

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	2	1	3
CO2	3	3	1	2	1
CO3	1	2	3	3	3
CO4	3	1	2	3	2
CO5	3	3	2	1	2

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCTSE3Q	MULTIMEDIA LAB	SEC	2	2	40	60	100

Learning Objectives		
L1	Understands the basics of multimedia.	
L2	Acquire knowledge of image editing and animation techniques.	
L3	Apply multimedia concepts to real world projects.	
UNIT	**Contents**	**No. of Hours**
I	GIMP's Tools-Taking Advantage of Paths-Working with Layers and masks-Using Channels **Exercises:** • Enlarge a Logo using path • Create an ink drawing using path • Replace Background of image using Channels	6
II	Manipulating Images: Transforming Images - Using The Image Tools -Adjusting Colors - Working with Text - Painting in Gimp: Creating new brushes - Enhancing Photos –Exploring Filters and Effects. **Exercises:** • Design Front Cover for a Book. • Create a customized logo. • Use clone tool to remove text from an image. • Remove Redeye using Filter.	6
III	Using GIMP animation package –Managing the Frames of Image Sequence with GAP - Morphing - onion skinning - Creating a Storyboard. **Exercises:** • Morphing-Create smooth transitions from one image to another. • Create a Storyboard for your project	6
IV	Flash: Introduction - Creating and Editing Objects - Color and Text. Animations: Frame- by- frame animation-Motion Tweening- Motion Guides • Creating Frame-by-frame Animation • Create a Motion Tween for Graphic and Text Object • Create a Motion guide Layer	6
V	Shape Tweening -Masking-Interactivity: Adding Script to Buttons-Testing and Publishing. **Exercises:** • Create a Shape Tween for Graphic Object • Create a Mask Layer • Adding buttons with Action Script	6
	Total	**30**
Course Outcomes		**Knowledge**

		Level
CO	**On completion of this course, students will**	
1	Demonstrate understanding and use of multimedia fundamentals.	K1,K2,K3,K4
2	Implement appropriate techniques required for editing images and designing animated system.	K1,K2,K3,K4, K5,K6
3	Solve various design and implementation issues materialize on the development of multimedia systems.	K1,K2,K3,K4, K5,K6
4	Assess different Photo Editing, Video Editing and animation tools and select the appropriate tool based on the requirements.	K1,K2,K3,K4, K5,K6
5	Design and develop Multimedia Projects.	K1,K2,K3,K4, K5
Textbooks		
1.	Jason Van Gumster & Robert Shimonski (2010), -***GIMP Bible//***, Wiley, 2nd edition.	
2.	Chris Gover, 2010, -Flash CS5: ***The missing Manual*****||,** 1st Edition, O"Reilly India.	
Reference Books		
1.	Juan Manuel Ferreyra (2011),-***GIMP 2.6 Cookbook//,*** PACK publishing Ltd.	
2.	Robert Reinhard(2003),-***Macromedia Flash MX Bible//***, Wiley Dream tech India Pvt Ltd.	
Web Resources		
1.	https://www.youtube.com/watch?v=T8NIK3RdoIc(UnitIV:GimpVideoEditing)	
2.	https://www.youtube.com/watch?v=Jz9WrbELGYA	

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	3	3	3	2
CO 2	3	3	2	2	2
CO 3	3	2	3	2	1
CO 4	3	2	2	2	1
CO 5	3	2	2	1	1

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	3	2
CO2	3	3	2	3	2
CO3	3	3	3	3	2
CO4	3	3	2	3	2
CO5	3	3	2	3	2

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCTSE4P	**WEB DESIGNING LAB**	**SEC**	**2**	**2**	**40**	**60**	**100**

Learning Objectives		
L1	Understand the basics of HTML and its components.	
L2	To study about the Graphics in DHTML.	
L3	Understand and apply the concepts of CSS.	
L4	Understand the concept of VBScript.	
L5	To identify and understand the goals and objectives of the Java Script.	
UNIT	**Contents**	**No. of Hours**
I	**HTML:** • Design a timetable using table tag and various font styles. • Develop a html program using div tag and span tag.	6
II	**DHTML:** • Develop a html program using order list and unordered list. • Develop a Resume Registration form using suitable controls.	6
III	**DHTML:** • Write a html program to demonstrate Internal and External Cascade Style Sheet.	6
IV	**VB SCRIPT:** • Write a VBScript program for Fibonacci using for loop. • Write a VBScript program to demonstrate the checkbox and list box.	6
V	**JAVA SCRIPT:** • Write a JavaScript program to compute the sum of an array of Integers. • Write a JavaScript to perform multiplication & division of two numbers by getting from user.	6
	Total	**30**
Course Outcomes		**Knowledge Level**
CO	**On completion of this course, students will**	
1	Develop working knowledge of HTML.	K1,K2,K3,K4
2	Ability to Develop and publish Web pages using Dynamic Hypertext Markup Language (DHTML).	K1,K2,K3,K4,K5,K6
3	Ability to optimize page styles and layout with Cascading Style Sheets (CSS).	K1,K2,K3,K4,K5,K6
4	Ability to develop a VBScript.	K1,K2,K3,K4,K5,K6
5	An ability to develop web application using Java Script.	K1,K2,K3,K4,K5
Textbooks		
1.	Pankaj Sharma, "***Web Technology***", SkKataria& Sons Bangalore 2011.	
2.	Mike Mcgrath, "***Java Script***", Dream Tech Press 2006, 1st Edition.	

Reference Books	
1.	Laura Lemay, RafeColburn, Jennifer Kyrnin, "***Mastering HTML, CSS & Java script Web Publishing***", 2016.
Web Resources	
1.	NPTEL & MOOC courses titled Web Design and Development.
2.	https://www.geeksforgeeks.org

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	2	1	2	3
CO 2	3	1	3	3	3
CO 3	2	3	2	2	2
CO 4	2	3	1	1	2
CO 5	1	3	2	3	1

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	3	1	3
CO2	3	1	1	3	1
CO3	1	3	2	2	2
CO4	3	2	2	2	1
CO5	2	1	3	1	3

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCTSE41	BIOMETRICS	SEC	2	2	25	75	100

Learning Objectives		
L1	Identify the various biometric technologies.	
L2	Design of biometric recognition.	
L3	Develop simple applications for privacy.	
L4	Understand the need of biometric in the society.	
L5	Understand the scope of biometric techniques.	
UNIT	**Contents**	**No. of Hours**
I	**Introduction**: What is Biometrics, History, Types of biometric Traits, General architecture of biometric systems, Basic working of biometric matching, Biometric system error and performance measures, Design of biometric system, Applications of biometrics, Biometrics versus traditional authentication methods. **Face Biometrics:** Introduction, Background of Face Recognition, Design of Face Recognition System, Neural Network for Face Recognition, Face Detection in Video Sequences, Challenges in Face Biometrics, Face Recognition Methods, Advantages and Disadvantages.	6
II	**Retina and Iris Biometrics:** Introduction, Performance of Biometrics, Design of Retina Biometrics, Design of Iris Recognition System, Iris Segmentation Method, Determination of Iris Region, Determination of Iris Region, Applications of Iris Biometrics, Advantages and Disadvantages. **Vein and Finger print Biometrics:** Introduction, Biometrics Using Vein Pattern of Palm, Fingerprint Biometrics, Fingerprint Recognition System, Minutiae Extraction, Fingerprint Indexing, Experimental Results, Advantages and Disadvantages.	6
III	**Privacy Enhancement Using Biometrics:** Introduction, Privacy Concerns Associated with Biometric Deployments, Identity and Privacy, Privacy Concerns, Biometrics with Privacy Enhancement, Comparison of Various Biometrics in Terms of Privacy, Soft Biometrics. **Multimodal Biometrics:** Introduction to Multimodal Biometrics, Basic Architecture of Multimodal Biometrics, Multimodal Biometrics Using Face and Ear, Characteristics and Advantages of Multimodal Biometrics, Characteristics and Advantages of Multimodal Biometrics.	6
IV	**Water marking Techniques:** Introduction, Data Hiding Methods, Basic Framework of Watermarking, Classification of Water marking, Applications of Water marking, Attacks on	6

	Watermarks, Performance Evaluation, Characteristics of Watermarks, General Water marking Process, Image Water marking Techniques, Water marking Algorithm, Experimental Results, Effect of Attacks on Water marking Techniques, Attacks on Spatial Domain Water marking.	
V	**Scope and Future:** Scope and Future Market of Biometrics, Biometric Technologies, Applications of Biometrics, Biometrics and Information Technology Infrastructure, Role of Biometrics in Enterprise Security, Role of Biometrics in Border Security, Smart Card Technology and Biometrics, Radio Frequency Identification (RFID) Biometrics, DNA Biometrics, Comparative Study of Various Biometric Techniques. **Biometric Standards:** Introduction, Standard Development Organizations, Application Programming Interface (API), Information Security and Biometric Standards, Biometric Template Inter-operability.	6
	Total	**30**
Course Outcomes		**Knowledge Level**
CO	**On completion of this course, students will**	
1	To understand the basic concepts and the functionality of the Biometrics, Face Biometrics, Types, Architecture and Applications.	K1,K2,K3,K4
2	To know the concepts Retina and Iris Biometrics and Vein and Fingerprint Biometrics.	K1,K2,K3,K4, K5,K6
3	To analyze the Privacy Enhancement and Multimodal Biometrics.	K1,K2,K3,K4, K5,K6
4	To get analytical idea on Water marking Techniques.	K1,K2,K3,K4, K5,K6
5	To Gain knowledge on Future scope of Biometrics, and Study of various Biometric Techniques.	K1,K2,K3,K4, K5
Textbooks		
1.	***Biometrics: Concepts and Applications*** by G.R Sinha and sandeep B.Patil, Wiley, 2013.	
Reference Books		
1.	***Guide to Biometrics*** by Ruud M.Bolle, Sharath Pankanti, Nalinik. Ratha Andrew W.Senior, Jonathan H.Connell, Springer 2009.	
2.	***Introduction to Biometrics*** by Anilk.Jain, Arun A.Ross, Karthik Nandakumar.	
3.	***Handbook of Biometrics*** by AnilK.Jain, Patrick Flynn, Arun A.Ross.	
Web Resources		
1.	https://www.tutorialspoint.com/biometrics/index.htm	
2.	https://www.javatpoint.com/biometrics-tutorial	
3.	https://www.thalesgroup.com/en/markets/digital-identity-and-security/government/inspired/biometrics	

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	2	3	2	3
CO 2	2	1	2	1	3
CO 3	1	3	1	3	2
CO 4	3	2	3	2	1
CO 5	3	2	2	1	3

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	1	3	3	3
CO2	3	3	2	1	2
CO3	1	2	1	3	2
CO4	2	2	3	2	1
CO5	3	3	2	1	3

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCTSE61	QUANTITATIVE APTITUDE	SEC	2	2	25	75	100

Learning Objectives		
L1	To understand the basic concepts of numbers	
L2	Understand and apply the concept of percentage, profit & loss	
L3	To study the basic concepts of time and work, interests	
L4	To learn the concepts of permutation, probability, discounts	
L5	To study about the concepts of data representation, graphs	
UNIT	**Contents**	**No. of Hours**
I	Numbers-HCF and LCM of numbers-Decimal fractions-Simplification-Square root and cube roots - Average-problems on Numbers.	6
II	Problems on Ages - Surds and Indices - percentage - profits and loss - ratio and proportion-partnership- Chain rule.	6
III	Time and work - pipes and cisterns - Time and Distance - problems on trains -Boats and streams - simple interest - compound interest - Logarithms - Area-Volume and surface area -races and Games of skill.	6
IV	Permutation and combination-probability-True Discount-Bankers Discount – Height and Distances- Odd man out& Series.	6
V	Calendar - Clocks - stocks and shares - Data representation - Tabulation – Bar Graphs-Pie charts- Line graphs.	6
	Total	**30**

Course Outcomes		Knowledge Level
CO	**On completion of this course, students will**	
1	Understand the concepts, application and the problems ofnumbers	K1,K2,K3,K4
2	To have basic knowledge and understanding aboutpercentage, profit & loss related processings	K1,K2,K3,K4,K5,K6
3	To understand the concepts of time and work	K1,K2,K3,K4,K5,K6
4	Speaks about the concepts of probability, discount	K1,K2,K3,K4,K5,K6
5	Understanding the concept of problem solving involved in stocks & shares, graphs	K1,K2,K3,K4,K5

Textbooks	
1.	Quantitative Aptitude‖,R.S.AGGARWAL.,S.Chand & CompanyLtd.,
Reference Books	
1.	Prof.Abhilasha Khanna, Arvind Sharma, “Quantitative Aptitude” and arithmetic Exam Book.
NOTE: Latest Edition of Textbooks May be Used	
Web Resources	
1.	https://www.javatpoint.com/aptitude/quantitative
2.	https://www.toppr.com/guides/quantitative-aptitude/

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	3	2	2	3	3
CO 2	3	3	2	2	2
CO 3	3	2	3	2	2
CO 4	3	2	2	2	2
CO 5	3	2	2	3	2

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	3	3
CO2	3	3	2	2	2
CO3	3	2	3	2	2
CO4	3	2	2	2	2
CO5	3	2	2	3	2

Strong-3 Medium-2 Low-1