B.Sc., Information Technology

Allied paper offered by B.Sc. Information Technology from 2023-2024 onwards

Subject Code	Subject Name	Category	L	T	P	S	C	Inst. Hours	Marks		
									CI A	External	Total
23BITA1	**Digital Logic Fundamentals**	Allied	3	-	-	-	3	3	25	75	100

	Learning Objective
LO1	It aims to train the student to the basic concepts of Digital ComputerFundamentals
LO2	To impart the in-depth knowledge of logic gates,Boolean algebra, combinational circuits and sequential circuits.
	Contents
UNIT I	Number Systems and Codes: Number System – Base Conversion – Binary Codes –Code Conversion. Digital Logic: Logic Gates – Truth Tables – Universal Gates.
UNIT II	Boolean Algebra: Laws and Theorems – SOP, POS Methods – Simplification of Boolean Functions – Using Theorems, K-Map, Prime – Implicant Method – Binary Arithmetic: Binary Addition – Subtraction – Various Representations of Binary Numbers –Arithmetic Building Blocks – Adder – Subtractor.
UNIT III	Combinational Logic: Multiplexers – Demultiplexers – Decoders – Encoders– Code Converters – Parity Generators and Checkers.
UNIT IV	Sequential Logic: RS, JK, D, and T Flip-Flops – Master-Slave Flip-Flops.Registers: Shift Registers – Types of Shift Registers.
UNIT V	Counters: Asynchronous and Synchronous Counters - Ripple, Mod, Up- Down Counters– Ring Counters. Memory: Basic Terms and Ideas – Typesof ROMs – Types of RAMs.
	Course Outcomes
CO1	Identify the logic gates and their functionality.
CO2	Perform number conversions from one system to another system
CO3	Understand the functions of combinational circuits
CO4	Perform number conversions.
CO5	Perform Counter design and learn its operations.
	Text Book
1	D.P.Leach and A.P.Malvino, *Digital Principles and Applications* – TMH – FifthEdition – 2002.
	Reference Books
1.	V.Rajaraman and T.Radhakrishnan, *Digital Computer Design*, PrenticeHallof India, 2001
2.	M. Moris Mano, *Digital Logic and Computer Design*, PHI, 2001.
3.	T.C.Bartee, *Digital Computer Fundamentals*, 6th Edition, TataMcGraw Hill,1991.

Allied			L	T	P	C	H/W
Subject code:	23BITAP1	**DIGITAL ELECTRONICS LAB**	**-**	**-**	**2**	**2**	**2**

Objectives

- To Understand the Digital Electronics Practically
- To know how to solve gates and other functions.

1. AND, OR and NOT Gate using Truth Table
2. Universality of NAND & NOR gates.
3. Verification of Boolean laws using NAND gates (Associative, Commutative & Distributive Laws)
4. Verification of Boolean laws using NOR gates (Associative, Commutative & Distributive Laws)
5. Sum of Products using NAND gates and Product of Sums using NOR Gates.
6. 4-bit binary parallel adder and Subtractor IC 7483
7. Counter using IC 7473
8. Study of RS, D, T and JK Flip-Flops with IC's.
9. Study of Encoder & Decoder.
10. Study of Multiplexer & De-Multiplexer.
11. Half and Full Adder using Simple & NAND Gates.
12. Half and Full Subtractor using Simple & NAND Gates.

Outcomes

- Students were able to solve simple gate functions.
- Students were able to solve and Design circuits using IC.

Subject Code	Subject Name	Category	L	T	P	S	C	Inst. Hours	Marks		
									CIA	External	Total
23BITA2	**Internet and Web Design**	Allied	3	-	-	-	3	3	25	75	100

Learning Objectives	
LO1	To learn more about markup languages
LO2	To understand various web services

Unit -I	Internet and the World Wide Web: What is Internet? Introduction to internet and its applications, E-mail, telnet, FTP, e-commerce, video conferencing, e-business. Internet service providers, domain name server, internet address, World Wide Web and its evolution, uniform resource locator (URL), browsers, search engine, web server, HTTP protocol, Routers, Gateways, Bridge, Switches, Subnet and Intranet.
Unit-II	HTML: Introduction, Why HTML5? Formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors. Style sheets, CSS formatting text usingstyle sheets, formatting paragraphs using style sheets. Creating navigational aids: planning site organization, creating text based navigation bar, creating graphics basednavigation bar, creating graphical navigation bar, creating image map, redirecting toanother URL, creating division based layouts: HTML5 semantic tags, creating divisions, creating HTML5 semantic layout, positioning and formatting divisions.
Unit -III	Creating tables: creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, formatting tables:applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment, creating user forms: creating basic form, using check boxes and option buttons, creating lists, additional input types in HTML5, Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page.
Unit -IV	Java Script: Introduction, Client-Side JavaScript, Server-Side JavaScript, JavaScript Objects, JavaScript Security, Operators , Conditional and Looping Statements-Break, continue, User Defined Function. Array, Date, Math, Number, Object, String, regExp.
Unit =V	Document and its associated objects: document, Link, Area, Anchor, Image, Applet, Layer . Events and Event Handlers : General Information about Events,Defining Event Handlers, event, onAbort, onBlur, onChange, onClick,onDblClick, onDragDrop, onError, onFocus, onKeyDown,onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove,onMouseOut, onMouseOver, onMouseUp, onMove, onReset,onResize, onSelect, onSubmit, onUnload.

Reference and Textbooks:

- Web Design The Complete Reference-Thomas Powell -Tata McGraw HillHTML5 Step by Step -Faithe Wempen-Microsoft Press
- HTML 5 Black Book-2nd Edition - Dreamtech Press -2016Head First HTML 5 Programming-Eric Freeman-O'Reilly
- Web Technologies--A Computer Science Perspective-Jeffrey C. Jackson- Pearson Education.

Course Outcome	
CO1	Understand web essential concepts and to design simple web pages using markuplanguage.
CO2	Understand style properties and able to build dynamic web pages usingscriptinglanguage.
CO3	Understand Java Script Basics
CO4	Understand Regular Expressions
CO5	Understand Event handling Techniques

Mapping with Programme Outcomes:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	2	2
CO2	3	3	3	2	3	2
CO3	3	3	3	3	3	2
CO4	3	3	3	3	3	2
CO5	3	3	3	2	3	2

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Allied LAB	T/P	C	H/W
23BITAP2	**Web Designing Lab**	**P**	**2**	**2**

1. Design a web page using different text formatting tags.
2. Design a web page with links to different pages and allow navigation between web pages.
3. Design a web page demonstrating all Style sheet types .
4. Design a web page with Image maps.
5. Design a web page demonstrating different semantics.
6. Design a web page with different tables.
7. Design a web page with a form that uses all types of input controls.
8. Design a web page embedding with multimedia features.
9. Write a JavaScript program to find the factorial value.
10. Write a JavaScript program to print the Fibonacci series.
11. Design a form and validate all the controls placed on the form using Java Script.
12. Write a JavaScript program to display all the prime numbers between 1 and 100.
13. Write a JavaScript program to accept a number from the user and display the sum of its digits.
14. Write a program in JavaScript to accept a sentence from the user and display the number of words in it. (Do not use split () function).
15. Write a java script program to design simple calculator.

Outcomes	● Students can create the webpage with formatting tags. ● Students can design the page with style sheets ● Students can use java script elements for client side validation

Subject Code	Subject Name	Category	L	T	P	S	C	Inst. Hours	Marks		
									CI A	External	Total
23BITA3	**Microprocessor and Microcontroller**	Allied	3	-	-	-	3	3	25	75	100

Learning Objectives		
LO1	To introduce the internal organization of Intel 8085 Microprocessor.	
LO2	To know about various instruction sets and classifictions	
LO3	To enable the students to write assembly language programs using 8085.	
LO4	To interface the peripheral devices to 8085 using Interrrupt controller and DMA interface.	
LO5	To provide real-life applications using microcontroller.	
	Contents	**No. of Hours**
UNIT I	Microprocessor Architecture and its operations – Microprocessor initiated operations and 8085 Bus organization – Internal Data operations and 8085 registers - Peripheral or External initiated operations.	9
UNIT II	8085 Microprocessor – Pinout and Signals – Functional block diagram - 8085 Instruction Set and Classifications.	9
UNIT III	The 8085 Interrupts – RIM AND SIM instructions-8259 Programmable Interrupt Controller-Direct Memory Access (DMA) and 8257 DMA controller.	9
UNIT IV	Introduction to Microcontroller - Microcontroller Vs Microprocessor - 8051 Microcontroller architecture - 8051 pin description.	9
UNIT V	Timers and Counters – Operating Modes- Control Registers. Interrupts – Interrupts in 8051 - Interrupts Control Register – Execution of interrupt.	9
	Total	**45**

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	Remember the Basic binary codes and their conversions. Binary concepts are used in Microprocessor programming and provide a good understanding of the architecture of 8085o introduce the internal organization of Intel 8085 Microprocessor..	PO1
CO2	Understanding the 8085 instruction set and their classifications, enables the students to write the programs easily on their own using different logic	PO1,PO2
CO3	Applying different types of instructions to convert binary codes and analyzing the outcome. The instruction set is applied to develop programs on multibyte arithmetic operations.	PO4,PO6
CO4	Analyze how peripheral devices are connected to 8085 using Interrupts and DMA controller.	PO4,PO5,PO6
CO5	An exposure to create real time applications using microcontroller.	PO3,PO6

Text Book	
1	R. S. Gaonkar- "Microprocessor Architecture- Programming and Applications with 8085"- 5th Edition- Penram International Publications,2009. [For unit I to unit IV]
2	Soumitra Kumar Mandal -“Microprocessors and Microcontrollers – Architectures, Programming and Interfacing using 8085, 8086, 8051”, Tata McGraw Hill EducationPrivate Limited. [for unit V].

Reference Books	
1.	Mathur- “Introduction to Microprocessor”- 3rd Edition- Tata McGraw-Hill -1993.
2.	Raj Kamal - “Microcontrollers: Architecture, Programming, Interfacing and System Design”, Pearson Education, 2005.
3.	Krishna Kant, “Microprocessors and Microcontrollers – Architectures, Programming and System Design 8085, 8086, 8051, 8096”, PHI, 2008

Web Resources	
1.	E-content from open source libraries
2.	https://www.bing.com/, https://theopennotes.in/

Mapping with Programme Outcomes:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	2	2	2	2
CO2	3	3	3	2	3	2
CO3	3	3	3	3	3	2
CO4	3	3	3	3	3	2
CO5	3	3	3	2	3	2

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
23BITAP3	**Microprocessor and microcontroller Lab**	Allied Lab	-	-	2	-	2	2	25	75	100

Learning Objectives	
LO1	To introduce the internal organization of Intel 8085 Microprocessor.
LO2	To know about various instruction sets and classifications.
LO3	To enable the students to write assembly language programs using 8085.
LO4	To interface the peripheral devices to 8085 using Interrrupt controller and DMA interface.
LO5	To provide real-life applications using microcontroller.

	Details	**No. of Hours**
	List of Exercises:	
1	Write an assembly language program to perform 8 - bit addition	30
2	Write an assembly language program to perform 16 - bit addition	
3	Write an assembly language program to perform 8 - bit subtraction	
4	Write an assembly language program to perform 8 - bit multiplication	
5	Write an assembly language program to perform 8 - bit division	
6	Write an assembly language program to searching for an element in an array.	
7	Write an assembly language program to perform Ascending and Descending order.	
8	Write an assembly language program to find the largest and smallest elements in an array.	
9	Write an assembly language program to reversing array elements.	
	Total	**30**

Course Outcomes		**Programme Outcome**
CO	On completion of this course, students will	
CO1	Remember the Basic binary codes and their conversions. Binary concepts are used in Microprocessor programming and provide a good understanding of the architecture of 8085o introduce the internal organization of Intel 8085 Microprocessor..	PO1
CO2	Understanding the 8085 instruction set and their classifications, enables the students to write the programs easily on their own using different logic	PO1,PO2
CO3	Applying different types of instructions to convert binary codes and analyzing the outcome. The instruction set is applied to develop programs on multibyte arithmetic operations.	PO4,PO6
CO4	Analyze how peripheral devices are connected to 8085 using Interrupts and DMA controller.	PO4,PO5,PO6
CO5	An exposure to create real time applications using microcontroller.	PO3,PO5

Text Book	
1	R. S. Gaonkar- "Microprocessor Architecture- Programming and Applications with 8085"- 5th Edition- Penram International Publications,2009. [For unit I to unit IV]
2	Soumitra Kumar Mandal -"Microprocessors and Microcontrollers – Architectures, Programming and Interfacing using 8085, 8086, 8051", Tata McGraw Hill Education Private Limited. [for unit V].

Reference Books	
1.	Mathur- "Introduction to Microprocessor"- 3rd Edition- Tata McGraw-Hill -1993.
2.	Raj Kamal - "Microcontrollers: Architecture, Programming, Interfacing and System Design", Pearson Education, 2005.
3.	Krishna Kant, "Microprocessors and Microcontrollers – Architectures, Programming and System Design 8085, 8086, 8051, 8096", PHI, 2008

Web Resources	
1.	E-content from open source libraries
2.	https://www.bing.com/

Mapping with Programme Outcomes:

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	2	2	3	3	2
CO2	3	3	2	3	3	2
CO3	3	3	3	3	3	2
CO4	3	3	2	3	3	2
CO5	3	3	2	3	3	2
Weightage of course contributed to each PSO	15	14	11	15	15	10

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	C	Inst. Hours	Marks		
									CI A	External	Total
23BITA4	**MULTIMEDIA AND ITS APPLICATIONS**	Allied	3	-	-	-	3	3	25	75	100

Learning Objectives	
LO1	To learn multimedia basics.
LO2	To know about Multimedia applications
Unit - I	Multimedia Definitions – Delivering - Uses of multimedia. **Text :** The Power of Meaning – About Fonts and Faces –Using Text in Multimedia – Computers and Text – Font Editing and Design Tools – Hypermedia and Hypertext.
Unit -II	**Images:** Making Still Images –Understating natural light and color- Image File formats. **Sound:** The Power of Sound – Multimedia System Sounds- Digital Audio - MIDI Versus Digital Audio – Making MIDI Audio – Audio file formats – Adding Sound– Copyright Issues.
Unit – III	**Animation:** The Power of motion – Principles of Animation – Making Animation. **Video:** Using video – How it works – Broadcast Video Standards – Integrating Computers andTelevision – shooting and Editing Video – Video Tips – Recording Formats – Digital video.
Unit – IV	Making Multimedia - Hardware Peripherals: Connection - Memory and storage Devices – Input/ Output Devices - Communication Devices - Software-Editing tools for Text, Image, Sound,Animation and Video- Multimedia Skills-Designing for the World Wide Web.
Unit - V	**Adobe Animate**: Animate Interface-Managing workspaces and Panels- Customizing the tools and Timeline panels- Animating with Diverse Techniques-Working with Shapes-Tweens-Symbols-Interactive Motion Graphics for the Web-Character design through Layer.

TEXT BOOK:

- Multimedia: Making It Work-Ninth Edition-Tay Vaughan-McGraw Hill Mastering Adobe Animate 2021-Joseph Labrecque - Packt Publishing Limited
- Multimedia Application and Web Designing - Dinesh Maidasani- Laxmi Publications
- Ultimedia Programming: A Practical Approach- Dr. Siddhartha Bhattacharyya & Dr. Paramartha Dutta -Vikas Publishing

Course Outcome	
CO1	Understand the multimedia usage and text elements
CO2	Understand the Image and sound elements of multimedia
CO3	Understand Animation and video recording formats
CO4	Understand the requirements to create the multimedia application
CO5	Understand to create the animation using Adobe animate

Mapping with Programme Outcomes:

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	**3**	**3**	**2**	**2**	**2**	**2**
CO2	**3**	**3**	**3**	**2**	**3**	**2**
CO3	**3**	**3**	**3**	**3**	**3**	**2**
CO4	**3**	**3**	**3**	**3**	**3**	**2**
CO5	**3**	**3**	**3**	**2**	**3**	**2**

S-Strong-3 M-Medium-2 L-Low-1

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
23BITAP4	**MULTIMEDIA LAB**	Allied	-	-	2	-	2	2	25	75	100

LIST OF PRACTICAL PROGRAMS

1. Draw an animation to show a bouncing ball.
2. Draw an animation to show a moving stick man.
3. Draw an animation with banana.
4. Draw an animation to show sunrise and sunset.
5. Draw an animation to show a disappearing house.
6. Draw an animation to show two boats sailing in river
7. Draw an animation to show a scene of cricket match.
8. Draw an animation to help teach a poem or a song
9. Draw an animation to show cartoon with a message
10. Draw an animation to move Butterfly from one flower to other.
11. Draw an animation for health tips.
12. Draw an animation for Kids Mathematics.
13. Make a movie showing Shape Tweening.
14. Make a movie showing Motion Tweening.
15. Add sound and button to the movie.

Outcomes	● Students can create the Animation. ● Students can add sound effects