B.Sc. INFORMATION TECHNOLOGY (For the candidates admitted from the academic year 2023 onwards)

				NATURE OF			FX	М	ARKS	
SEM	PART	COURSE CODE	TITLE OF THE COURSE	COURSE	IN	СР	HRS	CIA	ESE	TOTAL
		23UTAM101	TAMIL I							
	Ι	23UHIN101	HINDI I	LAN	6	3	3	25	75	100
		23UFRE101	FRENCH I							
Ι	п	23UENG101	GENERAL ENGLISH I	ENG	_			25	75	100
	11	23UAEN101	ADVANCED ENGLISH I	ENG	6	3	3	25	75	100
	III	23UIT1C01	CORE: PROBLEM SOLVING USING C	CC	5	5	3	25	75	100
	III	23UIT1CP1	CORE PRACTICAL: PROBLEM SOLVING USING C (Skill Development)	СС	6	3	3	25	75	100
	III	23UMA1A13	ALLIED: NUMERICAL METHODS	GEN	5	4	3	20	55	75
	IV	15UVAL101	VALUE EDUCATION	AEC	2	2	2	-	50	50
					30	20				525
		23UTAM202	TAMIL II							
	Ι	23UHIN202	HINDI II	LAN	6	3	3	25	75	100
		23UFRE202	FRENCH II							
	п	23UENG202	GENERAL ENGLISH II				_			
II	11	23UAEN202	ADVANCED ENGLISH II	ENG	6	3	3	25	75	100
	Ш	23UIT2C02	CORE: DIGITAL FUNDAMENTALS AND COMPUTER ARCHITECTURE (<i>Skill Development</i>)	СС	4	4	3	25	75	100
		23UIT2C03/ 23UCS2C03/ 23UCA2C03	CORE: PYTHON PROGRAMMING (<i>Skill Development/</i> <i>Employability</i>)	СС	4	4	3	25	75	100

		23UIT2CP2	CORE PRACTICAL: PYTHON PROGRAMMING WITH TECHNICAL REPORTING USING LATEX (Skill Development/ Employability)	СС	3	2	3	25	75	100
		23UMA2A12	ALLIED: OPERATIONS RESEARCH	GEN	5	4	3	20	55	75
	IV	21UENS202	ENVIRONMENTAL STUDIES	AEC	2	2	2	-	50	50
					30	22				625
		23UTML303	TAMIL III		4 3 3 25 75 100					
	Ι	23UHDI303	HINDI III	LAN	4	3	3	25	75	100
		23UFRH303	FRENCH III							
	П	23UGEL303	GENERAL ENGLISH III							
ш	11	23UAEL303	ADVANCED ENGLISH III	ENG	4	3	3	25	75	100
		23UIT3C04	CORE: DATA STRUCTURES AND ALGORITHM ANALYSIS IN C++ (<i>Skill Development</i>)	CC	4	4	3	20	55	75
		23UIT3C05	CORE: WEB PROGRAMMING (<i>Skill Development</i>)	CC	4	4	3	3 20 55 75 2 - 50 50 2 - 50 625 3 25 75 100 3 25 75 100 3 25 75 100 3 20 55 75 3 20 55 75 3 20 55 75 3 20 55 75 3 20 55 75 3 20 55 75 3 20 55 75 3 20 55 75 3 20 55 75 3 20 55 75 3 25 25 50 3 25 25 50	75	
	III	23UIT3A01	ALLIED: MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING	DSA	5	4	3	20	55	75
		23UIT3CP3	CORE PRACTICAL: WEB TECHNOLOGIES (<i>Skill Development</i>)	CC	4	2	3	20	55	75
	IV	22UBTA301/ 22UATA301	BASIC TAMIL I /ADVANCED TAMIL I	AEC	2	2	3	25	25	50
		21UGEA303	GENERAL AWARENESS					-	50	

		22UIT3SB1 SKILL BASED I: CONTENT DESIGNING AND MANAGEMENT USING OPEN SOURCE TOOLS LAB (Skill Development/ Entrepreneurship)		SEC	3	2	3	25	75	100
		21UNCCWS1	WOMEN STUDIES	AEC	2	-	2	-	50	50
					30 +2	24				700
		23UTML404	TAMIL IV							
	Ι	23UHDI404	HINDI IV	LAN	4	3	3	25	75	100
		23UFRH404	FRENCH IV							
	ч	23UGEL404	GENERAL ENGLISH IV							
	11	23UAEL404	ADVANCED ENGLISH IV	ENG	4	3	3	25	25 75 100 - 50 50 - 50 700 20 75 100 20 55 75 20 55 75 20 55 75 20 55 75 20 55 75 20 55 75 20 55 75 20 55 75 20 55 75 20 55 75 20 55 75 20 55 50 20 55 50 20 55 50 20 55 50	
IV		23UIT4C06	CORE:SOFTWARE ENGINEERING ESSENTIALS (<i>Employability</i>)	CC	3	3	3	20	55	75
	ш	23UIT4C07	CORE : DATABASE MANAGEMENT SYSTEM (Skill Development/ Employability)	СС	4	4	3	20	55	75
		23UIT4A02	ALLIED: EMBEDDED SYSTEMS	DSA	5	4	3	20	55	75100505070075700751005575557555755575557555755550
		23UIT4CP4	CORE PRACTICAL: DATABASE MANAGEMENT SYSTEM (Skill Development/ Employability)	CC	5	3	3	20	55	75
		22UBTA402/ 22UATA402/	BASIC TAMIL II /ADVANCED TAMIL II	AEC				25	25	
	IV	21UHUR404	HUMAN RIGHTS	AEU	2	2	3	-	50	50

			SKILL BASED: ARDUINO PROGRAMMING LAB		_	_	_			
		22UIT4SB2	(Skill Development/ Industry 4.0)	SEC	3	2	3	25	75	100
					30	24				650
		23UIT5C08	CORE: OPERATING SYSTEMS (Skill Development)	CC	5	5	3	20	55	75
		23UIT5C09	CORE: PROGRAMMING IN JAVA (Skill Development/ Employability)	CC	5	5	3	20	55	75
V		21NIT5E01	NME: GRAPHIC DESIGNING (Skill Development)	GE	4	4	3	25	5 75 10 659 $5 75 7$ $5 75 7$ $5 75 10$ $5 75 10$ $5 75 10$ $5 75 10$ $5 75 10$ $5 75 10$ 62 62 $0 55 7$	100
	III	21UIT5E01/ 21UIT5E02	ELECTIVE: DATA ANALYTICS / COMPUTER GRAPHICS AND VISUALIZATION (Skill Development/ Industry 4.0)	DSE	5	4	3	25	75	100
		23UIT5CP5	CORE PRACTICAL: JAVA PROGRAMMING IN LINUX (Skill Development)	CC	5	3	3	20	55	75
	IV	22UIT5SB3	SKILL BASED: DATA VISUALIZATION AND STATISTICAL TOOL LAB (Skill Development/ Employability /Industry 4.0)	SEC	3	2	3	25	75	100
	1V 21IDSBIT1		SKILL BASED: CONTENT MANAGEMENT USING JEKYLL AND WORD PRESS (Skill Development)	SEC	3	2	3	25	75	100
					30	25				625
	Ш	23UIT6C10	CORE: CLOUD COMPUTING (Skill Development/ Industry 4.0))	CC	5	5	3	20	55	75

		23UIT6C11	CORE: DATA COMMUNICATION AND NETWORKS (Skill Development/ Employability)	СС	4	4	3	20	55	75
VI		23UIT6CP6	CORE PRACTICAL: DOT NET PROGRAMMING (Skill Development)	CC	5	3	3	20	55	75
		23UIT6PVV	CORE: PROJECT & VIVA VOCE (Employability)	CC	5	4	3	25	75	100
		21UIT6E01/ 21UIT6E02	ELECTIVE: INDUSTRY 5.0 ESSENTIALS / MACHINE LEARNING	DSE	5	4	3	25	75	100
			(Skill Development/ Industry 4.0)							
		22UIT6SB4	SKILL BASED: CASE TOOLS AND SOFTWARE TESTING LAB (<i>Employability</i>)	SEC	3	2	3	25	75	100
	IV	21IDSBIT1	SKILL BASED: CONTENT MANAGEMENT USING JEKYLL AND WORD PRESS	SEC	3	2	3	25	75	100
			(Skill Development) CO-CURRICULAR							
	V		ACTIVITIES (NSS/ NCC/YRC/ SPORTS/ RSP/NECTAR/ CHETNA WOMEN CELL /AICUF)			1				50
		19UCYS605	CYBER SECURITY		2	2	2	-	50	50
			SWAYAM/NPTEL/			2				
			MOOC COURSE			2				
					30+2	29				725
	GRAND TOTAL									3800+ 50

 \mathbf{IH} – Instructional Hours, \mathbf{CP} – Credit Points, \mathbf{CIA} – Continuous Internal Assessment, \mathbf{ESE} – End Semester Examination

SEMESTER: I COURSE CODE: 23UIT1C01 TITLE OF THE COURSE: CORE – PROBLEM SOLVING USING C

OBJECTIVES

Credits: 5

- To inculcate the domain knowledge of C Programming with real time examples.
- To formulate the student's ability in modular structured programming.

COURSE OUTCOMES

At the end of the course the students will be able to:

CO1	Illustrate the basic concepts of C programming.	K2
CO2	Implement C program using Expressions with I/O Operations.	К3
CO3	Demonstrate the types of flow control statements such as Branching and Looping.	K3
CO4	Discuss the logic of modular programming with derived data types and user defined functions.	K2
CO5	Implement C programs for data storage using pointers and File concept.	K3

Syllabus

Instructional hours - 75

UNITI: INTRODUCTION TO PROGRAMMING CONCEPTS

Overview of computers and programming - History of C - Importance of C - Basic Structure of C Programs - Executing C Program - Character Set - C Tokens - Keywords and Identifiers - Constants - Variables - Data Types - Declaration of Variables - Assigning Values to Variables - Defining Symbolic Constants - Declaring Variable as Constant - Declaring Variable as Volatile.

UNIT II: I/O OPERATIONS

Types of Operators - Arithmetic Expressions - Evaluation of Expression – Precedence of Arithmetic Operators - Type Conversion in Expression - Operator Precedence and Associativity - Mathematical Functions - Reading and Writing a Character – Formatted Input/Output.

(Self Study: Operator Precedence and Associativity, Mathematical Functions)

UNIT III: CONTROL STRUCTURES

Decision Making with IF Statement – Simple If Statement – If... Else – Nesting of If – Else If Ladder – Switch Statement – Ternary Operator – Goto Statement - While Statement – Do Statement – For Statement- Jumps in Loops.

UNIT IV: ADVANCED MODULAR CONCEPTS

Declaring and Initializing Arrays - Multidimensional Arrays - Dynamic Arrays -

15 Hours

15 Hours

15 Hours

Searching and Sorting an Array - Declaring and Initializing String Variables - Reading and Writing Strings- Arithmetic Operation on Characters – Putting Strings together – Comparison of two Strings – String Handling Functions – Elements of User Defined Functions - Definition of Function - Return Values and their Types - Function Calls - Function Declaration - Category of Functions - Recursion - Scope of Variables -Visibility and Lifetime of Variables.

(Self Study: Multidimensional Arrays, Dynamic Arrays) UNIT V: COMPLEX DATA STORAGE

15 Hours

Defining a Structure - Declaring Structure Variables - Accessing Structure Members -Structure Initialization - Arrays of Structure – Arrays within Structure - Structure within Structure – Union - Understanding Pointers - Accessing address - Declaring Pointer Variables - Initialization of Pointer Variable - Accessing Variable through its Pointer - Defining File - Opening and Closing File – Input/Output Operations on File – Random Access Files - Command Line Arguments.

(Beyond Curriculum: Mapping files into memory, Localizing the name of directory, Dynamic Memory Allocation)

TEXT BOOK:

- 1. J. R. Hanly and E. B. Koffman(2015) ,"Problem Solving and Program Design in C", (7th Edition), Pearson.
- 2. Balagurusamy.E (2012), Programming in ANSI C, (6th Edition), Tata McGraw Hill Publications, India.

REFERENCE BOOKS:

- 1. Ashok N Kamthane (2005), Programming in ANSI and TURBO C, (5th Edition) Indian
- Re- print, Pearson Education, India.
- 2. Yashavant P. Kanetkar (2017), Let Us C, (15th Edition), BPB Publications, India
- 3. Brain W. Kernighan, Dennis M Ritche (2015), The C Programming Language, Prentice Hall Software Series Publications, Canada.
- 4. Byron S Gottfried (2007), Programming with C, (2nd Edition), Tata McGraw Hill Publications, US.

BLENDED LEARNING

UNIT V: COMPLEX DATA STORAGE

Topics	Links
Declaring a structure	https://youtu.be/Ranc3VvjI88
Declaring a structure variable	https://youtu.be/3pFSbSVIwKU,
Accessing structure members	https://youtu.be/2DidKZmwNMo
Structure initialization	https://youtu.be/A4-b3pbAruI,
Arrays of structure	https://youtu.be/3LQTxwKZAOY,
Arrays within structures	https://youtu.be/vL83MEFnRG4
Understanding pointers	https://youtu.be/mw1qsMieK5c
Accessing and declaring pointer variable	https://youtu.be/rfII6_8AoXw

Defining file- opening and closing file	https://youtu.be/_KW_YBTXhN0
I/O operations on file	https://youtu.be/dNezzCg6mNo

MAPPING OF CO'S WITH POs / PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2		2	2		2	3	3	2		2	3	3
CO2	3	3	3		2	2	2	3			2	3	3	2
CO3	3	3	3	3	2			3	2		2	3	2	3
CO4	3		2	2		2	2		2	2		3	2	2
CO5		3	2		3	3	3	2	2	2	2	3		3

Correlation: 1-Low, 2-Medium, 3-High

ASSESSMENT TOOLS

S.NO	Assessment Methods	Frequency of Assessment
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I, Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Group Discussion (Unit V)	Once in a Semester

Course designed by: Mrs.Jasmine Sagaya Jonita Verif	ied b
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erified by HOD:Mrs. A. Jansi Rani

Checked by CDC: Dr.K.Jayanthi

Approved by:

Principal

SEMESTER: I COURSE CODE: 23UIT1CP1 TITLE OF THE COURSE: PRACTICAL- PROBLEM SOLVING USING C (Skill Development)

OBJECTIVES

- To develop their basic programming skill in C.
- To express the algorithms and trace the execution using RAPTOR.
- To impart the concepts of problem solving.

COURSE OUTCOMES

At the end of the Course the students will be able to:

C 1:4		
CO3	Implement programs and present results through a record presentation	K3
CO2	Develop and experiment the skills for formulating iterative solutions to a problem using C	K3
CO1	Design the strategies of writing efficient and well-structured computer algorithms/programs	K3

Credits: 3

Instructional hours: 90

LIST OF PRACTICALS

(Students should draw well-structured diagrams using Raptor and implement programs using C)

- 1. Write a program and to perform arithmetic operations using different data types.
- 2. Write a program to find the greatest of 3 numbers using decision making statement.
- 3. Write a program to check whether a given number is Armstrong or not.
- 4. Write a program to find the sum of n terms using loop statement.
- 5. Write a program that word wraps the text to n characters for each line taking a paragraph and a number (n) as input
- 6. Write a program to display the following pattern.
 - * * * * * * * * * * * * * *
- 7. Write a program to perform string operation using string functions.

- 8. Write a program to perform matrix addition using two dimensional arrays.
- 9. Write a program to perform and print to sort an array in ascending order.
- 10. Write a program to print the students mark sheet with register number, name and marks in five subjects using structure.
- 11. Write a program to swap two numbers
 - i. with and without using temporary variable.
 - ii. using pointers.
- 12. Write a program to perform File Operations.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2
CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3

MAPPING OF CO'S WITH POs / PSOs

Correlation: 1-Low, 2-Medium, 3-High

S.No	Assessment Methods	Frequency of Assessment
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course designed by: Mrs.Jasmine Sagaya Jonita	Verified by HOD:Mrs. A. Jansi Rani
Checked by CDC:Dr.K.Jayanthi	Approved by:
	Principal

SEMESTER: II COURSE CODE: 23UIT2C02 TITLE OF THE COURSE: CORE- DIGITAL FUNDAMENTALS AND COMPUTER ARCHITECTURE

OBJECTIVES

- To provide a strong foundation in understanding the concept of digital number system and circuits.
- To have a deep knowledge on memory and I/O organization.

COURSE OUTCOMES

At the end of the course the students will be able to:

CO1	Illustrate the conversion among various number systems and perform simplifications using Boolean algebra.	K2		
CO2	Discuss combinational logic design using gates.			
CO3	Infer digital operations using Registers.			
CO4	Compare the different ways of communication with standard I/O interfaces.			
CO5	Distinguish the various memory organization for I/O operations.			

Syllabus

Credits: 4

Instructional Hours: 60

UNIT I: NUMBER SYSTEMS AND BOOLEAN ALGEBRA

12 Hours

Number Systems – Binary Operations – Floating Point Representation - Complements - BCD - Excess 3 - Gray Code - Boolean Algebra – Karnaugh Map – Canonical Form1 – Construction and Properties – Implicants – Don't Care Combination – Product of Sums – Sum of Products – Simplifications. *(Self study: BCD)*

UNIT II: COMBINATIONAL LOGIC DESIGN

Basic Logic Gates – NOR, NAND, XOR Gates –Half Adder - Full Adder - Parallel Binary Adder - BCD Adder - Half Subtractor - Full Subtractor - Parallel Binary Subtractor – RS - D - JK - T Flipflops. (*Self Study: Basic Logic Gates*)

UNIT III: REGISTERS

Shift Register – Shift Left Register – Shift Right Register - Encoder – Decoder – Multiplexers – Demultiplexers – Counters – Ring Counter – Programmable Counter

UNIT IV: I/O ORGANIZATION

Input/Output Interface – I/O Bus and Interface – I/O Bus Vs Memory Bus – Isolated vs Memory – Mapped I/O – Introduction to Asynchronous Data Transfer - Strobe Control and Handshaking.

UNIT V: MEMORY ORGANIZATION

Memory Hierarchy – Main Memory – Associative Memory - Cache Memory - Virtual Memory.

(Beyond Curriculum : Interleaved Memory)

TEXT BOOKS:

- 1. Puri V.K. (2010), Digital Electronics Circuits and Systems, (3rd Edition), Tata McGraw Hill publication Company. India.
- 2. Morris Mano M.(2012), Computer System Architecture, (3rd Edition), Pearson Education publication, India.

REFERENCE BOOKS:

- 1. Morris Mano M.(2006), Digital Design, (4th Edition), Prentice Hall of India.
- 2. Ata Elahi (2017), Computer Systems, Digital Design, Fundamentals of Computer Architecture and Assembly Language, Springer.
- 3. Nikrouz Faroughi, (2014), Digital Logic Design and Computer Organization with Computer Architecture for Security, Mc Graw Hill Education.

BLENDED LEARNING

UNIT V: MEMORY ORGANIZATION

Topics	Links
Memory Hierarchy	https://www.youtube.com/watch?v=YVObWiciVgw
Main Memory	https://www.youtube.com/watch?v=bkJx-URsnyc
Associative Memory	https://www.youtube.com/watch?v=zLDZCHrvjs4

12 Hours

12 Hours

12 Hours

Cache Memory	https://www.youtube.com/watch?v=U2iE3MwFYmA
Virtual Memory	https://www.youtube.com/watch?v=ujoJ7J_19cY

MAPPING OF CO'S WITH POs / PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	2	2		2	2		2			2	3	2
CO2	2	2	3	2		1	2	2	2	2		2	2	2
CO3	2	2		2	2			2	2	2	2			2
CO4	3	3		2	2		2		2		2	2	2	2
CO5	2	2			1		2	2	2	2	2	2		2

Correlation: 1-Low, 2- Medium, 3-High

S.NO	Assessment Methods	Frequency of Assessment
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I , Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Group Discussion (Unit V)	Once in a Semester

Course designed by: Mrs.Jasmine Sagaya Jonita	Verified by HOD:Mrs. A. Jansi Rani
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Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

SEMESTER: II COURSE CODE: 23UIT2C03/ 23UCS2C03/23UCA2C03 TITLE OF THE COURSE: CORE - PYTHON PROGRAMMING

OBJECTIVES

- To inculcate a greater understanding of programming language design and implementation.
- To comprehend the paradigm of object oriented concepts with PYTHON Programming.

COURSE OUTCOMES At the end of the course the students will be able to:

CO1	Discuss the fundamentals of programming with PYTHON.	K2
CO2	Illustrate problem solving techniques with Control Structures, Lists and functions	K2
CO3	Implement programs for real time problems using Modular Designs and OOPs	K3
CO4	Demonstrate the fundamentals of the text files ,dictionary and sets	K3
CO5	Implement programs for GUIs and Graphics using Turtle and Tkinter	K3

Syllabus

Credits: 4

Instructional hours: 60

UNIT I: PROGRAMMING CONCEPTS

The Python Programming Language: Python - The IDLE Python Development Environment - The Python Standard Library- Python IDLE-Data and Expressions: Literals-Numeric Literals - String Literals - Control Characters - String Formatting Implicit and Explicit Line Joining -Variables and Identifiers: Variable- Variable Assignment and Keyboard Input- Identifier- Keywords and Other Predefined Identifiers in Python Operators - Operator - Arithmetic Operators - Expressions and Data Types: Expression-Operator Precedence - Operator Associativity -Data Type - Mixed-Type Expressions.

UNIT II: CONTROL STRUCTURES AND FUNCTIONS

Control Structure - Iterative Control - While Statement - Input Error Checking -Infinite loops - Boolean Flags and Indefinite Loops - Lists: List Structures- Lists (Sequences) in Python: Python List Type - Tuples -Sequences -Nested Lists- Functions: Program Routines - Defining Functions - Functions - Calling Value-Returning Functions - Calling Non-Value-Returning Functions - Parameter Passing - Keyword Arguments in Python -Default Arguments in Python - Variable Scope

(Self Study: Boolean Expressions – Selection Control)

UNIT III : MODULAR DESIGN

Modules - Module Specification - Python Modules- Modules and Namespaces- Importing Modules - Object-Oriented Programming: Class - Features of Object-Oriented Programming Encapsulation - Defining Classes in Python - Inheritance Subtypes -Subclasses in Python - Polymorphism - Recursion: Recursive Functions.

(Beyond Curriculum : Django web framework in python : The Local Library website-Creating a skeleton website using models)

UNIT IV : TEXT FILES AND DICTIONARY & SETS

Text Files: Text File - Text Files Uses- Opening Text Files - Reading Text Files - Writing Text Files - String Processing - String Traversal - Sequence Operations - String Methods -Exception Handling - The Propagation of Raised Exceptions - Catching and Handling Exceptions - Exception Handling and User Input - Exception Handling and File Processing - Dictionaries and Sets: Dictionary Type in Python- Dictionary- Set Data Type in Python Modular Design

UNIT V: TURTLE AND TKINTER

Objects and Their Use: Software Objects - Object - Object References - Turtle Graphics -Creating a Turtle Graphics Window - The "Default" Turtle -Fundamental Turtle Attributes and Behavior - Additional Turtle Attributes - Creating Multiple Turtles - GUI Programming : Tkinter – Introduction – Tkinter and Python Programming – GUIs- Related Modules and GUIs.

TEXT BOOKS:

- 1. Charles Dierbach, Introduction To Computer Science Using Python -Computational Problem-Solving Focus, Reprint (2016), Wiley Publication, India.
- 2. Wesley J Chun, Sunnyvale, California (2012) Core Python Applications Programming, (3rd Edition), Pearson Publications, UK.

12 Hours

12 Hours

12 Hours

REFERENCE BOOKS:

- 1. Reema Thareja,(2019), Python Programming Using Problem Solving Approach, (1st Edition), Oxford University, London.
- 2. Kenneth A. Lambert,(2014), Martin Osborne, Fundamentals of Python, (1st Edition), Cengage Publication, UK.
- 3. Rob Miles,(2017), Begin to Code with Python, (1st Edition), Pearson Education, UK.

BLENDED LEARNING UNIT V: TURTLE AND TKINTER

Topics	Links
Software Objects	https://www.youtube.com/watch?v=_uYorV9ebLg
Object and Object	https://www.youtube.com/watch?v=zedS1tR5OCU
References	
Turtle Graphics	https://www.youtube.com/watch?v=ptEVisUCniw
Turtle Graphics Window	https://www.coursera.org/lecture/python-basics/our-first-turtle-
	<u>program-TOxha</u> ,
Turtle Attributes and	https://cleverprogrammer.teachable.com/courses/learn-
Behavior	python/lectures/1539085,
Multiple Turtles	https://www.coursera.org/lecture/python-basics/instances-a-herd-of-
	<u>turtles-hUkpB-</u>
Tkinter and Python	https://www.youtube.com/watch?v=D8-snVfekto
Programming and GUIs	

MAPPING OF CO'S WITH POs/PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2			2	2	2		2	2	3	3	2	2
CO2	3	3	2	2	2	2	2		2	2	3	3	2	2
CO3	3	3	3	2	3	3	2	1	2	2	2	2	3	2
CO4	2				2	2	2		2		2	3	2	2
CO5	3			1	3	3	2	2	2	2	3	3	3	3

Correlation: 1-Low, 2-Medium, 3-High

S.NO	Assessment	Frequency of Assessment
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	Methods	
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I, Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Workshop (Unit V)	Once in a Semester

Course designed by: Mrs.K.Sindhya	Verified by HOD:Mrs. A. Jansi Rani
Checked by CDC:Dr.K.Jayanthi	Approved by:
	Principal

SEMESTER: II

COURSE CODE: 23UIT2CP2 TITLE OF THE COURSE: PRACTICAL- PYTHON PROGRAMMING WITH TECHNICAL REPORTING USING LATEX (Skill Development/Employability)

OBJECTIVES

- To gain programming skills in python.
- To inculcate knowledge about the Object Oriented concepts and file operations.

COURSE OUTCOMES

At the end of the course the students will be able to:

CO1	Apply math functions, logic gates, strings, recursive functions and Graphical User Interface using Turtle	K 3
CO2	Create documents using text, mathematical equations, tables, graphs and image using PyLateX	K3
CO3	Implement programs and present results through a record presentation	K3

Credits: 2

Instructional Hours: 45

LIST OF PROGRAMS

- 1. Implement Python program to calculate GCD of two numbers.
- 2. Write a Python program to find the XOR of ASCII values of characters in a String.
- 3. Write a Python program implement AND, OR and NOT gates.
- 4. Write a Python function that checks whether a passed string is palindrome or not.
- 5. Implement function overloading with different function signatures.
- 6. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.
- 7. Write a Python program to get the factorial of a non-negative integer using recursive function.
- 8. Write a program to implement an Exception handling in python.
- Write a python program to draw Colourful Star Pattern in Turtle using classes and objects <u>PyLatex</u>
- 1.Write a Python program to create a document with section and subsection with text using pylatex

- 2. Write Python program to create a document with matrix equations with square brackets and round brackets using pylatex
- 3. Write a Python program to create a document with table using pylatex
- 4. Write a Python program to create a document with graphs using pylatex
- 5. Write a Python program to create a document with image using pylatex

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2
CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3

MAPPING OF CO'S WITH POs/PSOs

Correlation: 1-Low, 2-Medium, 3-High

S.No	Assessment Methods	Frequency of Assessment
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
4	Observation Note	Once in a Semester
5	Record Note	Once in a Semester

Course designed by: Mrs.K.Sindhya	Verified by HOD:Mrs. A. Jansi Rani
Checked by CDC:Dr.K.Jayanthi	Approved by:
	Principal

SEMESTER: III COURSECODE: 23UIT3C04 TITLE OF THE COURSE: CORE: DATA STRUCTURES AND ALGORITHM ANALYSIS IN C++ (Skill Development)

COURSE OBJECTIVES:

- To identify the problem, properties to develop procedural design to solve the problem.
- To emphasize the knowledge of data structures and its fundamental operations in different real world applications.
- To implement the use of organization methods to improve the data access in an efficient way.

COURSE OUTCOMES:

Total Credits : 4

At the end of the course the students will be able to:

CO1	Identify the Object Oriented Programming fundamentals and the appropriate	K1
	use of syntax and variables in data structures.	
CO2	Implement the concept in gaining knowledge of organizing large amount of	K3
	data and algorithm analysis with at most accuracy.	
CO3	Construct algorithms to verify the data stored and received.	К3
CO4	Distinguish various organization methods for storing and retrieving data.	K2
CO5	Apply the constructed algorithms in real time applications.	K3

Syllabus

Instructional hours : 60

UNIT I: INTRODUCTION: MATHEMATICS REVIEW AND C++ (K1)

12 Hours

Exponents - Logarithms - Series - Modular Arithmetic - The P Word - Recursion - C⁺⁺ Classes and Syntax - Pointers - Lvalues, Rvalues, and References -Parameter Passing - Return Passing The Big-Five: Destructor, Copy Constructor, Move Constructor, Copy Assignment operator, Move Assignment operator Style Arrays and Strings- Templates 12 Hours

UNIT II : ALGORITHM ANALYSIS (K3)

Model and Analyze- Running-Time Calculations- Logarithms in the Running Time- Limitations of Worst-Case Analysis- Abstract Data Types- The List ADT- Implementation of vector-Implementation of list- Stack ADT- Implementation of Stacks- Queue ADT- Array Implementation of Queues.

(Self Study: Stack ADT, Queue ADT)

UNIT III : TREES AND HASHING (K3)

Implementation of Trees and Tree Traversals- Binary Trees- Binary Search Trees - AVL Trees: Single Rotation and Double Rotation- B-Trees. Hash Function- Hash Tables without Linked Lists-Rehashing Universal Hashing- Extendible Hashing.

UNIT IV :HEAPS, QUEUES AND SORTING (K2)

12 Hours

Heaps : Properties and operations -Binary Heap- d-Heaps- Leftist Heaps- Skew Heaps-Queues : Applications of Priority Queues - The Selection Problem- Event Simulation - Binomial Queues: Structure – operation – Implementation .Sorting: Shell sort – Heap sort – Merge sort – Quick sort (Beyond Curriculum: Cock tail sort - Strand Sort- Brick Sort)

UNIT: V ALGORITHM DESIGN TECHNIQUES (K3) 12 Hours

Representation of Graphs - Shortest-Path Algorithms : Unweighted Shortest Paths - Dijkstra's Algorithm. Network Flow Problems - Minimum Spanning Tree - Applications of Depth-First Search: Undirected Graphs – Biconnectivity - Directed Graphs. Divide and Conquer- Dynamic Programming: Optimal Binary Search Tree - All-Pairs Shortest Path.

TEXT BOOK:

1. Mark Allen Weiss Florida International University, *Data Structures and Algorithm Analysis in C*⁺⁺, Fourth Edition, ISBN-13: 978-0-13-284737-7. (2014)

REFERENCE BOOKS:

- 1. Steven S. Skiena, *The Algorithm Design Manual* (Texts in Computer Science) 3rd ed Edition(2020)
- 2. VijayalakshmiPai. G.A. *Data Structures and Algorithms-Concepts, Techniques and Applications*. (1st Edition) Mc Graw Hill Education India Pvt. Ltd (2016)
- 3. E Balagurusamy ,*Object-Oriented Programming with C++*,8th Edition, Mc Graw Hill ISBN-10 : 9389949181 September 2020

Topics Unit Links **Representation of Graphs** https://www.youtube.com/watch?v=5hPfm_uqXmw Unit V https://www.youtube.com/watch?v=pVfj6mxhdMw Unit V Shortest-Path Algorithms https://www.youtube.com/watch?v=cwg3yNq-y5Y Minimum Spanning Tree Unit V https://www.youtube.com/watch?v=vLS-zRCHo-Y **Optimal Binary Search Tree** Unit V https://www.youtube.com/watch?v=nV wOZnhbog All-Pairs Shortest Path Unit V

BLENDED LEARNING

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	P03	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2	1	2	3	2	1	2	3	3	2
CO2	3	3	3	2	3	2	3	2	2	2	3	3	2	3
CO3	3	2	3	2	3	2	2	2	2	3	3	3	2	2
CO4	3	3	3	2	3	3	3	3	2	2	3	3	3	3
CO5	3	3	3	2	3	3	2	2	3	2	3	3	3	2

(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I &Unit II)	Twice in a semester
6	Seminar (Unit III & IV)	Twice in a semester
7	Quiz / Workshop(Unit V)	Once in a semester

Course Designed by: Mrs.K.Sindhya	Verified by HOD:Dr.A.Jansi Rani				
Checked by CDC: Dr.K.Jayanthi	Approved by:				
	Principal				

L.L	hbj Ay	le. Sofia.	4.Ebinozog
Dr.L.Robert- Associate Professor &Head, Department of Computer Science, Government Arts College, Coimbatore.	Dr.G.Satyavathy- Professor &Head, Department of Computer Science with Data Analytics, KPR College of Arts Science and Research, Coimbatore.	Dr.G.Sofia- Associate Professor, Department of Computer Science, Lady Doak College, Madurai.	Mr.Y.Ebinezar Associate General Manager, Expleo Solutions Limited, Coimbatore.

SEMESTER: III COURSE CODE: 23UIT3C05 TITLE OF THE COURSE: CORE: WEB PROGRAMMING (Skill Development)

COURSE OBJECTIVES:

- To understand the concepts and architecture of the World Wide Web.
- To understand and practice Markup languages.
- To understand and practice embedded dynamic scripting on client side Internet Programming and server side programming.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Explore mark-up languages features	K2
CO2	Explore and design client side validations using scripting languages	K2
CO3	Design applications using Java Servlet Architecture	K3
CO4	Acquire knowledge about Extensible Markup Language and develop applications for server side programming	К3
CO5	Develop dynamic web pages using Ajax Remote Scripting	К3

Syllabus

Credits: 4

Instructional hours: 60

UNIT I: WEB ESSENTIAL AND STYLE SHEET (K2)

World Wide Web Consortium - (W3C) - Hardware Trends-Key software trends :object technology. Introduction to XHTML: Editing XHTML- First XHTML example W3C XHTML validation services –Basic XHTML tables .Cascading style sheets(CSS):Inline

UNIT II: CLIENT SIDE PROGRAMMING (K2)

An Introduction to JavaScript – JavaScript control structures-if selection structures-if/else selection structure ,- While Repetition Structure-for Repetition Structure. (*Self study: Object Referencing, Collection all and children*)

UNIT III: SERVER SIDE PROGRAMMING (K3)

Java Servlet Architecture- Servlet Generating Dynamic Content- Servlets Life Cycle-Parameter Data-Session-Cookies-URL Rewriting –Other Servlet Capabilities - servlets and Concurrency. Separating Programming And Presentation :JSP And Servlets – Running Servlets Application.

UNIT IV: PHP (K3)

Incorporating PHP with HTML-structure of PHP- Using PHP- Variables- - Operators-Expressions requiring a file –PHP object-PHP Arrays: Basic access-The for each...as loop –Multi dimensional array- File handling – Cookies - Connecting to Database. XML: Basic XML- Document Type Definition- XML Schema DOM and Presenting XML, XML Parsers and Validation, XSL and XSLT Transformation,

(Beyond the Curriculum :PHP frame work: Laravel framework-Cake PHP- Security Features and Methods)

UNIT V: AJAX REMOTE SCRIPTING (K3)

Control flow in PHP –PHP Function –Including Program control- Built-in functions- Form Validation- Regular Expressions. AJAX:Introducing Ajax-Using Xml Http Request - Creating a Simple AJAX Library –Creating An Ajax Quiz Using the Library - Debugging Ajax Application .

TEXT BOOKS

1.Deitel and Nieto, *Internet and World Wide Web* - How to Program (5th Edition), Prentice Hall. (2011)

2. Jeffrey C Jackson, Web Technologies a Computer Science Perspective ,ISBN-0-13-185603-0, Pearson education, Upper sanddle river new jersey. (2007)

3. Robin Nixon, *Learning PHP, Mysql, JavaScript, CSS and html5* (3rd edition), ISBN:978-1-491-94946, O. Reilly, Tokyo. (2014)

4. Julie C Melonisams *Teach yourself HTML, CSS and Java Script All in one* ISBN:978-81-371-8697. (2012)

REFERENCE BOOKS

1. Chris Bates (2009), Web Programming Building Intranet Applications (third Edition), Wiley Publications.

2. Gopalan N.P, Akilandeswari J. (2011), Web Technology , Prentice Hall of India.

3. John Dean (2018), Web Programming with HTML5, CSS, and JavaScript, Jones & Bartlett Learning, Missouri.

BLENDED LEARNING

12 Hours

12 Hours

12 Hours

Unit	Topics	Links
Unit V	Introducing Ajax	https://youtu.be/My0MDTl0Zv4
Unit V	Using Xml Http Request	https://youtu.be/ugiFpA03B6c
Unit V	Creating a Simple AJAX Library	https://youtu.be/Mqq89P5-v7U
Unit V	PHP Function	https://www.youtube.com/watch?v=HvxQww-
		7NGA

MAPPING OF CO's WITH POs/PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	2	3	2	2	2	2	2	3	3	3
CO2	2	2	2	2	2		2	2	2	2	2	2	3	2
CO3		3	3	2	3		2		2		3	3	2	2
CO4	3	3	2	2	3	3		2		2	2	2	3	
CO5	3	3	2	3	2	2	2		3		2	2	3	2

(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I, Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Case Study (Unit V)	Once in a Semester

Course Designed by: Mrs.K.Sindhya	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

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Dr.L.Robert- Associate Professor &Head, Department of Computer Science, Government Arts College, Coimbatore.	Dr.G.Satyavathy- Professor &Head, Department of Computer Science with Data Analytics, KPR College of Arts Science and Research, Coimbatore.	Dr.G.Sofia- Associate Professor, Department of Computer Science, Lady Doak College, Madurai.	Mr.Y.Ebinezar Associate General Manager, Expleo Solutions Limited, Coimbatore.

SEMESTER: III COURSE CODE: 23UIT3A01 TITLE OF THE COURSE: ALLIED: MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

COURSE OBJECTIVES:

- To inculcate knowledge on Microprocessor and Assembly Language Programming concepts.
- To understand basic microprocessor architecture and its functionalities.
- To understand the programming model of microprocessor.

COURSE OUTCOMES:

At the end of the course the students will be able to:

C01	Infer the fundamentals of microprocessor chips	K2
CO2	Summarize the 8086 microprocessor instructions	K2
CO3	Discuss the architecture and memory management of 386 and 486 processor	K2
CO4	Classify the types of processors	K3
CO5	Discuss the interfacing of I/O devices, chips and A/D Converter to Intel Processor	K2

Credits: 4

Syllabus

Instructional hours: 75

UNIT I: INTRODUCTION TO MICROPROCESSOR (K2) 15 Hours

Microprocessors - Evolution of Microprocessors - Single chip microcomputer -Embedded Microprocessors - Bit Slice Processors - Microprogramming - RISC and CISC processors - Scalar and Super Scalar Processors - Vector Processors - Array Processors - Symbolic Processors - Digital Signal Processors. 16 - Bit Intel Microprocessors - Intel 8086 - Pin Description of Intel 8086 - Operating modes of 8086 - Register organization of 8086 - Addressing modes of 8086.

UNIT II: 8086 PROGRAMMING INSTRUCTIONS (K2) 15 Hours

8086 Instruction set - Instruction groups - Addressing Mode Byte - Segment Register Selection - Segment Override - 8086 Instructions- Assembly language programs for 8086 - Largest Number, Smallest Number in a Data Array -Block Relocation - Block Move using REP instruction - Sum of a Series - Multibyte Addition.

UNIT III: 80X86 PROCESSORS(K2)

Intel 386 and 486 Microprocessors - 486 DX Architecture - Register Organization of 486 Microprocessors - Memory Organization - Operating Modes of Intel 486 - Virtual Memory - Memory Management unit - Gates - Interrupts and Exceptions - Addressing Modes of 80486 – Pin Configuration.

UNIT IV: PROCESSOR TYPES (K3)

15 Hours

15 Hours

Power PC Microprocessor - Pentium Microprocessors - Pentium Pro Microprocessors - Alpha Microprocessor - Cyrix Microprocessor - MIPS Microprocessors - AMD Microprocessors. MOTOROLA 68000 - MOTOROLA 68020 - MOTOROLA 68030 - MOTOROLA 6840.

(Self study: Pentium Microprocessors)

UNIT V: INTERFACING WITH PROCESSORS (K2)

Input and Output Devices and Supporting Chips - Memory and I/O addressing - 8086 Addressing and Address Decoding - Programmable I/O ports - DMA Data Transfer -Interfacing of A/D Converter and Application - Introduction - Interfacing of ADC 0808 or ADC 0809 to Intel 8086 - Bipolar to Unipolar Converter - Sample and Hold Circuit, LF398.

TEXT BOOK:

1.BadriRam. Advanced Microprocessors and Interfacing. (16th reprint) Tata Mc Graw - Hill Publishing Company Limited, New Delhi.(2009)

REFERENCE BOOKS:

1. A.K.Ray, K.M.Bhurchandi, *Advanced Microprocessors and Peripherals*. (3rdEdition) Tata McGraw - Hill Publishing Company Limited, New Delhi. (2006)

2. Ramesh S Goanker *Microprocessor Architecture Programming and Applications* with the 8085/8085A. (5th Edition) Wiley Eastin Ltd, India.(2002)

3. SunillMathur, Jeebananda Panda, Microprocessors and controllers (Kindle

Edition), PHI Learning Private Limited, New Delhi. (2016)

4.Kaler,*Microprocessors and Microcontrollers* (2ndEdition), I. K International Publishing House Private Limited, Delhi.(2014)

Unit	Topics	Links
Unit V	Memory and I/O addressing	https://youtu.be/OeXq2HdO_00 https://youtu.be/HjrmXknDBt4 https://youtu.be/iKdQASjMV3k
Unit V	8086 addressing and address decoding	https://youtu.be/4G7N5G5RXZE
Unit V	Programmable I/O ports	https://youtu.be/fVpiWcUwlh0
Unit V	DMA data transfer	https://youtu.be/Hlb_T0fqwyI
Unit V	Interfacing of ADC 0808/0809 to Intel 8086	https://youtu.be/XezD1Fmbs0A
Unit V	Bipolar to unipolar converter	https://youtu.be/xqWSQBMe3Wk
Unit V	Sample and hold circuit, LF 398	https://youtu.be/6saRcQycX6I

BLENDED LEARNING

MAPPING OF CO's WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2		3	2	2	2	2		2	2	3	2
CO2	3	3	2		2	2	2		2		2	2	3	2
CO3	2	2	2	2		2	2	2	2	2	2	2		2
CO4	2	2		2	2		2	2	2	2	2		2	3
CO5	2	2	2	2		2	2	2	2		2	2	3	2

(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I, Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Model Presentation (Unit V)	Once in a Semester

Course Designed by: Mrs.M.Jasmine Sagaya Jonita	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal



Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
Associate Professor & Head,	Professor &Head,	Associate Professor,	Associate General
Department of Computer Science,	Department of Computer	Department of	Manager,
Government Arts College,	Science with Data Analytics,	Computer Science ,	Expleo Solutions
Coimbatore.	KPR College of Arts Science	Lady Doak College,	Limited,
	and Research,	Madurai.	Coimbatore.
	Coimbatore.		

SEMESTER: III COURSE CODE: 23UIT3CP3 TITLE OF THE COURSE: PRACTICAL: WEB TECHNOLOGIES (Skill Development)

COURSE OBJECTIVES:

- To demonstrate the knowledge of HTML, XML and AJAX
- To enhance their basic skills in web page creation.

COURSE OUTCOMES: At the end of the course the students will be able to:

CO1	Apply conceptual skills of mark-up languages, Javascript and CSS to create webpages with advanced interactivity	K3
CO2	Show proficiency to interpret basic XML,PHP and AJAX in web site development	K3
CO3	Implement programs and present the results	K3

Credits: 2

Instructional hours: 60

LIST OF PRACTICALS

- 1. Create a Bio-Data using XHTML.
- 2. Create a webpage with four frames (Picture, table, list, and hyperlink).
- 3. Design a webpage with internal and external CSS along with HTML.
- 4. Create a simple calculator using PHP.
- Create a JavaScript code that displays text "TEXT-GROWING" with increasing font size in the interval of 100ms in RED COLOR, when the font size reaches 50pt it displays "TEXTSHRINKING" in BLUE color. Then the font size decreases to 5pt.
- 6. Create a XML document to store information about a student.
- 7. Write a XML document that displays the details of the customers.
- 8. Write a program to perform arithmetic operations using AJAX.
- 9. Write a program how a web page can fetch information from a database with AJAX.
- 10. Create an XML Http Request to retrieve data from an XML file.

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2
CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3

(Correlation: 3- High , 2-Medium,1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course Designed by: Mrs.A.Mary Theresa	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal



Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
Associate Professor & Head,	Professor &Head,	Associate Professor,	Associate General
Department of Computer Science,	Department of Computer	Department of	Manager,
Government Arts College,	Science with Data Analytics,	Computer Science ,	Expleo Solutions
Coimbatore.	KPR College of Arts Science	Lady Doak College,	Limited,
	and Research,	Madurai.	Coimbatore.
	Coimbatore.		

SEMESTER: III COURSE CODE: 23UIT3SB1 TITLE OF THE COURSE: SKILL BASED:CONTENT DESIGNING AND MANAGEMENT USING OPEN SOURCE TOOLS LAB (Skill Development /Entrepreneurship)

COURSE OBJECTIVES:

- To demonstrate the knowledge of terminology related to desktop publishing, graphics and animation.
- To develop familiarity and confidence with designing and building.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	To identify significant experience with the Open source environment	K3
	using Canva/Inskscape/Gimp/photopea	
CO2	Design and apply word press creating interactive web pages and demonstrate	K3
	visual presentations using industry ready applications	
CO3	Implement programs and present results through a record presentation	K3

Credits: 2

Instructional hours: 45 LIST OF PRACTICALS

CANVA/InkScape/Gimp

- 1.Create a logo design
- 2.Create a business card
- 3.Create Patterns

PHOTOPEA

- 1. Create a shiny 3D text effect using photopea
- 2. Apply filters to an image or a selection using photopea
- 3. Create cover page for a text book using photoshop

WORD PRESS

- 1. Creating team page
- 2. Create Blog template for college adding categories
- 3. Adding a photo gallery
- 4. Adding a video gallery

OBS

- 1. Create new visual Presentations Using OBS Studio
- 2. Creating Sequence of Scenes and Sources Using OBS Studio
- 3. Create live streams and Recording Using OBS Studio

	PO1	PO2	P03	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2	1	3	3	2	2	2	3	3	2
CO2	3	3	3	2	3	2	3	1	2	2	3	3	3	2
CO3	3	2	3	2	3	2	2	2	1	3	3	3	2	2

MAPPING OF CO'S WITH PO's and PSO's

(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course Designed by: Mrs.A.Mary Theresa	Verified by HOD: Dr.A.Jansi Rani		
Checked by CDC: Dr.K.Jayanthi	Approved by:		
	Principal		
2.l	hbj Ag	Qr. softa.	Y.Ebimayog
---	---	---------------------------------------	------------------------------
Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
Associate Professor & Head, Department of Computer Science	Professor & Head, Department of Computer	Associate Professor, Department of	Associate General Manager
Government Arts College.	Science with Data Analytics.	Computer Science.	Expleo Solutions
Coimbatore.	KPR College of Arts Science	Lady Doak College,	Limited,
	and Research,	Madurai.	Coimbatore.
	Coimbatore.		

SEMESTER: IV COURSE CODE: 23UIT4C06 TITLE OF THE COURSE: CORE: SOFTWARE ENGINEERING ESSENTIALS (Employability)

COURSE OBJECTIVES:

- To provide the concepts of requirement process and design methods.
- To provide basic knowledge about software project management.

COURSE OUTCOMES: At the end of the course the students will be able to:

CO1	Discuss the different life cycle models used in managing a software project	K2
CO2	Illustrate the requirements in the context of software development life cycles and processes	K2
CO3	Compare various Software design techniques	K2
CO4	Implement relevant software testing strategy to ensure the correctness and quality of the product	K3
CO5	Discuss the role of management in software development	К2

Syllabus

Credits: 3

Instructional hours: 45

9 Hours

UNIT I: SOFTWARE ENGINEERING INTRODUCTION (K2) 9 Hours

Definition – Layered Technology – Process Framework – Process Patterns – Process technology – Waterfall Model – Incremental Process Models – Evolutionary Process Models – Agile Process Models - System Modeling. (Self study: Incremental Models)

UNIT II: SOFTWARE REQUIREMENTS ANALYSIS (K2)

Requirements Engineering Process – Developing Use-Cases – Building the Analysis Model – Validating Requirements – Requirement Analysis – Analysis Modeling Approaches – Data Modeling Concepts –Object-Oriented Analysis - Flow-Oriented Modeling – Data Flow Diagram - Class-Based Modeling.

UNIT III: SOFTWARE DESIGN (K2)

Design Concepts – Design Model – Pattern-Based Software Design - Software Architecture – Data Design – Architectural Design – Mapping Dataflow in a Software Architecture – Designing Class-Based Components - Design Conventional Components - User Interface Analysis and Design – Interface Analysis – Interface Design Steps.

UNIT IV: SOFTWARE TESTING(K3)

Strategic Approach to Software Testing - Strategic Issues - Test Strategies for Conventional

9 Hours

9 Hours

Software – Validation Testing – System Testing – White-Box Testing – Control Structure Testing – Black-Box Testing.

(Beyond the Curriculum: Advance software testing tools: Testing (AI powered test automation), Autify (codeless testing automation plat form)

UNIT V: SOFTWARE MANAGEMENT (K2)

9 Hours

Metrics for Software Quality – The COCOMO II Model – Project Scheduling – Software Risks – Risk Identification – Risk Projection – Risk Refinement –Risk Mitigation, Monitoring, and Management – Quality Concepts – Software Quality Assurance – Formal Technical Reviews. (*Self study: Formal Technical Reviews*)

TEXT BOOKS:

- 1. Roger Pressman . *Software Engineering: A Practitioner's Approach*.(Sixth Edition) McGraw-Hill Education, US. (2014)
- 2. V.Rajaraman. *Analysis and Design Information System*. (Second Edition) Prentice-Hall of India Private Limited, India. (2008)

REFERENCE BOOKS:

- 1. Pankaj Jalote. *An Integrated Approach to Software Engineering*. (Second Edition) Narosa Publishing House, Delhi. (2005)
- 2. Sommerville *Software Engineering*. (Eighth Edition) Addison Wesley Longman Publishing Co. (2006).
- 3. Shari Lawrence Pfleeger. P. Fleeger: *Software Engineering*. (Fourth Edition) Pearson Publication.

(2010)

4. Waman S. Jawadekar. *Software Engineering-Principles and Practice*. (Fifth reprint) Tata McGraw-Hill Publishing Company Limited, India.(2007)

Unit	Topics	Links
Unit V	Software Management	https://youtu.be/lekCisJYw
Unit V	Decomposition Techniques	https://youtu.be/YaSVUcVUIko
Unit V	The COCOMO II Model	https://youtu.be/5 GA2XHb8zY
Unit V	Risk Projection	https://youtu.be/bp9qi3R7K0U
Unit V	Quality Concepts	https://youtu.be/qOKPHpXuEvY
Unit V	Software Quality Assurance	https://youtu.be/R4stvtPWoW4

BLENDED LEARNING

MAPPING OF CO's WITH POs/PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2	2		2	2		3	3	3	2
CO2		2	3		2	3	3	2		2	3	2	2	2
CO3	2	2		2	2	2	2		2	2	2	2		2
CO4	3	2	2	2	3	2	2	2	2		2	2	2	2
CO5	2	2	3	2	2	2	2	3	2	2	2	3	2	3

(Correlation: 3-High, 2-Medium, 1-Low)

ASSESSMENT TOOLS:

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment(Unit I, Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Case Study Presentation(Unit V)	Once in a Semester

Course Designed by: Mrs.K.Sindhya	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

2.l	hbj Ay	Q. Sofia.	Y.Ebimeryba
Dr.L.Robert- Associate Professor &Head, Department of Computer Science, Government Arts College, Coimbatore.	Dr.G.Satyavathy- Professor &Head, Department of Computer Science with Data Analytics, KPR College of Arts Science and Research, Coimbatore.	Dr.G.Sofia- Associate Professor, Department of Computer Science, Lady Doak College, Madurai.	Mr.Y.Ebinezar Associate General Manager, Expleo Solutions Limited, Coimbatore.

SEMESTER: IV

SUBJECT CODE: 23UIT4C07 TITLE OF THE COURSE: DATABASE MANAGEMENT SYSTEM

OBJECTIVES

- To inculcate knowledge on database design and concepts.
- To develop database applying procedural techniques

COURSE OUTCOMES

At the end of the course the students will be able to:

CO1	Database and database users, database system concepts and architecture.	K2
CO2	Develop Data models using ER diagrams.	К2
CO3	Implement the data in tables using SQL queries.	К3
CO4	Interpret the database programming techniques	К2
CO5	Apply normalization, dependencies and information retrieval	К3

Syllabus

Credits: 4 UNIT I:DATABASE INTRODUCTION

Instructional hours: 60 12 HOURS

12 HOURS

12 HOURS

Introduction - Characteristics- Advantages - Concepts and Architecture:DBMS Data model schema and Instance-Architecture and Data Independence-Data Independence-DB Languages and Interfaces -Client/Server Architectures-Classification of Database Management Systems.

UNIT II : DATA MODELLING AND DESIGN

Conceptual Data Models for Database Design-Entity and Keys- Relationship Structural Constraints- ER Diagrams, Naming Conventions, and Design Issues- UML Class Diagrams. Relational Model Constraints and Relational Database Schemas- SQL: Data Definition and Data Types- Constraints- Retrieval Queries -Statements in SQL.

UNIT III: STRUCTURED QUERY LANGUAGE 12 HOURS

Complex Queries, Triggers, Views, and Schema Modification statements. Relational Algebra and Calculus: Unary relational operations- Set theory operations – Binary relational operations- Tuple and Domain relational calculus.

(Self Study : Triggers and Views)

UNIT IV:SQL PROGRAMMING TECHNIQUES 12 HOURS

SQL Programming Techniques - Database Programming Techniques and Issues – Functional Dependencies - Normal Forms Based on Primary Keys - General Definitions of Second and Third Normal Forms - Boyce-Codd Normal Form - Multivalued Dependency and Fourth Normal Form - Join Dependencies. Retrieval models – Queries in IR systems – Web search and analysis – Trends in information retrieval.

(Beyond the curriculum: Online Analytical Processing, Data warehouses)

UNIT V :DATABASE PROGRAMMING

Introduction: Embedded SQL; Dynamic SQL, JDBC; PHP and MySQL, Object Relational Modeling: Hibernate, Active Record in Rails.(ruby on Rails).BIG DATA Introduction; OLAP vs. OLTP; Map Reduce and Hadoop; Spark; Other Systems: HBase.

Text Book:

1. Ramez-Elmasri-Shamkant-B.-Navathe, *Fundamentals-of-Database-Systems*-Pearson. ISBN-10: 0-13-397077-9 ISBN-13: 978-0-13-397077-7 2015

Reference Book:

- 1. Nilesh Shah, Database Systems Using Oracle, (2nd Edition), Prentice Hall, US (2004)
- 2. Arun K. Majumdar, Pritimoy Bhattacharya, *Database Management Systems*, (1st Edition), McGraw Hill Education, India.(2004)
- 3. Gerald V. Post, Database Management Systems, (3rd Edition), Tata McGraw Hill Education. (2004)

BLENDED LEARNING

UNIT III: STRUCTURED QUERY LANGUAGE

Topics	Links
Design Theory and Normalization	https://youtu.be/FVEPeCIVBtU
Trends in information retrieval	https://www.youtube.com/watch?v=i293wUIvef8
Functional Dependencies	https://www.youtube.com/watch?v=dR-jJimWWHA
Boyce-Codd Normal Form	https://www.youtube.com/watch?v=nSnaGLtwgMc
Join Dependencies	https://www.youtube.com/watch?v=mbj3HSK28Kk

Mapping of CO's with POs/PSOs

	PO1	PO2	P03	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	3	2	2	2	3	2	1	2	3	3	2
CO2	2	3	3	2	3	2	3	2	2	2	3	3	2	3
CO3	3	3	2	3	3	3	2	2	3	3	3	2	2	2
CO4	3	3	3	2	3	3	3	3	2	2	3	3	3	3
CO5	3	3	3	2	3	3	2	2	3	2	2	3	3	2

Correlation: 1-Low, 2-Medium, 3-High

ASSESSMENT TOOLS:

S.NO	Assessment Methods	Frequency of Assessment
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I & Unit II)	Twice in a semester
6	Seminar (Unit III & Unit IV)	Twice in a semester
7	Quiz / Workshop	Once in a semester

Course Designed by: Mrs.M.Jasmine Sagaya Jonita	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

2.l	hbj Ay	le. Sofia.	4.Ebimagoog
Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
Associate Professor & Head,	Professor &Head,	Associate Professor,	Associate General
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	and Research,	Madurai.	Coimbatore.
	Coimbatore.		

SEMESTER: IV COURSE CODE: 23UIT4A02 TITLE OF THE COURSE: ALLIED: EMBEDDED SYSTEMS

COURSE OBJECTIVES:

- To study about the designing and the architecture of the embedded system.
- To identify the requirements and specifications of the system with the basic concepts, building blocks of Embedded System.

COURSE OUTCOMES:

At the end of the course the students will have the ability to

CO1	Discuss the concepts in embedded system with design and development Process	K2
CO2	Illustrate various architectures in embedded system with I/O Interface, Processor Modeling and Bus Communication	K2
CO3	Discuss appropriate interrupts in system with device drivers / ISR	K2
CO4	Relate the concepts of Process Management in Real time operating system using Inter Process Communication	К3
CO5	Summarize the Real Time Operating System usage with necessary process and memory management	K2

Syllabus

Credits: 4

Instructional hours: 75

UNIT I: OVERVIEW ON BUILDING AN EMBEDDED SYSTEM (K2)

15 Hours

Embedded System - Processor Embedded - Embedded Hardware Units and Devices -Embedded Software - Overview of Programming Languages - Introduction to Embedded System Design - Architecture and Model - Classification of Embedded System - Examples of the Embedded System - Embedded System - On-Chip (Soc) - Use of VLSI Circuit Design Technology - Complex Systems Design and Processors.

UNIT II:EMBEDDED ARCHITECTURES(K2) 15 Hours

Processor and Memory Organization - Advanced Processor Architectures - Processor ORGANIZATION - I/O Types and Examples - Serial Communication Devices - Parallel Device Ports - Wireless Devices - Timer and Counting Devices - Distributed Network Embedded Systems Architecture.

(Self study: Serial Communication Devices, Wireless Devices)

UNIT III: CONCEPT ON INTERRUPT SERVICE (K2) 15 Hours

Port for Device Access - Interrupt - Driven Input and Output - Interrupt Service Routine Concept - Interrupt Sources - Hardware Interrupts - Software Interrupts - Servicing Mechanism - Interrupt Latency.

UNIT IV: OVERVIEW OF PROCESS MANAGEMENT (K3) 15 Hours

Multiple Processes - Multiple Threads – Tasks - Task and Thread States - Tasks and Data - Inter-Process Communication and Synchronization – Signals - Concepts of Semaphores - Queues and Mailboxes - Pipe and Socket Functions.

UNIT V: REAL TIME OPERATINGSYSTEMS (K2)

15 Hours

Operating System Services - Process Management - Timer Functions - Event Functions - Memory Management - Device, File And I/O Subsystems Management - Interrupt Routine in RTOS Environment - Handling of Interrupt - Source Calls - Introduction to RTOS - Basic Design using a RTOS – RTOSTask - Scheduling Models - OS Security Issues.

TEXT BOOK:

1. Prof. Raj Kamal. Embedded Systems *-Architecture, Programming and Design*.(3rd Edition) McGraw Hill Education (India) Private Limited, New Delhi. (2014)

REFERENCE BOOKS:

- 1. Shibu K V *Introduction to Embedded Systems*. Tata MC Graw Hill Education Pvt. Ltd, New Delhi. (2009)
- 2. Lyla B.Dass *Embedded Systems an Integrated Approach* (First impression), Pearson Education, India. (2013)
- 3. K. C. Wang *Embedded and Real-Time Operating Systems*. Pearson Education,

USA.(2017)

BLENDED LEARNING

Unit	Topics	Links
Unit V	Operating System Services	https://youtu.be/elzvHG6M-eU
Unit V	Memory Management	https://youtu.be/68J N7hoFLg
Unit V	Interrupt Routine in RTOS Environment-	https://youtu.be/oqrrlyK94PI
Unit V	Handling of Interrupt	https://youtu.be/rmdCP-PEgZ4
Unit V	Introduction to RTOS	https://youtu.be/yiFBRQLgeZA

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2		2	2	2	2	2	2	2	2	2	2
CO2	2			2	2	2	2	2	2		2	3		3
CO3	3	2	2	2	2	2		3	2	2		2		2
CO4		3	2	2	2		2	2	2		3	2	2	
CO5	3	2	2		2	2			3		3	2	3	2

(Correlation: 3-High, 2-Medium, 1-Low)

ASSESSMENT TOOLS:

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I, Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Workshop (Unit V)	Once in a Semester

Course Designed by: Mrs.K.Sindhya	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

2.l	hbj Ag	Qr. Sofia.	4.Ebimagba
Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
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Coimbatore.	KPR College of Arts Science	Lady Doak College,	Limited,
	and Research,	Madurai.	Coimbatore.
	Coimbatore.		

SEMESTER: IV COURSE CODE: 23UIT4CP4 TITLE OF THE COURSE: PRACTICAL: DATABASE MANAGEMENT SYSTEM (Skill Development/Employability)

COURSE OBJECTIVES:

- To inculcate knowledge on DML and DDL Commands.
- To inculcate knowledge on Procedures, Functions and Trigger concepts.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Apply Data Definition Language, Data Manipulation Language Commands, built in functions, formatting reports and operations on tables	K3
CO2	Implement the Procedures, Triggers, Recursive functions and Master Detail Relationships	K3
CO3	Implement programs and present results through a record presentation	К3

Credits: 3

Instructional hours: 75

LIST OF PRACTICALS

(Install MySQL and practice the following experiments)

- **1.** Consider following databases and draw ER diagram and convert entities and relationships to relation table for a given scenario.
 - a. COLLEGE DATABASE: STUDENT (USN, SName, Address, Phone, Gender)
 SEMSEC (SSID, Sem, Sec)
 CLASS (USN, SSID)
 SUBJECT (Subcode, Title, Sem, Credits)
 IAMARKS (USN, Subcode, SSID, Test1, Test2, Test3, FinalIA)
 - b. COMPANY DATABASE: EMPLOYEE (SSN, Name, Address, Sex, Salary, SuperSSN, DNo) DEPARTMENT (DNo, DName, MgrSSN, MgrStartDate) DLOCATION (DNo,DLoc) PROJECT (PNo, PName, PLocation, DNo) WORKS_ON (SSN, PNo, Hours)
- 2. Create an employee table and perform the following updation and alteration.
 - a. Add a new column.
 - b. Change the size of salary column
 - c. Increase the salary of all employees by 20%

- d. Change the department for two employees.
- e. Remove one of the employee record
- f. Change the name of employee table.
- 3. Creation of reports using Column Format
- 4. Create an Item table and write queries for the following statements using builtin functions.
 - a. Find the minimum and maximum of itemprice.
 - b. Find the average price for two items and display the rounded value of average.
 - c. Concatenate Item name and Quantity.
 - d. Find the length of the department.
 - e. Retrieve the Manufacture date in 'DD/Month/YY' format.
 - f. Retrieve the Item name, manufacture date after adding 3 months to the date.
- 5. Create a Student Information table and perform the following operations.
 - a. Comparison Operations
 - b. Logical Operations
 - c. Set Operations
 - d. Sorting and Grouping

6. Create a Students Information table and write a PL/SQL block. Find the total, average marks and

result.

- 7. Write a Pl/SQL program to print integers from 1 to 10 by using PL/SQL FOR loop
- 8. Given an integer i, write a PL/SQL procedure to insert the tuple (i, 'xxx') into a given relation.
- 9. Write a PL/SQL block to split the Students Information table into two, one with the passed and other with failed.
- 10. Write a PL/SQL block to join two tables, first table contains Roll Number, Name, Total and Second Table contains the Roll Number and Address.
- 11. .Write a PL/SQL block to implement Exception Handling.
- 12. .Write a PL/SQL block to design an Electricity Bill using stored procedure concept.
- 13. .Create a database trigger to check the validity of Record.
- 14. Write a Recursive Function in PL/SQL to find the Factorial of N
- 15. Write a database trigger to implement the Master-Detail Relationship.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2

MAPPING OF CO'S WITH PO's and PSO's

CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3
10							>							

(Correlation: 3-High, 2-Medium, 1-Low)

ASSESSMENT TOOLS

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course Designed by: Mrs.M.Jasmine Sagaya Jonita	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

2.l	hbj Ag	Q. Sofia.	4.Ebimay 29
Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
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Department of Computer Science,	Department of Computer	Department of	Manager,
Government Arts College,	Science with Data Analytics,	Computer Science,	Expleo Solutions
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	and Research,	Madurai.	Coimbatore.
	Coimbatore.		

SEMESTER: IV COURSE CODE:23UIT4SB2 TITLE OF THE COURSE: SKILL BASED: ARDUINO PROGRAMMING LAB (Skill Development/Industry 4.0)

COURSE OBJECTIVES:

- To inculcate knowledge about basic networking commands
- To inculcate knowledge about the microcontrollers using Arduino.
- To develop better knowledge about sensors and indicators.
- To create modules and to understand better about the programming using Arduino C.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Apply timer, alarm system and sensor concepts to predict the uncertainties and implement detectors and motors to indicate and avoid the obstacles	K3
CO2	Apply network reconnaissance tools, ip tables and port scanning tool	К3
CO3	Implement programs and present results through a record presentation	K3

Credits: 2

Instructional hours: 45

LIST OF PRACTICALS

- 1. Study the use of network reconnaissance tools like WHOIS, dig, traceroute, nslookup to gather information about networks and domain registrars
- 2. Demonstrate the use of Network tools: ping, ipconfig, ifconfig, tracert, arp, netstat
- 3. Use port scanning audit tools such as nmap to detect the ports.
- 4. Simple LED Blink Making LEDs to turn On and Off with certain delay.
- 5. Burglar alarm System Automatically turning On buzzer when PIR sensor finds out suspicious movement with the help of IF condition
- 6. LED brightness control using PWM PWM is used to control the brightness of the LED using the for loop
- 7. LED brightness control using potentiometer The LED brightness can be adjusted while rotating the knob of the potentiometer with the help of MAP function.
- 8. Obstacle Avoider Finding distance of any object using an ultrasonic sensor to avoid it.
- 9. Pollution Alert System Detecting the pollution using the GAS sensor and alerting using the LCD.
- 10. EarthQuake Detection system Finding the earthquake using the tilt sensor and indicated using LCD and BUZZER.
- 11. Servo Rotation Make servo motors rotate with an angle given.

Tool used:TinkerCad Micro Controller: Arduino Programming used: Arduino C .

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2
CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3

(Correlation: 3-High, 2-Medium, 1-Low) ASSESSMENT TOOLS

S.NO	ASSESSMENT METHODS	FREQUENCY OF
		ASSESSMENT
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course Designed by: Dr.A.Jansi Rani Mrs.M.Jasmine Sagaya Jonita	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal



Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
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	and Research,	Madurai.	Coimbatore.
	Coimbatore.		

SEMESTER: V COURSE CODE: 23UIT5C08 TITLE OF THE COURSE: CORE: OPERATING SYSTEMS (Skill Development)

COURSE OBJECTIVES:

- To understand the essentials of Operating Systems.
- To know the components and management aspects of processor, deadlock and memory.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Describe the necessary components in operating systems with examples	K1
CO2	Illustrate the process management strategies.	K2
CO3	Express the various deadlocks algorithms.	K2
CO4	Discuss the mechanisms involved in memory management.	K2
CO5	Discuss secondary storage memory management with Linux case study	K2

Syllabus

Credits:5

Instructional hours: 75

UNIT I: INTRODUCTION TO OPERATING SYSTEMS (K1) (15 Hours)

History - Operating System Environments - Operating System Components and Goals -Operating System Architectures - Hardware Components – Software Overview. (*Beyond the Curriculum: Boot Blocks in operating system*)

UNIT II: PROCESS MANAGEMENT (K2)

Process - Process States - Process Management – Interrupts - Interprocess Communication – Thread States - Thread Operations - Threading Models – Semaphores - Scheduling Levels - Preemptive Vs Non - Preemptive Scheduling – Priorities - Scheduling Algorithms. (*Self Study: Thread Operations, Threading Models*)

UNIT III: DEADLOCK (K2)

Deadlock - Indefinite Postponement - Necessary Conditions for Deadlock - Deadlock Solutions - Deadlock Prevention - Deadlock Avoidance - Deadlock Detection – Deadlock Recovery- Deadlock Strategies in Current and Future Systems.

UNIT IV: MEMORY MANAGEMENT(K2)

Memory Management Strategies - Contiguous Vs Non-Contiguous Memory Allocation -Single User Contiguous Memory Allocation - Fixed Partition Multiprogramming – Variable Partition Multiprogramming – Virtual Memory Basic Concepts –Paging :Paging Address Translation by Direct Mapping , Associative Mapping, Direct/Associative Mapping – Segmentation- Locality - Demand Paging - Page Replacement - Page Replacement Strategies.

(Self Study: Demand Paging)

UNIT V: SECONDARY STORAGE MANAGEMENT AND LINUX(K2) (15 Hours)

(15 Hours)

(15 Hours)

(15 Hours)

Moving-Head Disk Storage - Necessity of Disk Scheduling - Disk Scheduling Strategies -Files - File Organization - File Allocation - Free space Management - File Servers and Distributed Systems – Linux case study - overview - Kernel Architecture - Process management - Memory management - Networking - Security.

TEXT BOOK:

1. Harvey M. Deitel c, *Operating Systems*, (3rd Edition), Pearson Education Publication, UK. (2017)

REFERENCE BOOKS:

- 1. Achyut.SGodbole, *Operating Systems*, (2nd Edition), Tata Mc- Graw Hill Publications, India. (2008)
- 2. A.A.Puntambekar, I.A.Dhotre, Rupesh Mahajan, *Systems Programming and Operating System*, (1stEdition), Technical Publications, India. (2021)
- 3. MukeshSinghal, Niranjan Shivaratri, *Advanced Concepts in Operating Systems*, (Indian Edition), McGraw Hill Education, India. (2017)
- 4. Andrew.S. Tanenbaum, *Modern operating System*, (4th Edition), Pearson Education Publications, UK. (2016)
- 5. Abraham Silberschatz, Peter B.Galvin, Greg Gane, *Operating System Concepts*, (9th Edition), Wiley Global Education. (2019)

Unit	Topics	Links
Unit V	Necessity of Disk Scheduling	https://youtu.be/Qow06ontwuc
Unit V	Disk Scheduling Strategies	https://youtu.be/f9y_uMhbZ2c
Unit V	Files	https://youtu.be/kZNEh4hBlYM
Unit V	File Organization	https://youtu.be/Do0L9Urzzh8
Unit V	File Allocation	https://youtu.be/gK6L3v1b8AM
Unit V	Free space Management	https://youtu.be/hDBFSQRHPAU
Unit V	File Servers and Distributed Systems	https://youtu.be/fM7z0X08mzo
Unit V	Linux case study	https://www.youtube.com/watch?v=TTBkc5eiju4

BLENDED LEARNING

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	2	2	2	2	2	1	2	1	2	2
CO2	2	2	2	2	2	2	2	2	2	2	3	3	2	3
CO3	3	2	2	2	2	1	2	1	1	2	2	3	2	2

CO4	2	3	2	2	2	2	1	2	2	2	3	2	2	2
CO5	3	2	1	2	2	2	2	2	2	2	3	2	3	2

(Correlation: 3-High, 2-Medium, 1-Low)

ASSESSMENT TOOLS

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I, Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Case Study (Unit V)	Once in a Semester

Course Designed by: Mrs.M.Jasmine Sagaya Jonita	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

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	and Research,	Madurai.	Coimbatore.

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Coimbatore.	

SEMESTER: V COURSE CODE: 23UIT5C09 TITLE OF THE COURSE: CORE: PROGRAMMING IN JAVA (Skill Development/Employability)

COURSE OBJECTIVES:

- To impart the fundamental concepts of JAVA.
- To gain knowledge of standalone and web applications
- To understand the concepts needed for database connectivity.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Discuss the fundamentals of Java with illustration.	K2
CO2	Implement program using Inheritance, Packages and Collections.	K3
CO3	Summarize Exception handling and concurrent programming.	K2
CO4	Implement GUI programs for user-friendly environment.	К3
CO5	Illustrate File and back end connectivity.	K2

Syllabus

Instructional hours: 75

UNIT I: INTRODUCTION(K2)

Credits: 5

Java Features – Byte Code – Lexical issues - Class Fundamentals – Objects – Overloading Methods - Passing and Returning Objects - Recursion - Controlling Access to Members - this Keyword - static and final Keyword. (Self Study: Recursion)

UNIT II: INHERITANCE AND PACKAGES(K3)

Nested Classes - Inheritance - super Keyword - Multilevel Hierarchy - Method Overriding - Dynamic Method Dispatch - Object Class - Abstract Classes - Packages -Access Modifiers – Importing Packages – Interfaces – Applying Interfaces – Collections Framework - Collection Interfaces - Collection Classes - Accessing Collection.

UNIT III: EXCEPTION HANDLING AND THREADS(K2)

Exception Handling - Using Try Catch - Nested Try- Throw - Throws - Finally - Built In Exceptions - User Defined Exceptions - Threads - Thread Model - Creating Thread -Thread Priorities - Synchronization - Multithreading - Suspending - Resuming - Stopping Threads.

UNIT-IV: GUI PROGRAMMING WITH SWING(K3) 15 Hours

Introduction to Swing: Swing Features - MVC Connection - Components and Containers - Swing Packages - Swing Application. Exploring Swing - Swing Menus: Menu Basics -JmenuBar - Jmenu - JmenuItem - Main Menu - Adding Images and Tooltips to Menu Items – Popup Menu – Toolbar.

(Beyond the Curriculum: JSP architecture, Life cycle of JSP, JSP tags and expressions)

UNIT V : FILES AND DATABASES(K2)

15 Hours

15 Hours

15 Hours

15 Hours

Streams - Stream Classes - Byte Stream Classes - Character Stream Classes - Using Streams - I/O Classes - File Class - I/O Exceptions - Creation of Files - Reading/Writing Characters and Bytes - Primitive Data Types - Random Access File - JDBC Basics -Components of JDBC- Executing DLL and DML Commands.

TEXT BOOKS:

1. Herbert Schildt, *JAVA - The Complete Reference* (9th Edition), McGraw-Hill Publications, UK. (2014)

- 2. Balagurusamy E, *Programming with JAVA* (5th Edition), McGraw-Hill Education, India. (2014)
- 3. Rashmi Kanta Das, *Core Java for Beginners* (3rd Edition), First Reprint, Vikas Publishing House Pvt Ltd, India. (2015)

REFERENCE BOOKS:

- 1. Paul Deitel, Harvey Deitel, *Java How to Program* (9th edition), Pearson Publications, UK. (2015)
- 2. Samanta D, *Object Oriented Programming with C++ and JAVA* (2nd edition) Prentice-Hall of India Private Limited, India. (2005)
- 3. Bruce Eckel, Chuck Allison, *Thinking in Java* (3rd Edition), Prentice-Hall of India Private Limited, India. (2002)

Unit	Topics	Links
Unit V	Streams, Stream Classes, Byte	https://www.youtube.com/watch?v=SjMibFjAjr0
	Stream Classes	
Unit V	Character Stream Classes, Using	https://www.youtube.com/watch?v=E5y1AF5WJP0
	Streams	
Unit V	I/O Classes, File Class	https://www.youtube.com/watch?v=NvRswBF-Yiw
Unit V	I/O Exceptions	https://youtu.be/6LIoSR5N3t0
Unit V	Creation of Files, Reading/Writing	https://www.youtube.com/watch?v=mkqbbkBqOaU
	Characters and Bytes	
Unit V	Primitive Data Types	https://youtu.be/Rilk5TayNbI
Unit V	Random Access File	https://www.youtube.com/watch?v=XW0N07JbiCk
Unit V	JDBC Basics - Components of	https://www.youtube.com/watch?v=kLz2h0vA1MI
	JDBC	
Unit V	Executing DLL and DML	https://www.linkedin.com/learning/oracle-database-
	Commands	12c-basic-sql/introduction-to-dml-and-ddl-
		<u>commands</u>

BLENDED LEARNING

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2		2	2		2		2	2		2	3	2

CO2		2	2		2		2	2	2		2	3	2	3
CO3	2	2	3	2	2	3		2	2		2	2		2
CO4	3	2	2		2	2	2		2	2		2	3	2
CO5	2	3	2	2	2	2		2	3	2	2	2		2

(Correlation: 3-High, 2-Medium,1-Low)

ASSESSMENT TOOLS

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment(Unit I, Unit II)	Twice in a semester
6	Seminar(Unit III, Unit IV)	Twice in a semester
7	Group Discussion (Unit V)	Once in a Semester

Course Designed by: Mrs.M.Jasmine Sagaya Jonita	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

2.l	hbj Ay	Qr. Softa.	Y.Ebimegba
Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
Associate Professor & Head,	Professor &Head,	Associate Professor,	Associate General
Department of Computer Science,	Department of Computer	Department of	Manager,
Government Arts College,	Science with Data Analytics,	Computer Science,	Expleo Solutions
Coimbatore.	KPR College of Arts Science	Lady Doak College,	Limited,
	and Research,	Madurai.	Coimbatore.
	Coimbatore.		

SEMESTER: V COURSE CODE: 21NIT5E01 TITLE OF THE COURSE: NON MAJOR ELECTIVE: GRAPHIC DESIGNING (Skill Development)

COURSE OBJECTIVES:

- To inculcate various graphic design concepts and their elements.
- To gain exposure to the various Adobe Components.

COURSE OUTCOMES:

At the end of the course the student will have the ability to

CO1	Understand the basic Design Concepts in Graphics.	K2
CO2	Extend the knowledge of Adobe InDesign Elements.	K2
CO3	Model a simple multimedia tool using Photoshop.	K5
CO4	Illustrate the basic knowledge of Adobe Illustrator Components	K2
CO5	Create with the development of Adobe Tools to extend their ability	K5

UNIT I: GRAPHIC DESIGN CONCEPTS(K2)

Elements of Design - Typography - Color theory - Introduction to Graphics - Information Hierarchy Introduction to Photoshop- Bitmap and Vector Images - Understanding Image Size and Resolution

UNIT II:ADOBE INDESIGN(K2)

Credits: 4

Explore the InDesign Workspace –View and Modify Page Elements – Work with Objects and Smart Guides - Working with Text – Working with Color.

UNIT III: ADOBE PHOTOSHOP(K5)

Photoshop Basics- Layers and History panels - Working with Layers- Organize layers with colors -Making Selections- Placing type in an Image-Apply Special Effects to Type using Filters.

(Self Study: Basic Photoshop tools and Animation)

UNIT IV: ADOBE ILLUSTRATOR(K2)

View and Modify Artboard Elements - Create basic Shapes - Apply Fill and Stroke colors to Objects - Creating Text and Gradients - Drawing and Composing an Illustration -Working with Layers.

UNIT V: PANORAMIC PICTURE CREATION (K5)

Creating product Packaging designs - CD cover - Book and magazine front cover -Envelope and Visiting card - Color correction and Color channel management - Design automation theory and Practical's Samples and demos - Guidelines for freelance work -Website links.

TEXT BOOKS:

- 1. Jennifer Cole Phillips, Graphic Design: The New Basics Paperback, July 14-, Princeton Architectural Press, Hudson, New York. 2015
- 2. Chris Botello., Elizabeth Eisner Reding., The Design Collection Revealed: Adobe InDesign CS5, Photoshop CS5 and Illustrator CS5 Cengage Learning- Princeton Architectural Press, Hudson, New York. 2010,
- 3. Adobe Photoshop-, Classroom in a Book- Adobe system incorporation, Adobe Press, San Jose, California, United States. 2010

REFERENCE BOOKS:

- 1. Ranjan Parekh Principles of Multimedia. (6th edition)-, Tata Mc Graw Hill Publishing Company Ltd, Chennai, Tamil Nadu. 2007
- 2. Mike Wooldridge Teach Yourself Visually Adobe Photoshop CS 5, Wiley Publishing, Daryaganj, NewDelhi, India (2010)
- 3. LesaSnider, Photoshop the missing Manual O'Reilly Media Inc, Gravenstein Highway North ,Sebastopol, CA 95472,USA. (2010)

Instructional Hours: 60

(12 Hours)

(12 Hours)

(12 Hours)

(12 Hours)

(12 Hours)

BLENDED LEARNING

Unit	Topics	Links					
Unit V	Creating product Packaging designs	https://www.youtube.com/watch?v=dFyBy831ei8					
Unit V	CD cover	https://www.youtube.com/watch?v=ITKHRw_11f0					
Unit V	Book and magazine front cover	https://www.youtube.com/watch?v=DB9L2NI-dO0					
Unit V	Envelope and Visiting card	https://www.youtube.com/watch?v=ur7VbO06hPs					
Unit V	Color correction and Color channel management	https://www.youtube.com/watch?v=WvVonq05ahE					
Unit V	Design automation theory and Practical's Samples and demos	https://www.youtube.com/watch?v=JUH7JqYTg08					
Unit V	Website links	https://www.youtube.com/watch?v=DiSvq5SgLMI					

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2		3	3			2	2		2	2	2
CO2	2	2		2	3	2	2	2	2	2	2	2		2
СО3	2	3	2		2		2		2	2	2	2	2	2
CO4	2	2	2		2	3		2	2	2	2	3		3
CO5	2	2	2	2	2	3	3	3			2	3	2	3

(Correlation: 3-High, 2-Medium, 1-Low)

ASSESSMENT TOOLS

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester

4	Model	Once in a semester
5	Assignment (Unit I, Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Field Visit (Unit V)	Once in a Semester

Course Designed by: Mrs.A.Mary Theresa	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

2.L	hbj Ay	Qr. Softa.	Y.Ebimayba
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	and Research,	Madurai.	Coimbatore.
	Coimbatore.		

SEMESTER: V COURSE CODE: 21UIT5E01 TITLE OF THE COURSE: ELECTIVE: DATA ANALYTICS (Skill Development/Industry 4.0)

COURSEOBJECTIVES:

- To understand the concepts of Data Analytics.
- To understand the methodologies used for analysis of data.
- To explore hidden structures in big data

COURSE OUTCOMES:

At the end of the course the student will have the ability to:

CO1	Express big data and statistical analysis techniques on big data	K2
CO2	Illustrate appropriate classification techniques for data analysis	K2
CO3	Classify the concepts behind data preparation and dimensionality reduction techniques	K3
CO4	Understand techniques for mining similar items, frequent itemsets and data streams	K2
CO5	Explore big data analytics frameworks such as Hadoop Ecosystem and Spark architecture and apply for few case studies	K2

Syllabus

Instructional hours: 75

UNIT I: INTRODUCTION TO BIG DATA(K2)

Introduction to big Data: Sources of Big data, Characteristics, Challenges and applications and case studies. Statistical analysis and modelling: Mean, Covariance, Correlation - Sampling distributions- random variables and probabilities - Probability Theory – Bayes Theorem

(Self Study: Statistical analysis and modeling-Sampling Distributions)

UNIT – II GRAPHICAL MODELS(K2)

Graphical models: Bayesian Learning. Data Preparation, Dimensionality reduction techniques :Principal Component Analysis - Singular Value Decomposition.

UNIT III:HADOOP(K3)

Credits: 4

Hadoop Ecosystem for Big Data – Hadoop Architecture, HDFS - Algorithms using Map Reduce Framework — Hbase – Hive MongoDB. Scalable Machine Learning, Mahout for Machine Learning

UNIT IV: INTRODUCTION TO SPARK(K2)

Introduction to Spark Architecture- Analyzing big data- Case studies. Finding similar items: distance measures, Locality sensitive hashing- applications.

UNIT V: MINING CONCEPTS(K2)

(15 Hours)

(15 Hours)

(15 Hours)

(15 Hours)

(15 Hours)

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Mining frequent itemsets: Market –basket model, Apriori algorithm, Limited pass algorithms. Mining data streams: sampling, filtering, counting distinct elements, counting frequent items in a stream.

TEXT BOOK:

1. Jure Leskovec, Anand Rajaraman, Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press(Second Edition), Cambridge. (2014)

REFERENCE BOOKS:

1. Bart Baesens , *Analytics in a Big Data World: The Essential Guide to Data Science and its Applications*, Wiley Publishers, India. (2014)

2. Bill Franks, Taming the Big Data Tidal Wave: Finding opportunities in Huge Data Streams with Advanced Analytics, John Wiley & sons, India. (2012)

3. Michael Minelli, Michelle Chambers, and Ambiga Dhiraj, *Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses*, Wiley Publishers, India. (2013)

BLENDED LEARNING

Unit	Topics	Links
Unit V	Mining frequent itemsets	https://youtu.be/mpQZVYPuDGU
Unit V	Apriori algorithm	https://youtu.be/SBaARws0hy4
Unit V	Mining data streams	https://youtu.be/PJo5yOtu7o8-
Unit V	frequent items in a stream	https://youtu.be/tOj8MSEIbfA

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2			2	2	2	2	2	2		2	2	2
CO2	2		2	2	2	2		2		2	2	2		2
CO3	2	3	2		2			2	3		2	3	2	3
CO4	3	2	2	2	2		2	3		2		2	2	2

CO5	2	3	3	2	2		3	2	2	2	2

(Correlation: 3-High,2-Medium, 1-Low)

ASSESSMENT TOOLS

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment(Unit I, Unit II	Twice in a semester
6	Seminar(Unit III, Unit IV)	Twice in a semester
7	Case Study((Unit V)	Once in a Semester

Course Designed by: Dr.A.Jansi Rani	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
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2.l	hbj Ag	Qr. Softa.	4.Ebimayba
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	and Research,	Madurai.	Coimbatore.
	Coimbatore.		

SEMESTER: V COURSE CODE:21UIT5E02 TITLE OF THE COURSE:ELECTIVE: COMPUTER GRAPHICS AND VISUALIZATION (Skill Development)

COURSE OBJECTIVES:

Total Credits : 4

- To inculcate various two dimensional and three dimensional graphic concepts and their functions.
- To gain exposure to the various Visualization datasets.

COURSE OUTCOMES: At the end of the course the students will have the ability to:

CO1	Illustrate the fundamental principles of Computer Graphics and algorithms	K2
CO2	Extend the knowledge of 2D Transformations and Viewing Functions	K2
CO3	Extend the knowledge of 3D Object Representation	K2
CO4	Apply various Hypermedia concepts for creating and manipulating	K3
CO5	Understand the basics of Visible-Surface Detection Methods and Visualization data sets	K2

Syllabus

Instructional hours:75

UNIT I: GRAPHIC SYSTEMS AND OUTPUT PRIMITIVES(K2) (15 Hours)

Graphic Systems Introduction – Video Display Devices - Raster Scan Systems - Random Scan Systems - Input Devices - Hard Copy Devices – Line - Drawing Algorithms – Circle – Generating Algorithms - Line Attributes – Curve Attributes – Area–Fill Attributes – Character Attributes.

UNIT II: 2D TRANSFORMATIONS, VIEWING AND FUNCTIONS (K2) (15 Hours)

Basic Transformations – Types of Transformations - Viewing Pipeline – Viewing Co-Ordinate Reference Frame – Window To Viewport Co-Ordinate Transformation -2D Viewing Functions – Clipping Operations.

UNIT III: 3D OBJECT REPRESENTATION (K2)

Three-Dimensional Translation - Three-Dimensional Rotation - Three-Dimensional Scaling - Other Three-Dimensional Transformations - OpenGL Geometric-Transformation Functions Three-Dimensional Viewing: The Three-Dimensional Viewing Pipeline - Three-Dimensional Viewing-Coordinate Parameters -Transformation from World to Viewing Coordinates

UNIT IV:HYPERMEDIA(K3)

Types of Text -Font - Insertion of Text - File Formats - Image Types- Color Models -

(15 Hours)

(15 Hours)

Basic Steps for Image Processing – Scanner – Digital Camera – File Formats – Acoustics-Fundamental Characteristics of Sound-Elements of Audio Systems-Audio File Formats-Digital Video – Digital Video Standards – Video Recording Formats-Video Editing-Video Editing Software.

(Self-study: Image editing fundamentals)

UNIT V:VISUALIZATION(K2)

(15 Hours)

Visible-Surface Detection Methods: Classification of Visible-Surface Detection Algorithms- Depth-Buffer Method- Scan-Line Method- Depth-Sorting Method- Area-Subdivision Method- Comparison of Visibility-Detection Methods. Visualization of Datasets: Visual Representations for Scalar Fields - Visual Representations for Vector Fields - Visual Representations for Tensor Fields - Visual Representations for Multivariate Data Fields -Visualization of Data Sets Color Plates.

TEXT BOOKS:

- 1. Hearn D and Baker P. *Computer Graphics Open GL Version*, Second Edition, Prentice Hall of India (2013)
- 2. Ranjan Parekh. *Principles of Multimedia*. (6th edition) Tata Mc Graw Hill Publishing Company Ltd.(2007)

REFERENCE BOOKS:

- 1. Amarendra N Sinha., Arun D Udai., *Computer Graphics*. Tata Mc Graw Hill Publishing Company Ltd.
- 2. Plastook R A and Kalley G. *Theory and Problems of Computer Graphics, Schaum's Outline Series*, TMH;1985.
- 3. Foley J D D, Eiener S K and Hughes J.F. *Computer Graphics Principles and Practice*, Second Edition, Pearson Education;1996.

Unit	Topics	Links
Unit V	Visible-Surface Detection	https://www.youtube.com/watch?v=1aSYTBLAKBA
	Methods	
Unit V	Visualization of Datasets	https://www.youtube.com/watch?v=yQsOFWqpjkE
Unit V	-Visualization of Data Sets	https://www.youtube.com/watch?v=AiD6etOB6qI
	Color Plates	
Unit V	Visual Representations for	https://www.youtube.com/watch?v=a5ovw-B60as
	Multivariate Data Fields	

BLENDED LEARNING

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	P03	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2	1	2	3	2	1	2	3	3	2
CO2	3	3	3	3	3	2	3	2	3	2	3	3	2	3
CO3	3	2	3	3	2	2	2	2	3	3	3	3	2	2
CO4	3	3	3	3	2	3	3	3	3	2	3	3	3	2
CO5	3	3	3	2	3	3	2	2	3	2	3	3	3	2

(Correlation: 3-High, 2-Medium,1-Low)

ASSESSMENT TOOLS

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment(Unit I, Unit II)	Twice in a semester
6	Seminar(Unit III, Unit IV)	Twice in a semester
7	Case Study((Unit V)	Once in a Semester

Course Designed by: Mrs.A.Mary Theresa	Verified by HOD:Dr.A.Jansi Rani		
Checked by CDC: Dr.K.Jayanthi	Approved by:		
	Principal		
2.l	hbj Ay	Qr. Softa.	4.Ebimeryba
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Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
Associate Professor & Head,	Professor &Head,	Associate Professor,	Associate General
Department of Computer Science,	Department of Computer	Department of	Manager,
Covernment Arts College	Catanan mith Data Analatian	Computer Science	Evalos Solutions
Government Arts Conege,	Science with Data Analytics,	Computer Science,	Explet Solutions
Coimbatore.	KPR College of Arts Science	Lady Doak College,	Limited,
Coimbatore.	KPR College of Arts Science and Research,	Lady Doak College, Madurai.	Limited, Coimbatore.

SEMESTER: V COURSE CODE: 23UIT5CP5 TITLE OF THE COURSE: PRACTICAL: JAVA PROGRAMMING IN LINUX (Skill Development)

COURSE OBJECTIVES:

- To inculcate the practical knowledge on Java concepts through simple coding in Linux environment
- To extract the system properties using Linux commands.
- To understand protocol for File Sharing and communication.

COURSE OUTCOMES:

At the end of the course the students will have the ability to:

CO1	Apply decision making statements, mathematical calculations and back end	K3
	connectivity to derive solution oriented applications.	
CO2	Implement shell scripts to demonstrate various commands in Linux	K3
CO3	Implement programs and present results through a record presentation	K3

Credits: 3

Instructional hours: 75

LIST OF PRACTICALS

JAVA

- 1. Write a program using decision making statement. Get the input through the keyboard
- 2. Write a program for sorting the given numbers in ascending and descending order using arrays.
- 3. Write a program to display the multiplication table.
- 4. Write a program to calculate electricity bill using inheritance.
- 5. Write a program to find the area of triangle and rectangle using package.
- 6. Write a program to traverse ArrayList.
- 7. Write a program to check if element(value) exists in ArrayList.
- 8. Write a program to handle the divide by zero exception.
- 9. Write a Java program that lets user to select one of three lights: red, yellow, or green with radio buttons and simulates a traffic light.
- 10. Write a program to demonstrate the multiple selection list box.
- 11. Write a program to read and write a file.
- 12. Write a program to connect java application with database.

LINUX PROGRAMMING

1. Write a shell script to stimulate the file commands: rm, cp, cat, mv, cmp, wc, split, diff. 2. Write a shell script for displaying current date, user name, file listing and directories by getting user choice.

- 3. Write a shell script to remove the files which has file size as zero bytes.
- 4. Write a shell script for Sorting numbers/Names
- 5. i) Read a file name from command line and check it's a file or not.
 - ii) Read a file name from command line and check if it read and write permission or not.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2
CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3

MAPPING OF CO'S WITH PO's and PSO's

(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course Designed by: Dr.A.Jansi Rani	Verified by HOD: Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal



Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
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	and Research,	Madurai.	Coimbatore.
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SEMESTER: V COURSE CODE: 23UIT5SB3 TITLE OF THE COURSE: SKILL BASED: DATA VISUALIZATION AND STATISTICAL TOOL LAB (Skill Development /Employability/Industry 4.0)

COURSE OBJECTIVES:

- To provide an exposure on data visualization tool
- To provide an understanding on statistics with pragmatic tool for statistical analysis.

COURSE OUTCOMES:

At the end of the course the students will have the ability to:

CO1	Apply appropriate data sets for visualization	К3
CO2	Apply analytical graphics and Plotting system	К3
CO3	Implement programs and present results through a record presentation	K3
0 114		

Credits: 2

Instructional hours: 45

LIST OF PRACTICALS

DATA VISUALIZATION TOOL

- 1. Create a scatter plot for the given data
- 2. Create a pie chart for the given data
- 3. Create a histogram for the given data
- 4. Create a bar chart for the given data
- 5. Create a heat map for the given data

STATISTICAL TOOL

- 1. Calculate mean, median, mode and display results in proper format.
- 2. Calculate the product and sum of two vectors.
- 3. Calculate Range, standard deviation and coefficient of variation for grouped data.
- 4. Graphical Representation (Bar, Pie, Line, Scatter, Histogram)

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2
CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3

(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course Designed by: Dr.A.Jansi Rani	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

2.l	hbj Ay	Qr. Sofia.	4.Ebimegolag
Dr.L.Robert-	Dr.G.Satyavathy-	Dr.G.Sofia-	Mr.Y.Ebinezar
Associate Professor &Head,	Professor &Head,	Associate Professor,	Associate General
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Coimbatore.	KPR College of Arts Science	Lady Doak College,	Limited,
	and Research,	Madurai.	Coimbatore.

Coimbatore.	

SEMESTER: V COURSE CODE: 22IDSBIT1 TITLE OF THE COURSE: SKILL BASED: CONTENT MANAGEMENT USING JEKYLL AND WORDPRESS

(Skill Development)

COURSE OBJECTIVES:

• To enhance the designing skills using opensource environment.

• To organize and present content in Jekyll and Wordpress.

COURSE OUTCOMES:

At the end of the course the students will have the ability to:

CO1	Apply appropriate designing skills to create static web pages	K3
CO2	Apply appropriate designing skills to create dynamic web pages	K3
CO3	Implement programs and present results through a record presentation	K3

Credits: 2

LIST OF PRACTICALS

Instructional hours: 45

JEKYLL

- 1. Write a step guide on how you created the blog using Jekyll. Use markdown to create the pages
- 2. Create a collection in jekyll that contains the basic details of the students of your class
- 3. Create a page in jekyll that uses data files and lists all the staff members of your department
- 4. Build a website for your college using themes
- 5. Create a blog with 25 posts and paginate the blog with 5 posts per page

WORDPRESS

- 1. Creating team page
- 2. Adding a photo gallery
- 3. Adding a video gallery
- 4. Adding project portfolio

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2
CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3

(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course Designed by: Dr.A.Jansi Rani Mrs.M.Jasmine Sagaya Jonita	Verified by HOD:Dr.A.Jansi Rani
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Coimbatore.	

SEMESTER: VI COURSE CODE: 23UIT6C10 TITLE OF THE COURSE: CORE: CLOUD COMPUTING (Skill Development/Industry4.0)

COURSE OBJECTIVES:

- To understand the basic concepts of cloud computing.
- To familiarize with the various cloud Platforms and Applications.
- To acquire knowledge on cloud management and Advanced topics.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Illustrate the basic concepts of C loud computing.	K2				
CO2	Explain Cloud computing Architecture and types of clouds.					
CO3	Demonstrate the types of Commercial cloud platforms used in Industry.	K3				
CO4	Discuss the Applications of Cloud computing in various fields.					
CO5	Discuss the Advanced Topics on Cloud Computing such as Energy	K2				
	Efficiency and third party clouds					
·						

Syllabus

Credits: 5

Instructional Hours: 75

UNIT 1: INTRODUCTION TO CLOUD COMPUTING (K2) 15 Hours

Introduction to Cloud Computing, Historical Developments-Distributed Systems-Virtualization-Web2.0-Service Oriented Computing-Utility Oriented Computing-Building Cloud computing Environments-Computing Platforms and Technologies-Eras of Computing-Parallel vs Distributed Computing-Elements of Parallel computing-Elements of Distributed Computing Technologies for Distributed Computing.

UNIT II: CLOUD COMPUTING ARCHITECTURE (K2)

Cloud Reference Model-Architecture-- Infrastructure as a Service(IaaS), Platform as a Service(PaaS), Software as a Service(SaaS), Types of Clouds- Public clouds- Private clouds- Hybrid clouds-Community clouds-Economics of the cloud.

UNIT III: CLOUD PLATFORMS IN INDUSTRY (K3)

Amazon Web Services-Compute Services-Storage Services-Communication Services-Google App Engine-Architecture and Core concepts-Application Lifecycle-Costmodel-Microsoft Azure-Azure Core Concepts-SQL Azure-Windows Azure Platform Appliances. (Self study: Microsoft Azure, Windows Azure Platform Appliances)

UNIT IV:CLOUD APPLICATIONS (K2)

Scientific Applications - Healthcare - ECG Analysis in the cloud-Biology-Geoscience-Business Consumer Applications-Social Networking-Media Applications-Multiplayer **Online** Gaming

15 Hours

15 Hours

15 Hours

(Beyond the Curriculum : Green Cloud Computing)

UNIT V:ADVANCED TOPICS IN CLOUD COMPUTING (K2) 15 Hours

Energy Efficiency in Clouds-Market Based Management of Clouds-Federated Clouds/Intercloud-Third Party Cloud Services.

TEXT BOOKS:

- 1. Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, , *Cloud Computing: Principles and Paradigms* (1st Edition), Willey Publications, India. (2011)
- 2. Barrie Sosinsky, Cloud Computing Bible (1st Edition), Willey Publications, India. (2011),

REFERENCE BOOKS:

- 1. Gautam Shroff, *Enterprise Cloud Computing Technology, Architecture, Applications* (1st Edition), Cambridge University Press, UK. (2010)
- 2. Ronald L. Krutz, Russell Dean Vines, *Cloud Security: A Comprehensive Guide to Secure Cloud Computing* (1st Edition), Wiley Publications, India. (2010)
- 3. Judith S. Hurwitz, Robin Bloor, Marcia Kaufman, Fern Halper, *Cloud Computing For Dummies* (1st Edition), Willey Publications, India. (2012)

Unit	Topics	' Links
Unit IV	Scientific Applications	http://serious-science.org/practical-applications-of-cloud- computing-7593
Unit IV	Business Consumer Applications	https://www.dqindia.com/cloud-computing-important- businesses/
Unit IV	Multiplayer Online Gaming	https://www.rcrwireless.com/20201103/5g/5g-cloud- computing-wont-fix-online-multiplayer-gaming-issues
Unit IV	Market Based Management of Clouds	https://www.youtube.com/watch?v=jkHwSwnbDqg

BLENDED LEARNING

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2		2	2			2	2	2		3		3
CO2	2	2			3		2	2	2	2	2	2	2	2
CO3	3		2		2	2	2	2		2		2		2
CO4	2		3	2	2	2	2	2	2			2	2	2
CO5	2	2		2	2			3	2		2	2		2

(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I, Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Field Visit (Unit V)	Once in a Semester

Course Designed by: Mrs.M.Jasmine Sagaya Jonita	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

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	and Research,	Madurai.	Coimbatore.
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SEMESTER: VI COURSE CODE: 23UIT6C11 TITLE OF THE COURSE: CORE: DATA COMMUNICATION AND NETWORKS (Skill Development/Employability)

COURSE OBJECTIVES:

- To indicate the fundamental concepts of data communications and networking.
- To identify different components and their respective roles in data communication system.
- To understand system architecture and layered protocol models.

COURSE OUTCOMES:

At the end of the course the student will have the ability to:

CO1	Express data communication system, components and the purpose of layered architecture	K2
CO2	Illustrate the functionality of various transmission media	K2
CO3	Classify different types of networks and its integrated services	K3
CO4	Summarize internetworking concepts using appropriate architectures.	K2
CO5	Discuss various networking models	K2

Syllabus

Credits: 4

Instructional hours: 60

UNIT I: FUNDAMENTALS OF DATA TRANSMISSION IN NETWORKING(K2)

12 Hours

12 Hours

Fundamental Concepts - Data Communications – Protocols – Standards - Standards Organizations - Signal Propagation - Analog and Digital Signals - Bandwidth of a Signal and Medium - Fourier Analysis - Modes of Data Transmission and Multiplexing - Detection and Correction - Basic Concepts of Data Compression and Encryption – Digital Signature.

UNIT II: DATA TRANSMISSION(K2)

Transmission Media - Guided Media - Unguided Media - Topology - Types of Topology -Switching Basics - Circuit Switching - Packet Switching - Message Switching - Router and Routing - Factors Affecting Routing Algorithms - Routing Algorithms - OSI Model - OSI Layer Functions.

(Self study: Guided media)

UNIT III: NETWORK TYPES AND ITS INTERFACES (K3) 12 Hours

Introduction to Networks - Local Area Networks (LAN) - Ethernet - TokenRing - Metropolitan Area Network (MAN) - Wide Area Network (WAN) - WAN Architecture -

Introduction to ISDN - Background of ISDN - ISDN Architecture - ISDN Interfaces - Asynchronous Transfer Mode (ATM) - Overview of ATM - ATM Layers. (Self study: LAN, MAN & WAN)

UNIT IV:INTERNETWORKING (K2)

12 Hours

Introduction to Internetworking - Virtual Network - Internetworking Devices - Repeaters - Bridges - Routers - Gateways - Introduction to TCP/IP - IP - ARP - RARP - ICMP. (Beyond the Curriculum: Firewalls : Glass wire firewall -Zone alarm)

UNIT V: INTERNET PROTOCOLS AND ITS USES (K2) 12 Hours

TCP Basics - Ports and Sockets - TCP Connections - TCP Packet Format - User Datagram Protocol(UDP) – UDP Packet – DNS - EMAIL - FTP - TFTP - Domain Name System -Electronic Mail(EMAIL) - File Transfer Protocol(FTP) – WWW - HTTP - TELNET - Web Browser Architecture.

TEXT BOOK:

1.Achyut S Godbole *Data Communications and Networks*. (16thReprint) Tata McGraw-Hill Publishing Company Limited, India. (2009).

REFERENCE BOOKS:

- 1. Behrouz A Forouzan. *Data Communications and Networking*. (4thEdition) Tata McGraw-Hill Publishing Company Limited, India. (2007)
- 2. Andrew S Tanenbaum. *Computer Networks*. (4thEdition) Prentice Hall of India Learning Private Limited. (2008)
- Andrew S Tanenbaum., David J Wetherall. *Computer Networks*. (5thEdition) Prentice Hall of India Learning Private Limited. (2008)
- Yekini N Asafe., Adebari F Adebayo., Bello Olalekan. *Data Communications And Networking*. (2ndEdition) Yeknua ICT & Educational Research Publication, Nigeria. (2015)

Unit	Topics	Links
Unit V	TCP Basics	https://youtu.be/NtpHG9AaS_8
Unit V	Ports and Sockets	https://youtu.be/mpQZVYPuDGU
Unit V	TCP Connections	https://youtu.be/SBaARws0hy4
Unit V	UDP Packets	https://youtu.be/PJo5yOtu7o8
Unit V	E-Mail	https://youtu.be/tOj8MSEIbfA
Unit V	File Transfer Protocol(FTP	https://youtu.be/hExRDVZHhig
Unit V	НТТР	https://youtu.be/6QE21wQ2bEE

BLENDED LEARNING

MAPPING OF CO'S WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	3	3	2	2	2	3	2	2	2	
CO2	2	3	2		2		2	2	2	2		2		2
CO3	2	3	2	2	2	2	3	2	2	2	2	3	2	3
CO4	2				2	2	2	2	2			3	3	3
		2												
CO5	2		2		2		2	3		2	2	2	2	2

(Correlation:3-High, 2-Medium,1-Low) ASSESSMENT TOOLS:

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment(Unit I, Unit II)	Twice in a semester
6	Seminar(Unit III, Unit IV)	Twice in a semester
7	Group Discussion(Unit V)	Once in a Semester

Course Designed by: Mrs.A.Mary Theresa	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

L.L	hbj Ay	le. Softa.	4.Ebimentog
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SEMESTER: VI COURSE CODE: 23UIT6CP6 TITLE OF THE COURSE: PRACTICAL: DOT NET PROGRAMMING (Skill Development)

COURSE OBJECTIVES:

- To inculcate knowledge on C# Programming.
- To create an applications with database on C# Programming

COURSE OUTCOMES:

• At the end of the course the students will be able to:

CO1	Apply the components, tools, procedures and illustrate programs to create various forms and it's controls	К3
CO2	Implement the control structures and various arithmetic operations and develop applications to generate reports.	K3
CO3	Record : Implement programs and present result	K3

Credits: 3

75

Instructional hours:

LIST OF PRACTICALS

- 1. Write a C# Program to Display the Date in Various Formats
- 2. Write a C# Program to determine a candidate's age is eligible for casting the vote or not
- 3. Write a C# Program to Implement PhoneBook
- 4. Write an application in C# with two textbox controls to enter the name and the address and a button control. After clicking onto the button, the application redirects to another page and displays the name and address that you have enter in different color.
- 5. Write a C# Program to Demonstrate Tower of Hanoi Game
- 6. Create a calculator using buttons to enter different input values and display result using buttons to perform arithmetic operations as in case of normal calculator
- 7. Write a C# Program to Generate the Marksheet of the Student
- 8. Write a C# program for Calculate Electricity Bill

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2
CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3

CASE STUDIES

- Write a C# program for College Portal
 Write a C# program for Job Portal

WEBSITE REFERENCES

- 1. https://www.sanfoundry.com/csharp-programming-examples/
- 2. https://www.w3resource.com/csharp-exercises/

MAPPING OF CO'S WITH PO's and PSO's

(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course Designed by: Mrs.A.Mary Theresa	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
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SEMESTER: VI COURSE CODE: 21UIT6E01 TITLE OF THE COURSE: ELECTIVE: INDUSTRY 5.0 ESSENTIALS

COURSE OBJECTIVES:

- To inculcate knowledge on Industry
- To enrich the skills on New Technologies

COURSE OUTCOMES: At the end of the course the students will be able to:

CO1	Understand the drivers and enablers of Industry5.0.	K2
CO2	Illustrate the smartness in Smart Factories, Smart cities, smart products and smart services.	K2
CO3	Outline the various systems used in a manufacturing plant and their role in an Industry5.0 world.	К3
CO4	Illustrate factors of printing technologies	K2
CO5	Apply the drivers in Industry5.0 services	K3

Syllabus

Credits: 4

UNIT I: INTRODUCTION TO INDUSTRY 5.0 (K2)

Introduction to Industry 5.0 - The Various Industrial Revolutions - Digitalisation and the Networked Economy- Drivers – Enablers - Compelling Forces and Challenges for Industry 5.0 - Comparison of Industry 5.0 Factory and Today's Factory.

(Self Study: Comparison of Industry 5.0 Factory and Today's Factory.)

UNIT II :INTERNET OF THINGS (K2)

Internet of Things (IoT) & Industrial Internet of Things (IIoT) & Internet of Services, Smart Manufacturing, Smart Devices and Products, Smart Logistics, Smart Cities, Predictive Analytics.

UNIT III : TECHNOLOGIES IN INDUSTRY 5.0 (K3)

Technologies for enabling Industry 5.0 - Cyber Physical Systems - Robotic Automation and Collaborative Robots - Support System for Industry4.0 - Mobile Computing, - Cyber Security.

UNIT IV: PRINTING TECHNOLOGIES (K2)

3D printing technologies, selection of material and equipment, develop a product using 3D printing in Industry5.0 environment.

UNIT V:STRATEGIES FOR INDUSTRY5.0 (K3)

15 Hours

15 Hours

Instructional hours: 75

15 Hours

15 Hours

15 Hours

IIoT case studies- Industry5.0 in health care services –Strategies for competing in an Industry 4.0 world. Trends of Industrial Big Data and Predictive Analytics for Smart Business Transformation.

TEXT BOOK:

- 1. Alasdair Gilchrist, "Industry4.0: The Industrial Internet of Things", Apress, (2016)
- 2. Lan Gibson, David W. Rosen and Brent Stucker "Additive Manufacturing Technologies Rapid Prototyping to Direct Digital Manufacturing", Springer. (2010.)

REFERENCE BOOKS:

- 1. Andreas Gebhardt, "Understanding Additive Manufacturing: Rapid Prototyping, Rapid Tooling, Rapid Manufacturing", Hanser Publisher, (2011.)
- 2. J. Chanchaichujit, A.Tan, Meng, F., Eaimkhong, S. "*Healthcare 4.0 Next Generation Processes with the Latest Technologies*", Palgrave Pivot(2019)

BLENDED LEARNING

Unit	Topics	Links
Unit V	Industry5.0 in healthcare services	https://www.youtube.com/watch?v=VU5ns5sF N7I
Unit V	Strategies for competing in an Industry 4.0 world	https://www.youtube.com/watch?v=bNfZWqD LW0Q
Unit V	Trends of Industrial Big Data	https://www.youtube.com/watch?v=cVibCHR SxB0

MAPPING OF CO's WITH POs/PSOs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	2	2	2	2	2	2	2	3	2	3
CO2	3	2	2	2	2	2	2	2	2	2	2	3	2	3
CO3	3	2		2	2		2	2	2		2	2	2	2
CO4	2		2		3	2	3		2	2	2	2	3	2
CO5	3	3	2	2	2		2	2	2	2	2	2	2	2

(Correlation: 3-High, 2-Medium, 1-Low)

Course De	signed by: Mrs.AJansi Rani	Verified by HOD:Dr.A.Jansi Rani
Checked b	y CDC: Dr.K.Jayanthi	Approved by:
		Principal
S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a semester
2	CIA I	Once in a semester
3	CIA II	Once in a semester
4	Model	Once in a semester
5	Assignment (Unit I, Unit II)	Twice in a semester
6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Case Study (Unit V)	Once in a Semester

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SEMESTER: VI COURSE CODE: 21UIT6E02 TITLE OF THE COURSE: ELECTIVE: MACHINE LEARNING (Skill Development/Industry 4.0)

COURSE OBJECTIVES:

- To inculcate knowledge on Machine Learning methods
- To enrich the skills on data and estimation methods

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO 1	Intercept the knowledge of Machine learning	K2
CO 2	Illustrate the Multivariate methods in Machine Learning	K2
CO 3	Interpret the nonparametric methods	K3
CO4	Illustrate Linear Discrimination	K2
CO5	Implement Bayesians Estimation and Hidden MarkovModel	K3

Syllabus

Credits: 4

UNIT I: INTRODUCTION TO MACHINE LEARNING (K2) 15 Hours

Introduction: Machine Learning-Examples of Machine Learning Applications. Bayesian Decision Theory: Introduction – Classification - Losses and Risks - Discriminant Functions - Utility Theory. Parametric Methods: Maximum Likelihood Estimation-Evaluating an Estimator: Bias and Variance - The Bayes" Estimator - Parametric Classification – Regression - Tuning Model Complexity: Bias/Variance Dilemma - Model Selection Procedures.

UNIT II :MULTIVARIATE METHODS (K2)

Multivariate Methods: Multivariate Data - Parameter Estimation - Estimation of Missing Values - Multivariate Normal Distribution - Multivariate Classification - Tuning Complexity - Discrete Features - Multivariate Regression - Principal Components Analysis - Factor Analysis - Linear Discriminant Analysis – Isomap - Locally Linear Embedding-Mixture Densities

(Self Study: Factor Analysis, Linear Discriminant Analysis)

UNIT III :NONPARAMETRIC METHODS(K3)

Nonparametric Methods: Nonparametric Density Estimation Generalization to Multivariate Data-Nonparametric Classification Condensed Nearest Neighbor-Nonparametric Regression: Smoothing Models.

UNIT IV: LINEAR DISCRIMINATION(K2)

Linear Discrimination: Generalizing the Linear Model- Geometry of the Linear Discriminant - Pair wise Separation-Parametric Discrimination Revisited - Gradient Descent - Logistic Discrimination-Discrimination by Regression.

UNIT V: BAYESIAN ESTIMATION(K3)

Bayesian Estimation: Estimating the Parameter of a Distribution Bayesian Estimation of the Parameters of a Function - Gaussian Processes. Hidden Markov Models: Discrete

15 Hours

15 Hours

Instructional hours: 75

15 Hours

15 Hours

Markov Processes - Hidden Markov Models - Three Basic Problems of HMMs-Evaluation Problem

- Finding the State Sequence - Learning Model Parameters-Continuous Observations-The HMM with Input-Model Selection in HMM.

TEXT BOOK:

1. EthemAlpaydin," Introduction to Machine Learning ", Second Edition, The MIT Press Cambridge. (2010)

REFERENCE BOOKS:

1. Jason Bell, Reprint "Machine Learning for Big Data- Hands on for Developers and Technical Professionals", John Wiley & sons . (2017).

2. Henrik Brink ,. Joseph W.Richards , Mark Fetherolf," *Real World Machine Learning*", Dreamtech Press (India) Pvt Ltd. (2017)

Unit	Topics	Links
Unit V	Introduction to Machine Learning	https://www.youtube.com/watch?v=h0e2HAPTGF4
Unit V	Multivariate Methods	https://www.youtube.com/watch?v=iHcXD9HuNzU
Unit V	Nonparametric Methods	https://www.youtube.com/watch?v=sAcnz2u2yXI&list= PLIeGtxpvyG-IV0Yf8AyeMgmNkpFBxBJlh
Unit V	Linear Discrimination	https://www.youtube.com/watch?v=azXCzI57Yfc
Unit V	Bayesian Estimation	https://www.youtube.com/watch?v=TUgqL9c1jik

BLENDED LEARNING

MAPPING OF CO's WITH PO's and PSO's

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CO2	3	2	2		2	2	2	2	2	2	2	3		3
CO3	3	2		2	2		2	2	2		2	2	2	
CO4	2		2		3	2	3		2	2	2	2		2
CO5	3	3	2	2	2		2	2	2	2	2	2	2	

(Correlation: 3-High, 2-Medium, 1-Low)

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1	End Semester Examination	Once in a semester
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6	Seminar (Unit III, Unit IV)	Twice in a semester
7	Case Study(Unit V)	Once in a Semester

Course Designed by: Mrs.AJansi Rani	Verified by HOD:Dr.A.Jansi Rani
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SEMESTER: VI COURSE CODE: 23UIT6SB4 TITLE OF THE COURSE: SKILL BASED: CASE TOOLS AND SOFTWARE TESTING LAB (Employability)

(Employability)

COURSE OBJECTIVES:

- To inculcate the knowledge on Testing Tools.
- To inculcate knowledge in UML diagrams.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Apply visual representations for dynamic behaviour of system, planning of projects, Object interactions and data flow	К3
CO2	Implement programs to test web page functionalities.	К3
CO3	Implement programs and present result.	K3

Credits: 2

Instructional hours: 45

LIST OF PRACTICALS

CASE TOOLS

- 1. Draw a DFD for Student Management System.
- 2. Draw an ER Diagram for Employee Payroll System. 3. Design an Use case diagram for ATM System.
- 4. Design a Class diagram for Library Management System.
- 5. Design a Sequence diagram for online shopping.
- 6. Design an Activity diagram for E-ticketing.

SOFTWARE TESTING

- 1. Write and test a program to login a specific web page.
- 2. Write and test a program to provide the total number of links available on the web page.
- 3. Write and test a program to select the specified item from the combo box.

4. Write and test a program to count the number of check boxes on the page checked and unchecked count.

5. Write a program and perform data driven testing line by line.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2

MAPPING OF CO's WITH PO's and PSO's

CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3
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(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course Designed by: Mrs.AJansi Rani	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
	Principal

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SEMESTER: VI COURSE CODE: 22IDSBIT1 TITLE OF THE COURSE: SKILL BASED: CONTENT MANAGEMENT USING JEKYLL AND WORDPRESS (Skill Development)

COURSEOBJECTIVES:

- To enhance the designing skills using opensource environment.
- To organize and present content in Jekyll and Wordpress.

COURSE OUTCOMES:

At the end of the course the students will have the ability to:

CO1	Apply appropriate designing skills to create static web pages	K3
CO2	Apply appropriate designing skills to create dynamic web pages	K3
CO3	Implement programs and present results through a record presentation	K3

Credits: 2

Instructional hours: 45 LIST OF PRACTICALS

JEKYLL

1. Write a step guide on how you created the blog using Jekyll. Use markdown to create the pages

- 2. Create a collection in jekyll that contains the basic details of the students of your class
- 3. Create a page in jekyll that uses data files and lists all the staff members of your department
- 4. Build a website for your college using themes
- 5. Create a blog with 25 posts and paginate the blog with 5 posts per page

WORDPRESS

- 1. Creating team page
- 2. Adding a photo gallery
- 3. Adding a video gallery
- 4. Adding project portfolio

MAPPING OF CO's WITH PO's and PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C01	3	3	3	2	3	2	2	2	2	3	3	3	3	2
CO2	3	3	2	2	3	2	2	2	2	3	3	3	2	2

CO3	3	3	3	3	3	3	3	2	3	2	3	3	3	3

(Correlation: 3-High, 2-Medium, 1-Low)

S.NO	ASSESSMENT METHODS	FREQUENCY OF ASSESSMENT
1	End Semester Examination	Once in a Semester
2	Test	Twice in a Semester
3	Observation Note	Once in a Semester
4	Record Note	Once in a Semester

Course Designed by: Dr.A.Jansi Rani Mrs.M.Jasmine Sagaya Jonita	Verified by HOD:Dr.A.Jansi Rani
Checked by CDC: Dr.K.Jayanthi	Approved by:
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CERTIFICATE COURSE IN MOBILE APP DEVELOPMENT

COURSE OBJECTIVES:

- To gain a comprehensive overview of mobile app development principles and practices.
- To understand the mobile ecosystem, including major platforms like iOS and Android.
- To develop basic mobile applications using industry-standard programming languages and frameworks.
- To acquire hands-on experience in designing user-friendly interfaces and implementing essential features.

COURSE OUTCOMES At the end of the course, students will have the ability to:

CO1	Understand the fundamentals of mobile app development.	K3
CO2	Develop basic mobile apps using industry-standard programming	K4
	languages and frameworks.	
CO3	Deploy and distribute simple mobile apps on different platforms.	K4

Total Hours:45

Syllabus

Week 1: Introduction to Mobile App Development- Overview of the mobile ecosystem - Introduction to iOS and Android platforms - Understanding user requirements and app ideation.

Week 2: User Interface Design for Mobile Apps - Principles of UX/UI design for mobile - Basics of designing responsive layouts - Introduction to prototyping tools.

Week 3: Programming for Mobile Apps - Introduction to Swift for iOS or Kotlin for Android -Setting up development environments (Xcode or Android Studio) - Basics of mobile app development with Hello World examples.

Week 4: Building User Interfaces and Navigation - UI components and navigation patterns - Handling user input and events.

Week 5: Data Management in Mobile Apps - Storing data locally using SQLite or Shared Preferences - Basics of consuming RESTful APIs for remote data retrieval.

Week 6: Advanced Topics and Deployment - Integrating device features (e.g., camera, GPS) - Debugging and testing mobile applications - Deploying apps to app stores (Apple App Store, Google Play Store)

Assessment:

Weekly assignments: Programming exercises to practice concepts covered in class. Final Project: Develop a basic mobile application, incorporating design and development principles learned throughout the course.

Quiz: Assess understanding of key concepts covered in the course.

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SKILL DEVELOPMENT COURSE II UG ARTIFICIAL INTELLIGENCE in INFORMATION TECHNOLOGY Applicable from the academic year 2024 -2025 onwards

Course Objectives:

- > To familiarize with the concepts and applications in Artificial Intelligence
- To acquire the knowledge in Artificial Intelligence and to apply in the field of Information Technology.

Unit I: ARTIFICIAL INTELLIGENCE: Introduction – Types – Machine Learning – Neural Networks– AI Applications – AI Tools - Ethical Considerations - Practical exercises

Unit II: GITHUB COPILOT FOR PROGRAMMERS : Getting started with GitHub Copilot - Data form GitHub Copilot - Express.js Server Middleware with GitHub Copilot - Static Website with GitHub copilot - Practical exercises

Unit III: TABNINE: Getting started with Tabnine - using Tabnine to write Jest Test Cases - Leveraging Tabnine to handle HTTP Request-Practical exercises

Unit IV: SOURCE GRAPH: Overview - Features - Smelling Code with Source graph - Generate Unit Test - Practical Exercises

Unit V: DEEP LEARNING: Computer vision applications – Natural language processing applications – Case studies and examples of deep learning in industry.

Pattern for Evaluation

Internal – 50 marks External – 50 marks

Internal Assessment

- 1. Submission of Activity reports on Artificial Intelligence -10 marks
- 2. Submission of Activity reports on Github Copilot for Programmers -10 marks
- 3. Submission of Activity reports on Tabnine -10 marks
- 4. Submission of Activity reports on Source Graph -10 marks
- 5. Submission of Activity reports on Deep Learning- 10 marks

EXTERNAL - 50 marks



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Coimbatore.Coimbatore.Project/Case Study on any one of the above emerging Technologies – 30 Marks
Viva Voce– 20 marks