

(CM401) MICROPROCESSORS

1. AIM: To provide basic knowledge of Microprocessor, Assembly Language Programming and Microcontrollers.

2. COURSE OBJECTIVES: In this course the students will learn the following:

1. Architecture of 8086 microprocessor
2. Addressing modes and instruction set of Microprocessor.
3. 8086 interrupt types, interrupt handling process.
4. Differentiate between Microprocessor and Microcontroller.

3. PRE-REQUISITES: Knowledge of Digital Electronics and Computer Organization.

4. TEACHING AND EXAMINATION SCHEME

Semester	IV	Periods/Week (in hours)			Total Hours	Examination Scheme				
Course code & course title						Theory Marks		Practical Marks		Total Marks
CM401 Microprocessors and Applications		L	T	P	H	TH	TM	TW	PR/OR	
		3	-	2	5	75	25	25	-	125

5. COURSE OUTCOMES: Student will be able to:

CM401.CO1: Explain basic concepts of Microprocessor and Microcontroller.

CM401.CO2: Use 8086 Microprocessor instructions.

CM401.CO3: Select appropriate addressing mode.

CM401.CO4: Develop assembly language programs.

6. MAPPING COURSE OUTCOMES WITH PROGRAM OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
	Basic & Discipline Specific Knowledge	Problem Analysis	Design and Development of Solutions	Engg. Tools, Experimentatio n & Testing	Engg. Practices for Society, Sustainability & Environment	Project Management	Life -long Learning
CO1	1	1	0	0	1	0	1
CO2	2	2	1	0	0	0	1
CO3	2	2	1	0	0	0	1
CO4	2	2	2	2	0	2	1

Relationship: Low-1 Medium-2 High-3

	PSO1	PSO2
CO1	1	1
CO2	1	1
CO3	1	1
CO4	2	1

7. DETAILED COURSE CONTENTS / MICRO-LESSON PLAN

M=Marks	Thr= Teaching hours	CO = Course Outcomes		
UNIT		M	Thr	CO
UNIT I	<p>1. 8086 – INTRODUCTION AND ARCHITECTURE</p> <p>1.1 Organization of a Microprocessor-Based System (Microprocessor, Memory, Input/Output, System Bus)</p> <p>1.2 Introduction to 8086</p> <p> 1.2.1 Salient features of 8086</p> <p> 1.2.2 8086 Internal Block Diagram</p> <p> 1.2.3 Bus Interface Unit: Segment registers, Instruction Queue, Instruction pointer</p> <p> 1.2.4 Execution Unit: General purpose Registers, Flag register, Control Unit, Pointer registers, Base and Index Registers</p> <p>1.3 Pin diagram and signal description</p> <p> 1.3.1 Pins used in minimum mode and its description</p> <p> 1.3.2 Pins used in maximum mode and its description</p> <p> 1.3.3 Pins common in both the modes</p> <p>1.4 Memory Organization of 8086</p> <p> 1.4.1 Memory Segmentation</p> <p> 1.4.2 Generation of 20-bit physical address</p>	15	10	CO1, CO2, CO3, CO4
UNIT II	<p>2. ADDRESSING MODES AND INSTRUCTION SET OF 8086</p> <p>2.1 Classification of addressing Modes</p> <p> 2.1.1 Immediate addressing Mode</p> <p> 2.1.2 Register addressing Mode</p> <p> 2.1.3 Memory addressing Mode: Direct, Register Indirect, Indexed, Based, Based-Indexed</p> <p> 2.1.4 Relative addressing Mode: Register Relative, Relative Based Indexed</p> <p> 2.1.5 Implied addressing Mode</p> <p> 2.1.6 Port addressing Mode</p> <p>2.2 Assembler Directives- Segment, db, dw, ends, endp, endm, assume, start, end, proc, equ, dup</p> <p>2.3 Instruction set and Programming</p> <p> 2.3.1 Data Transfer Instructions- MOV, IN, OUT, PUSH, POP, PUSHF, POPF, XCHG</p> <p> 2.3.2 Arithmetic Instructions- ADD, ADC, INC, DAA, SUB, SBB, DEC, CMP, MUL, DIV, CBW, CWD</p> <p> 2.3.3 Bit Manipulation Instructions- AND, OR, NOT, XOR, SHL, SHR, SAL, SAR,</p>	15	10	CO1, CO2, CO3, CO4

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	<p>ROR, ROL, RCR, RCL</p> <p>2.3.4 String Instructions- MOVSB/W, CMPSB/W, LODSB/W, SCASB/W, STOSB/W String prefix: REP, REPE/REPZ</p> <p>2.3.5 Processor Control Instructions -STC, CLC, CMC, STD, CLD, STI, CLI, NOP</p>			
UNIT III	<p>3.ASSEMBLY LANGUAGE PROGRAMMING CONCEPTS</p> <p>3.1 Branch Instructions</p> <p>3.1.1 Unconditional: CALL-NEAR and FAR, RET, JMP-NEAR and FAR</p> <p>3.1.2 Conditional: JC, JNC, JZ, JNZ, JP, JNP, JO, JNO, JS, JNS</p> <p>3.1.3 Structures: If - then, if - then - else, multiple if – then – else, Repeat - Until</p> <p>3.1 Overview of Stack</p> <p>3.2.1 Stack operations (PUSH, POP)</p> <p>3.2.2 Stack pointer</p> <p>3.3 Overview of Procedures</p> <p>3.3.1 Types of procedures: Reentrant and Recursive</p> <p>3.3.2 Brief overview of CALL and RET instructions for implementing procedure</p> <p>3.4 Overview of Macros</p> <p>3.5 Comparison between Macros and Procedures</p> <p>3.6 Assembly Language Program Development Tools</p> <p>3.6.1 Editor</p> <p>3.6.2 Assembler</p> <p>3.6.3 Linker</p> <p>3.6.4 Loader</p> <p>3.6.5 Debugger</p> <p>3.6.6 Emulator</p>	15	10	CO1, CO2, CO3, CO4
UNIT IV	<p>4. INTERRUPTS AND BUS OPERATIONS</p> <p>4.1 Interrupt Instructions - INTO, INT, IRET</p> <p>4.2 Types of 8086 interrupts</p> <p>4.2.1 Hardware interrupts, software interrupts and interrupts due to error conditions</p> <p>4.2.2 Interrupt response with diagram</p> <p>4.2.3 Interrupt pointer table</p> <p>4.2.4 Priority of interrupts</p> <p>4.3 8259 Interrupt Controller - Block Diagram & its description</p> <p>4.4 8086 Bus operations</p> <p>4.4.1 Timing diagram of 8086 read machine cycle</p> <p>4.4.2 Timing diagram of 8086 write machine cycle</p>	15	9	CO1, CO2, CO3, CO4

UNIT V	5. ADVANCED MICROPROCESSORS AND MICROCONTROLLERS 5.1 Salient features of 80286, 80386 and 80486 processors 5.2 Architectural features of Pentium Processor 5.3 Salient features of latest processors 5.3.1 Dual core 5.3.2 Core 2 duo 5.3.3 i3, i5, i7 processors 5.4 Introduction to Microcontroller 5.4.1 Definition of a Microcontroller 5.4.2 Microprocessor vs Microcontroller 5.4.3 Microcontroller features: On-chip Oscillator, Large number of special purpose registers, Harvard architecture, On-chip program memory, On-chip data memory, On-chip I/O ports, Powerful Interrupt structure, Built-in ADC 5.4.4 Applications of Microcontroller	15	9	CO1, CO2, CO3, CO4
	Total	75	48	

8. COURSE DELIVERY:

The Course will be delivered through lectures, class room interactions, exercises and case studies

9. SPECIFICATION TABLE FOR THEORY/ MACRO-LESSON PLAN

Unit No	Unit	Number of lectures	Marks
1	1. 8086 – INTRODUCTION AND ARCHITECTURE 1.1 Organization of a Microprocessor-Based System 1.2 Introduction to 8086 1.3 Pin diagram and signal description 1.4 Memory Organization of 8086	10	15
2	2. ADDRESSING MODES AND INSTRUCTION SET OF 8086 2.1 Classification of addressing Modes 2.2 Assembler Directives 2.3 Instruction set and programming	10	15
3	3.ASSEMBLY LANGUAGE PROGRAMMING CONCEPTS 3.1 Branch Instructions 3.2 Overview of Stack 3.3 Overview of Procedures 3.4 Overview of Macros	10	15

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	3.5 Comparison between Macros and Procedures 3.6 Assembly Language Program Development Tools		
4	4. INTERRUPTS AND BUS OPERATIONS 4.1 Interrupt Instructions - INTO, INT, IRET 4.2 Types of 8086 interrupts 4.3 8259 Interrupt Controller -Block Diagram & its description 4.4 8086 Bus operations	9	15
5	5. ADVANCED MICROPROCESSORS AND MICROCONTROLLERS 5.1 Salient features of 80286, 80386 and 80486 processors 5.2 Architectural features of Pentium Processor 5.3 Salient features of latest processors 5.4 Introduction to Microcontrollers	9	15
	Total	48	75

10. SPECIFICATION TABLE FOR TERM WORK & PRACTICALS HOURS

No	Practical
1	Study of 8086 Microprocessor- Registers, Memory, Flags, Instruction classification.
2	Study of Assembly Language Program Development Tools.
3	Assembly Language Program on Data transfer instructions.
4	Assembly Language Program on basic Arithmetic Operations
5	Assembly Language Program on Logical Instructions.
6	Assembly Language Program on Rotate and Shift Instructions.
7	Assembly Language Program on String instructions.
8	Assembly Language Program on Branch Instructions.
9	Assembly Language Program on Processor control instructions.
10	Comparative study of Microprocessor and Microcontroller
11	Microprocessor based mini project.

11. LEARNING RESOURCES

Text Books

S. No.	Author	Title of Books	Publishers
1	Douglas V. Hall	Microprocessors and Interfacing: Programming and Hardware	Tata McGraw-Hill Education
2	A. K. Ray and K. M. Bhurchandi	Advanced Microprocessors and Peripherals	Tata McGraw-Hill Education
3	Ajit Pal	Microcontrollers-Principles and Applications	Asoke K. Ghosh, PHI Learning Pvt. Ltd.

Reference Books for further study

S. No.	Author	Title of Books	Publishers
1	Mohamed Rafiquzzaman	Microprocessors and Microcomputer - Based System Design	CRC Press, 1990
2	Barry B. Brey	The Intel Microprocessors: 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Pentium Pro Processor, Pentium II, Pentium III, Pentium 4, and Core2 with 64-bit Extensions	Pearson Education

Internet and Web Resources

S. No.	Description
1	https://www.tutorialspoint.com/microprocessor/microprocessor_tutorial.pdf
2	http://www.vssut.ac.in/lecture_notes/lecture1428551326.pdf
3	https://nptel.ac.in/courses/Webcourse-contents/IISc-BANG/Microprocessors%20and%20Microcontrollers/pdf/Teacher_Slides/mod1/M1L3.pdf
4	http://www.gabrielececchetti.it/Teaching/CalcolatoriElettronici/Docs/i8086_instruction_set.pdf

Videos and Multimedia Tutorials

S. No.	Description
1	https://nptel.ac.in/courses/108105102/62
2	https://www.youtube.com/watch?v=DmwOSdwzZ3E
3	https://www.youtube.com/watch?v=zMtErZsJ1o8

(CM402) INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS

1. AIM: To provide broad understanding of the basic concepts of database management system in particular relational database system.

2. COURSE OBJECTIVES: In this course the students will learn the following:

1. Understand the need and uses of database.
2. Learn designing of a database.
3. Use data manipulation language to query, update and manage a database.
4. Understand the concepts of transactions and database security.

3. PRE-REQUISITES: Elementary knowledge about computers and computer programming.

4. TEACHING AND EXAMINATION SCHEME

Semester	IV	Periods/Week (in hours)			Total Hours	Examination Scheme				
Course code & course title						Theory Marks		Practical Marks		Total Marks
		L	T	P	H	TH	TM	TW	PR/OR	
CM402 Introduction to database management systems		3	1	2	6	75	25	25	25	150

5. COURSE OUTCOMES: Student will be able to:

CM402.CO1: Explain the concepts of database management system.

CM402.CO2: Use the concepts of Database management system.

CM402.CO3: Formulate SQL queries.

CM402.CO4: Design a simple Database System.

6. MAPPING COURSE OUTCOMES WITH PROGRAM OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
	Basic & Discipline Specific Knowledge	Problem Analysis	Design and Development of Solutions	Engg. Tools, Experiment	Engg. Practices for Society, Sustainability & Environment	Project Management	Life -long Learning
CO1	2	2	0	0	0	0	0
CO2	2	3	2	2	0	2	0
CO3	2	3	3	3	0	0	2
CO4	2	3	3	3	3	2	1

Relationship: Low-1 Medium-2 High-3

	PSO1	PSO2
CO1	2	2
CO2	3	3
CO3	3	3
CO4	3	3

7. DETAILED COURSE CONTENTS / MICRO-LESSON PLAN

M=Marks	Thr= Teaching hours	CO = Course Outcomes			
UNIT		M	Thr	CO	
UNIT I	1. INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS 1.1 Database - an introduction 1.2 The database management system 1.3 Advantages of using a database 1.4 Features of data in a database 1.5 Components of a DBMS 1.6 The three-level architecture for a database system 1.7 Data modeling 1.7.1 Introduction 1.7.2 Types of data models: Record based logical models (Relational Model, Network Model, Hierarchical Model) Object based data models: Object Oriented Model 1.7.3 Advantages and Disadvantages of Relational, Network, Hierarchical, Object Oriented Model 1.7.4 Comparison between Relational, Network, Hierarchical, Object Oriented	15	10	CO1, CO2, CO3, CO4	
UNIT II	2. INTRODUCTION TO RELATIONAL DATABASE MANAGEMENT SYSTEM 2.1 Relational Model 2.1.1 Relational Database Primer: Tabular Representation of data, Some terminology, Domains 2.1.2 Relational Database Characteristics 2.2 Relational Algebra 2.2.1 Relational Algebra Operators: Restrict, Project, Product, Union, Intersection, Difference, Join, Divide 2.3 Relational Calculus 2.4 Database Integrity 2.4.1 Constraints 2.4.2 Declarative and Procedural Constraints: Type Constraints, Attribute Constraints, Instance Constraints, Database	15	10	CO1, CO2, CO3, CO4	

	<p style="text-align: center;">Constraints</p> <p>2.5 Keys</p> <p>2.5.1 Super key and key</p> <p>2.5.2 Composite key</p> <p>2.5.3 Candidate key</p> <p>2.5.4 Primary key</p> <p>2.5.5 Alternate key or Secondary key</p> <p>2.5.6 Foreign key</p>			
UNIT III	<p>3. DATABASE DESIGN & ER MODELLING</p> <p>3.1 Entity/Relationship (E/R) Modelling</p> <p>3.1.1 Components of an ER model: Entities, Attributes</p> <p>3.1.2 Entity Relationship Diagram (ERD): Symbols in ER diagram</p> <p>3.1.2 Relationships: Degree, Cardinality, Dependency</p> <p>3.2 Functional Dependency</p> <p>3.3 Normalization and Normal Forms</p> <p>3.3.2 Introduction to Normalization: Need of Normalization: Advantages of Normalization</p> <p>3.3.2 Definitions of Normal Forms: First Normal Form, Second Normal Form, Third Normal Form</p>	15	9	CO1, CO2, CO3, CO4
UNIT IV	<p>4. STRUCTURED QUERY LANGUAGE</p> <p>4.1 Structured Query Language</p> <p>4.1.1 SQL - an introduction</p> <p>4.1.2 Advantages of SQL</p> <p>4.1.3 SQL commands</p> <p>4.1.4 SQL data types and literals</p> <p>4.1.5 SQL operators</p> <p>4.2 Queries</p> <p>4.2.1 DDL Queries: Create table, Create table as select, Alter table add, Alter table modify, Drop table, Renaming a table</p> <p>4.2.2 DML queries: Insert, Update, delete</p> <p>4.2.3 Select query: The select, from, where clause, SQL operators in queries</p> <p>4.2.4 Aggregate functions: avg, min, max, sum, count</p> <p>4.2.5 Set operations (union, intersect, except)</p> <p>4.2.6 Grouping while selecting</p> <p>4.2.7 Joins: Need for joins, Use of Aliases, Equijoins & Non-Equijoins</p> <p>4.2.8 Order by</p> <p>4.2.9 Having</p>	15	10	CO1, CO2, CO3, CO4
UNIT V	<p>5. TRANSACTION PROCESSING AND DATABASE SECURITY</p>	15	9	CO1, CO2,

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	5.1 Transaction 5.1.1 Transaction – Need and Mechanism 5.1.2 Transaction Processing (TP) Monitor 5.1.3 Transaction Properties 5.2 Recovery 5.2.1 Classification of recovery 5.2.2 System recovery 5.2.3 Failure recovery 5.2.4 Media recovery 5.3 Two phase commit 5.4 Database Security 5.4.1 Introduction 5.4.2 Database users 5.4.3 Types of database users 5.4.4 Database privileges			CO3, CO4
	Total	75	48	

8. COURSE DELIVERY:

The Course will be delivered through lectures, class room interactions, exercises and case studies

9. SPECIFICATION TABLE FOR THEORY/ MACRO-LESSON PLAN

Unit No	Unit	Number of lectures	Marks
1	1. INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS 1.1 Database - an introduction 1.2 The database management system 1.3 Advantages of using a database 1.4 Features of data in a database 1.5 Components of a DBMS 1.6 The three-level architecture for a database system 1.7 Data modeling	10	15
2	2. INTRODUCTION TO RELATIONAL DATABASE MANAGEMENT SYSTEM 2.1 Relational Model 2.2 Relational Algebra 2.3 Relational Calculus 2.4 Database Integrity 2.5 Keys	10	15
3	3. DATABASE DESIGN & ER MODELLING 3.1 Entity/Relationship (E/R) Modelling 3.2 Functional Dependency 3.3 Normalization and Normal Forms	9	15
4	4. STRUCTURED QUERY LANGUAGE 4.1 Structured Query Language 4.2 Queries	10	15
5	5. TRANSACTION PROCESSING AND DATABASE SECURITY	9	15

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	5.1 Transaction 5.2 Recovery 5.3 Two phase commit 5.4 Database Security		
	Total	48	75

10. SPECIFICATION TABLE FOR TERM WORK & PRACTICALS HOURS

No	Practical
1	Designing E-R diagrams for given applications.
2	Tabular representation of E-R diagrams.
3	Overview and comparison of different database softwares. (MySQL, Oracle, Microsoft SQL Server)
4	Installation and Configuration of DBMS.
5	Creating & Executing DDL commands with Integrity constraints on table in SQL.
6	Creating & Executing DML commands in SQL.
7	Build and execute SQL queries using various Arithmetic, Conditional and Logical
8	Build and execute SQL queries using the DQL Commands with various clauses and aggregate functions.
9	Build and execute queries using various types of Join operations.
10	Build and execute queries for implementing Set Operations.
11	Study of Transaction processing and Database Security concepts.
12	Mini Project: Design and implement Database Management Systems

11. LEARNING RESOURCES

Text Books

S. No.	Author	Title of Books	Publishers
1	Isrd Group	Introduction to Database Management Systems	McGraw Hill Education (India) Private Limited
2	Atul Kahate	Introduction to Database Management Systems	Pearson
3	AviSilberschatz, Henry F. Korth, S. Sudarshan	Database System Concepts	Tata McGraw Hill

Reference Books for further study

S. No.	Author	Title of Books	Publishers
1	Shilbhadra Dasgupta, Rini Chakrabarti	Advanced Database Management System	Dreamtech Press
2	An Introduction to Database Systems	Date, C. J.	Pearson Education

Internet and Web Resources

S. No.	Description
1	http://holowczak.com/oracle-sqlplus-tutorial/
2	http://www.roseindia.net/programming-tutorial/Database-Tutorials
3	http://www.w3schools.com/sql/

Videos and Multimedia Tutorials

S. No.	Description
1	ER Model - https://www.youtube.com/watch?v=Wv1c9K4788A
2	Join Operations - https://www.youtube.com/watch?v=zYH-e6tUYbw

(CM403) OBJECT ORIENTED PROGRAMMING

- 1. AIM:** To develop Object Oriented Programming skills.
- 2. COURSE OBJECTIVES:** In this course the students will learn the following:
 1. Understand basic skills of object oriented programming.
 2. Develop object oriented programs.
 3. Build strong foundation for advanced programming.
- 3. PRE-REQUISITES:** Knowledge of Computer Programming.

4. TEACHING AND EXAMINATION SCHEME

Semester	IV	Periods/Week (in hours)			Total Hours	Examination Scheme				
Course code & course title						Theory Marks		Practical Marks		Total Marks
CM403 Object Oriented Programming		L	T	P	H	TH	TM	TW	PR/OR	
		3	1	2	6	75	25	25	25	150

- 5. COURSE OUTCOMES:** On successful completion of the course, the student will be able to:
- CM403.CO1: Explain the concepts of Object-Oriented programming.
- CM403.CO2: Use the features of Object-Oriented programming in computer programs.
- CM403.CO3: Compare various Java programming constructs.
- CM403.CO4: Develop simple java programs.

6. MAPPING COURSE OUTCOMES WITH PROGRAM OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
	Basic & Discipline Specific Knowledge	Problem Analysis	Design and Development of Solutions	Engg. Tools, Experimentation & Testing	Engg. Practices for Society, Sustainability &	Project Management	Life -long Learning
CO1	0	2	0	0	0	0	0
CO2	0	3	2	0	0	0	0
CO3	2	3	3	3	2	2	1
CO4	2	3	3	3	3	3	2

Relationship: Low-1 Medium-2 High-3

	PSO1	PSO2
CO1	2	2
CO2	3	3
CO3	2	2
CO4	3	3

7. DETAILED COURSE CONTENTS / MICRO-LESSON PLAN

M=Marks	Thr= Teaching hours	CO = Course Outcomes		
UNIT		M	Thr	CO
UNIT I	1. INTRODUCTION TO JAVA 1.1 Basic concept of object-oriented programming 1.1.1 Objects & classes 1.1.2 Data abstraction & encapsulation 1.1.3 Inheritance 1.1.4 Polymorphism 1.1.5 Dynamic binding 1.1.6 Message communication 1.1.7 Advantages & applications of OOP. 1.2 Java features 1.2.1 Compiled & interpreted 1.2.2 Platform independent & portable 1.2.3 Object oriented 1.2.4 Robust & secure 1.2.5 Distributed 1.2.6 Simple, small & familiar 1.2.7 Multithreaded & interactive 1.2.8 High performance 1.2.9 Dynamic & extensible 1.3 Java Environment 1.4 Overview of Java language 1.4.1 Java program structure 1.4.2 Tokens 1.4.3 Java statements 1.5 Constants, variables & data types 1.5.1 Constants 1.5.2 Variables 1.5.3 Data types 1.5.4 Declaration of variables 1.5.5 Giving values to variables 1.5.6 Scope of variables 1.5.7 Symbolic constants 1.5.8 Type casting 1.5.9 Standard default values 1.6 Operators & expressions 1.6.1 Arithmetic operators 1.6.2 Relational 1.6.3 Logical operators 1.6.4 Assignment operators 1.6.5 Increment/decrement operators 1.6.6 Conditional operators 1.6.7 Bitwise operators 1.6.8 Special operators 1.6.9 Arithmetic expressions 1.6.10 Evaluation of expression	15	9	CO1, CO2, CO3, CO4

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	<ul style="list-style-type: none"> 1.6.11 Precedence of arithmetic operators 1.6.12 Type conversion in expression 1.6.13 Operator precedence & associativity 1.7 Decision making, branching & looping <ul style="list-style-type: none"> 1.7.1 if statement 1.7.2 if-else, nested if-else, if-else if ladder 1.7.3 switch 1.7.4 while 1.7.5 do-while 1.7.6 for 1.7.7 jumps in loops (break, continue) 1.7.8 Labeled loop 1.7.9 Nested loops 			
UNIT II	2. CLASSES, OBJECTS & ARRAY <ul style="list-style-type: none"> 2.1 Classes & objects <ul style="list-style-type: none"> 2.1.1 Introduction 2.1.2 Defining a class 2.1.3 Field declaration 2.1.4 Method declaration 2.1.5 Creating objects 2.1.6 Accessing class members 2.1.7 Constructors 2.1.8 Method overloading 2.1.9 Static methods 2.1.10 Nesting of methods 2.2 Visibility control 2.3 Arrays, Strings & Vectors <ul style="list-style-type: none"> 2.3.1 One dimensional array 2.3.2 Creating an array 2.3.3 Two-dimensional array 2.3.4 Strings: String array, String methods, String buffer class 2.3.5 Enumerated types 	15	10	CO1, CO2, CO3, CO4
UNIT III	3. INHERITANCE, INTERFACES AND PACKAGES <ul style="list-style-type: none"> 3.1 Inheritance <ul style="list-style-type: none"> 3.1.1 Defining a subclass 3.1.2 Subclass constructor 3.1.3 Multilevel inheritance 3.1.4 Hierarchical inheritance 3.1.5 Overriding methods 3.1.6 Final variables & methods 3.1.7 Final classes 3.1.8 Finalizer method 3.1.9 Abstract methods & classes 3.2 Interfaces <ul style="list-style-type: none"> 3.2.1 Introduction 3.2.2 Defining interfaces 3.2.3 Extending interfaces 	15	10	CO1, CO2, CO3, CO4

	<p>3.2.4 Implementing interfaces 3.2.5 Accessing interface variables</p> <p>3.3 Packages</p> <p>3.3.1 Introduction 3.3.2 Java API packages 3.3.3 Using system packages 3.3.4 Naming conventions 3.3.5 Creating packages 3.3.6 Accessing a package 3.3.7 Adding a class to a package 3.3.8 Hiding classes</p>			
UNIT IV	<p>4.EXCEPTION HANDLING AND MULTITHREADING</p> <p>4.1 Exception handling</p> <p>4.1.1 Types of errors 4.1.2 Exceptions 4.1.3 Syntax of exception handling code 4.1.4 Multiple catch statements 4.1.5 Using finally statements 4.1.6 Throwing our own exception</p> <p>4.2 Multithreaded Programming</p> <p>4.2.1 Creating threads 4.2.2 Extending the thread class 4.2.3 Stopping & Blocking the thread 4.2.4 Lifecycle of a thread 4.2.5 Using thread methods 4.2.6 Thread exceptions 4.2.7 Thread priority 4.2.8 Synchronization 4.2.9 Implementing the runnable interface</p>	15	10	CO1, CO2, CO3, CO4
UNIT V	<p>5. GRAPHICS ANDAPPLETS</p> <p>5.1 Graphics Programming</p> <p>5.1.1 Graphics class 5.1.2 Lines & rectangles 5.1.3 Circles & ellipses 5.1.4 Drawing arcs 5.1.5 Drawing polygon</p> <p>5.2 Applet Programming</p> <p>5.2.1 Introduction 5.2.2 Applet lifecycle 5.2.3 Building Applet code 5.2.4 Creating an executable Applet 5.2.5 Designing a webpage 5.2.6 Applet tag</p>	15	09	CO1, CO2, CO3, CO4

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	5.2.7 Adding Applet to a HTML file			
	5.2.8 Running the Applet			
	5.2.9 Aligning the display			
	Total	75	48	

8. COURSE DELIVERY:

The Course will be delivered through lectures, class room interactions, exercises and case studies

9. SPECIFICATION TABLE FOR THEORY/ MACRO-LESSON PLAN

Unit No	Unit	Number of lectures	Marks
1	1. INTRODUCTION TO JAVA 1.1 Basic concept of object-oriented programming 1.2 Java features 1.3 Java Environment 1.4 Overview of Java language 1.5 Constants, variables & data types 1.6 Operators & expressions 1.7 Decision making, branching & looping	9	15
2	2. CLASSES, OBJECTS & ARRAY 2.1 Classes & objects 2.2 Visibility control 2.3 Arrays, Strings & Vectors	10	15
3	3. INHERITANCE, INTERFACES AND PACKAGES 3.1 Inheritance 3.2 Interfaces 3.3 Packages	10	15
4	4.EXCEPTION HANDLING AND MULTITHREADING 4.1 Exception handling 4.2 Multithreaded Programming	10	15
5	5. GRAPHICS ANDAPPLET 5.1 Graphics Programming 5.2 Applet Programming	9	15
	Total	48	75

10. SPECIFICATION TABLE FOR TERM WORK & PRACTICALS HOURS

No	Practical
1	Program to implement constants, variables, operators and expressions.
2	Program to Implement if-else.
3	Program to implement loops.
4	Program to implement switch-case.
5	Program to implement arrays and strings.
6	Program to implement Inheritance.

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7	Program to implement packages.
8	Program to implement interfaces.
9	Program to implement multithreading.
10	Program to implement exception handling.
11	Program to implement applets and graphics.
12	Object Oriented Programming based mini project.
No	Tutorial Exercise
1	At least 2 problems on each unit given above

11. LEARNING RESOURCES

Text Books

S. No.	Author	Title of Books	Publishers
1	E Balagurusamy	Programming in Java	Tata Mc Graw Hill Education
2	Timothy Budo	An Introduction to Object-Oriented Programming with Java	Pearson Education
3	Danniel Liang	Introduction to Java programming	Pearson Education
4	Sachin Malhotra & Saurabh Chaudary	Programming in Java	Oxford University

Reference Books for further study

S. No.	Author	Title of Books	Publishers
1	Herbert Schildt	Java 2: The Complete Reference	Tata Mc Graw Hill Education
2	David Flanagan	Java Examples in a Nutshell	O'Reilly Media

Internet and Web Resources

S. No.	Description
1	https://www.tutorialspoint.com/java/
2	https://docs.oracle.com/javase/tutorial/java/TOC.html
3	https://beginnersbook.com/java-tutorial-for-beginners-with-examples/

Videos and Multimedia Tutorials

S. No.	Description
1	https://www.youtube.com/watch?v=r59xYe3Vyks&vl=en
2	https://www.youtube.com/watch?v=3u1fu6f8Hto
3	https://www.youtube.com/watch?v=uWYPVz_i7W4

(CM404) INTERNET TECHNOLOGIES

1. AIM: To develop web programming skills of the students for building dynamic and interactive web-based applications using PHP.

2. COURSE OBJECTIVES: In this course the students will learn the following:

1. Understand basic PHP constructs.
2. Develop web pages using PHP.
3. Establish database connectivity using PHP.
4. Build dynamic websites.

3. PRE-REQUISITES: Knowledge of Web Designing.

4. TEACHING AND EXAMINATION SCHEME

Semester	IV	Periods/Week (in hours)			Total Hours	Examination Scheme						
Course code & course title		L			T	P	H	Theory Marks		Practical Marks		Total Marks
								TH	TM	TW	PR/OR	
CM404	Internet Technologies	L	T	P	H	TH	TM	TW	PR/OR			
		3	-	2	5	75	25	-	25	125		

5. COURSE OUTCOMES: Student will be able to:

CM404.CO1: Explain the basics of PHP for web development.

CM404.CO2: Use in-built functions of PHP.

CM404.CO3: Compare PHP constructs for Internet Programming.

CM404.CO4: Develop basic programs using PHP.

6. MAPPING COURSE OUTCOMES WITH PROGRAM OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
	Basic & Discipline Specific Knowledge	Problem Analysis	Design and Development of Solutions	Engg. Tools, Experimentati on & Testing	Engg. Practices for Society, Sustainability &	Project Management	Life -long Learning
CO1	2	3	3	0	0	0	2
CO2	2	3	2	2	2	0	3
CO3	2	3	3	3	2	2	3
CO4	2	3	3	3	3	3	3

Relationship: Low-1 Medium-2 High-3

	PSO1	PSO2
CO1	2	2
CO2	3	3
CO3	2	2
CO4	3	3

7. DETAILED COURSE CONTENTS / MICRO-LESSON PLAN

M=Marks	Thr= Teaching hours	CO = Course Outcomes		
UNIT		M	Thr	CO
UNIT I	1. INTRODUCTION OF PHP 1.1 Relationship between Apache and PHP 1.2 Steps to Install & test web server 1.3 Steps to Configure Apache to use PHP 1.4 Creating First PHP Page 1.5 Mixing HTML and PHP 1.6 Printing string and values 1.7 Adding comments to PHP Code 1.8 Working with variables 1.9 Storing data in variables 1.10 Creating constants 1.11 Understanding PHP's internal Data Types	15	9	CO1, CO2 CO3, CO4
UNIT II	2. OPERATORS, FLOW CONTROL AND LOOPS 2.1 Operators 2.1.1 Math operator 2.1.2 Assignment operator 2.1.3 String Operator 2.1.4 Bit-wise Operator 2.1.5 Operator Precedence 2.1.6 Comparison operator 2.1.7 Logical Operator 2.1.8 Ternary operator 2.2 Flow Control 2.2.1 If Statement 2.2.2 Else Statement 2.2.3 Else If Statement 2.2.4 Switch Statement 2.3 Loops 2.3.1 For Loop 2.3.2 While Loop 2.3.3 Do While Loop 2.3.4 Foreach Loop	15	10	CO1, CO2, CO3, CO4
UNIT III	3. STRINGS, ARRAYS AND FUNCTIONS 3.1 Strings 3.1.1 The string function 3.1.2 Conversion of string variables 3.1.3 Formatting text strings 3.2 Arrays 3.2.1 Building arrays 3.2.2 Modifying the data in arrays 3.2.3 Deleting array elements 3.2.4 Handling array with loops 3.2.5 The PHP array function 3.2.6 Extracting data from array 3.2.7 Sorting arrays	15	10	CO1, CO2, CO3, CO4

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	<p>3.2.8 Using array operator</p> <p>3.2.9 Comparing array to each other</p> <p>3.2.10 Handling multidimensional array</p> <p>3.2.11 Splitting and merging array</p> <p>3.3 Functions</p> <p>3.3.1 Creating function in PHP</p> <p>3.3.2 Passing and return of data, array</p> <p>3.3.3 PHP conditional function</p> <p>3.3.4 PHP variable function</p>			
UNIT IV	<p>4. READING DATA IN WEB PAGES AND WORKING WITH DATABASES IN PHP</p> <p>4.1 Setting up web pages to communicate with PHP</p> <p>4.1.1 Handling Web Components</p> <p>4.1.2 Text Fields</p> <p>4.1.3 Text areas</p> <p>4.1.4 Check boxes</p> <p>4.1.5 Radio buttons</p> <p>4.1.6 List boxes</p> <p>4.1.7 Password controls</p> <p>4.1.8 Hidden controls</p> <p>4.2 Database Connection using PHP</p> <p>4.2.1 Creating MYSQL database</p> <p>4.2.2 Creating and accessing a table</p> <p>4.2.3 Inserting new data items into a table</p> <p>4.2.4 Updating existing data from a table</p> <p>4.2.5 Deleting records from a table</p>	15	10	CO1, CO2, CO3, CO4
UNIT V	<p>5. COOKIES, SESSION AND FILE HANDLING</p> <p>5.1. Cookies</p> <p>5.1.1. Introduction of cookies</p> <p>5.1.2. Setting a cookie</p> <p>5.1.3. Reading Cookie variables</p> <p>5.1.4. Setting cookies expiration</p> <p>5.1.5. Deleting cookies</p> <p>5.2. Sessions</p> <p>5.2.1. Introduction of Session</p> <p>5.2.2. Start PHP session</p> <p>5.2.3. Manage PHP session variable</p> <p>5.2.4. Destroy session</p> <p>5.3. File Handling</p> <p>5.3.1. Opening file using fopen</p> <p>5.3.2. File handling functions: feof(), fgets(), fgetc(), file_get_contents(), file_exists(), fclose()</p>	15	09	CO1, CO2, CO3, CO4
	Total	75	48	

8. COURSE DELIVERY:

The Course will be delivered through lectures, class room interactions, exercises.

9. SPECIFICATION TABLE FOR THEORY/ MACRO-LESSON PLAN

Unit No	Unit	Number of lectures	Marks
1	1. INTRODUCTION OF PHP 1.1 Relationship between Apache and PHP 1.2 Steps to Install & test web server 1.3 Steps to Configure Apache to use PHP 1.4 Creating First PHP Page 1.5 Mixing HTML and PHP 1.6 Printing string and values 1.7 Adding comments to PHP Code 1.8 Working with variables 1.9 Storing data in variables 1.10 Creating constants 1.11 Understanding PHP's internal Data Types	9	15
2	2. OPERATORS, FLOW CONTROL AND LOOPS 2.1 Operators 2.2 Flow Control 2.3 Loops	10	15
3	3. STRINGS, ARRAYS AND FUNCTIONS 3.1 Strings 3.2 Arrays 3.3 Functions	10	15
4	4. READING DATA IN WEB PAGES AND FILE HANDLING 4.1 Setting up web pages to communicate with PHP 4.2 Database Connection using PHP	10	15
5	5.COOKIES, SESSION AND WORKING WITH DATABASES IN PHP 5.1 Cookies 5.2 Sessions 5.3 File Handling	9	15
	Total	48	75

10. SPECIFICATION TABLE FOR TERM WORK & PRACTICALS HOURS

No	Practical
1	Install and configure Apache web server and test web page
2	Write a PHP script to implement following: Variables. Data Types Comments

3	Write a PHP script to demonstrate following: arithmetic operators comparison operators logical operators
4	Write PHP Script to implement following: if-else Nested if-else
5	Write PHP Script to implement following: while loop do-while loop for loop
6	Write PHP Script to implement String functions.
7	Write PHP Script to implement following: One dimensional array Multi-Dimensional array Array functions
8	Write PHP Script to implement following: Conditional Functions Variable Functions
9	Write PHP Script to implement Forms for: Submitting data to self-webpage using GET and POST methods Submitting data to other webpage using GET and POST methods
10	Write PHP Script to implement MySQL database connection for achieving following: Create table Insert data into table Update data from table View data from table Delete data from table
11	Write PHP script to implement File functions.
12	Mini Project: Create a dynamic web site using PHP and MySQL.

11. LEARNING RESOURCES

Text Books

S. No.	Author	Title of Books	Publishers
1	PHP: The Complete Reference	Steven Holzner	McGraw-Hill
2	Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition	Robin Nixon	O'reilly Media
3	DT Editorial services	HTML, JavaScript, PHP, Java, JSP, ASP.NET, XML and AJAX Black Book	DreamTech Press

Reference Books for further study

S. No.	Author	Title of Books	Publishers
1	Julie C. Meloni	Teach yourself PHP, MySQL and Apache All in One , 5th Edition	Pearson Education
2	W. Jason Gilmore	Beginning PHP and MySQL	Apress

Internet and Web Resources

S. No.	Description
1	http://www.w3schools.com/PHP
2	https://www.tutorialspoint.com/php/
3	https://www.homeandlearn.co.uk/php/php.html

Videos and Multimedia Tutorials

S. No.	Description
1	PHP - https://www.youtube.com/watch?v=OK_JCtrrv-c

(CM405) DATA COMMUNICATION & COMPUTER NETWORKS

1. AIM: To provide students with an overview of the concepts and fundamentals of data communication and computer networks.

2. COURSE OBJECTIVES: In this course the students will learn the following:

1. Understand the concept of Data Communication
2. Learn Data encoding/decoding techniques, Basics of Computer Networks, Switching Techniques and Network Topologies
3. Understand OSI Model, Transmission Control Protocol/Internet Protocol Suite, Data link layer protocols
4. Study Network and Transport layer services and Protocols.

3. PRE-REQUISITES: Knowledge of Computer Hardware and peripherals.

4. TEACHING AND EXAMINATION SCHEME

Semester	IV	Periods/Week (in hours)			Total Hours	Examination Scheme				
Course code & course title						Theory Marks		Practical Marks		Total Marks
CM405 Data Communication & Computer Networks		L	T	P	H	TH	TM	TW	PR/OR	
		3	-	2	5	75	25	25	-	125

5. COURSE OUTCOMES: Student will be able to:

CM405.CO1: Explain Data Communication Systems, Computer Networks and its components.

CM405.CO2: Examine the different modulation techniques, network topologies, OSI layers and TCP/IP model.

CM405.CO3: Compare different data communication techniques, networking methodologies and protocols.

CM405.CO4: Design a Local Area Network.

6. MAPPING COURSE OUTCOMES WITH PROGRAM OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
	Basic & Discipline Specific Knowledge	Problem Analysis	Design and Development of Solutions	Engg. Tools, Experiment ation & Testing	Engg. Practices for Society, Sustainability & Environment	Project Management	Life -long Learning
CO1	2	3	1	0	0	0	2
CO2	3	3	3	0	0	0	2
CO3	2	3	1	0	0	0	2
CO4	2	3	3	3	2	2	3

Relationship: Low-1 Medium-2 High-3

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	PSO1	PSO2
CO1	2	1
CO2	2	1
CO3	2	1
CO4	2	1

7. DETAILED COURSE CONTENTS / MICRO-LESSON PLAN

M=Marks	Thr= Teaching hours	CO = Course Outcomes			
UNIT			M	Thr	CO
UNIT I	1. FUNDAMENTALS OF DATA COMMUNICATION 1.1 Introduction to data communication 1.2 Data Communication System/Model- Transmitter-Medium-Receiver 1.3 Concept of Signal and Data 1.4 Concept of channel and channel characteristics – The Electromagnetic Spectrum, Channel noise, Channel bandwidth, Channel data transmission rate (bit rate), channel capacity, transmission time, propagation time, throughput, channel utilization. 1.5 Communication modes - Simplex, half duplex and full duplex. 1.6 Digital Data Transmission-Parallel transmission and Serial transmission- Serial Data Transmission modes - Synchronous and Asynchronous transmission. 1.7 Transmission media 1.7.1 Guided media/bounded media: Twisted pair – Unshielded Twisted Pair (UTP) – Category 1 to Category 6 and Shielded Twisted Pair (STP) Co-axial cable – Baseband and Broadband coaxial cable, Standards for co-axial cable, connectors. Optical Fibre – Fibre optics communication components/system - Light Source, Transmission media, Light Detector. Advantages & disadvantages of Optical fibre, 1.7.2 Unguided media -Radio, Microwave, Satellite and Infrared transmission,	OF	15	10	CO1, CO2, CO3, CO4

	Cellular phones.			
UNIT II	2. DATA MODEMS AND MULTI CHANNEL DATA COMMUNICATION 2.1 Concept of Modulation – need of modulation 2.2 Types of modulation 2.2.1 Analog Data, Analog Signal: Amplitude Modulation, Frequency Modulation, Phase Modulation 2.2.2 Analog data, Digital signal: Pulse Code Modulation (PCM) 2.2.3 Digital data, Analog Signal/Modem Modulation Techniques: Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying 2.2.4 Digital data, Digital Signal/Encoding Techniques: Unipolar-NRZ (NRZ-L, NRZ-I), RZ 2.3 Introduction to Modem 2.3.1 Building blocks of modem 2.3.2 Types of Modems -half Duplex, Full Duplex	15	9	CO1, CO2, CO3, CO4
UNIT III	3.NETWORKING FUNDAMENTALS 3.1 An overview of networking 3.1.1 Need of computer networks 3.1.2 Classification of computer networks based on: Transmission technology –Broadcast networks and Point to Point networks Geographical area covered: LAN, MAN, WAN Acknowledgement sent by receiver- Connectionless and connection-oriented communication	15	10	CO1, CO2, CO3, CO4

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	<p>3.2 Switching techniques:</p> <p>3.2.1 Circuit Switching</p> <p>3.2.2 Packet switching</p> <p>3.2.3 Message switching</p> <p>3.2.4 Cell switching (ATM)</p> <p>3.3 Network Topologies</p> <p>3.3.1 Types of Topologies:</p> <p>Bus topology: Examples of bus topology: Ethernet, Local Talk</p> <p>Ring topologies, Examples of Token Ring Topology: IBM Token Ring, FDDI (Fiber Distributed Data Interface)</p> <p>Star topologies, Example of Star Network: ATM (Asynchronous Transmission Mode)</p> <p>Tree Topology, Mesh Topology</p>			
UNIT IV	<p>4.OSI MODEL, TCP/IP SUITE AND DATA LINK PROTOCOLS</p> <p>4.1 Network architectures</p> <p>4.1.1 Layering the communication process</p> <p>4.1.2 The need for layered solutions</p> <p>4.2 Open system Interconnection (OSI) model</p> <p>4.2.1 Functions of all 7 Layers</p> <p>4.2.2 Data transmission in OSI Model</p> <p>4.3 TCP/IP Protocol suite</p> <p>4.3.1 TCP/IP Reference model layers</p> <p>4.3.2 LAN Protocol and OSI</p> <p>4.3.3 Data transmission by TCP and Ethernet</p> <p>4.3.4 Data Encapsulation</p> <p>4.3.5 Data Routing</p> <p>4.4 Data Link Protocol</p> <p>4.4.1 Protocol</p> <p>4.4.2 Transmission Control Procedure: Synchronous protocols, Asynchronous Data Link Control (DLC) Protocols</p> <p>4.4.3 Character Oriented Protocols (COP): Binary synchronous Protocol (Bisync or BSC)</p> <p>4.4.4 Bit Oriented Protocols (BOP): High level Data Control Protocol (HDLC)</p>	15	10	CO1, CO2, CO3, CO4

UNIT V	5.NETWORK LAYER AND TRANSPORT LAYER 5.1 Network Layer Protocols 5.1.1 Overview of Internet Protocol: IP Addressing Scheme (Dotted Decimal Notation, Loopback Address, IP Multicast Addresses) IP version 6 (Limitations of IP version 4, Features of IP version 6, General IPv6 Packet Format) 5.1.1 Address Resolution Protocol: Resolution through Dynamic Binding, Address Resolution Cache 5.1.2 Reverse Address Resolution Protocol 5.1.3 Internet Control Message Protocol: Error Reporting by ICMP (Destination Unreachable, Source Quench, Redirect, Time Exceeded), ICMP Message Delivery 5.2 Transport Layer Protocols 5.2.2 Transmission Control Protocol: Features of TCP, Understanding the TCP Connection (Establishing, Terminating and Resetting a TCP Connection) 5.2.3 Features of User Datagram Protocol (UDP) 5.2.4 Difference between TCP and UDP	15	9	CO1, CO2, CO3, CO4
	Total	75	48	

8. COURSE DELIVERY:

The Course will be delivered through lectures, class room interactions and exercises.

9. SPECIFICATION TABLE FOR THEORY/ MACRO-LESSON PLAN

Unit No	Unit	Number of lectures	Marks
1	1. FUNDAMENTALS OF DATA COMMUNICATION 1.1 Introduction to data communication 1.2 Data Communication System/Model 1.3 Concept of Signal and Data 1.4 Concept of channel and channel characteristics 1.5 Communication modes 1.6 Digital Data Transmission 1.7 Transmission media	10	15

2	2.DATA MODEMS AND MULTI CHANNEL DATA COMMUNICATION 2.1 Concept of Modulation 2.2 Types of modulation 2.3 Introduction to Modem	9	15
3	3.NETWORKING FUNDAMENTALS 3.1 An overview of networking 3.2 Switching techniques 3.3 Network Topologies	10	15
4	4.OSI MODEL, TCP/IP SUITE AND DATA LINK PROTOCOLS 4.1 Network architectures 4.2 Open system Interconnection (OSI) model 4.3 TCP/IP Protocol suite 4.4 Data Link Protocol	10	15
5	5.NETWORK LAYER AND TRANSPORT LAYER 5.1 Network Layer Protocols 5.2 Transport Layer Protocols	9	15
	Total	48	75

10. SPECIFICATION TABLE FOR TERM WORK & PRACTICALS HOURS

No	Practical
1	Study of Data Communication fundamentals.
2	Study of different types of communication modes.
3	Study of different types of communication media.
4	Study of different types of modulation techniques.
5	Study of Modem
6	Study of different types of computer networks.
7	Study of network topologies.
8	Comparative study of OSI and TCP/IP model.
9	Study of Data link protocols.
10	Study of Network protocols.
11	Study of Transport protocols.
12	Implementation of LAN.

11. LEARNING RESOURCES

Text Books

S. No.	Author	Title of Books	Publishers
1	ISRDR Group	Data Communication and Computer Networks	Tata McGraw-Hill, ace series
2	Prakash C. Gupta	Data communications and Computer Networks	PHI Learning Private Limited,2014
3	Rajneesh Agrawal and Bharat Bhushan Tiwari	Data Communication and Computer Networks	Vikas Publishing house Ltd, 2005

Reference Books for further study

S. No.	Author	Title of Books	Publishers
1	Behrouz A Forouzan	Data Communication and Networking	Tata McGraw-Hill,2008
2	William Stallings	Data and Computer Communications	Pearson Education, 2008

Internet and Web Resources

S. No.	Description
1	The TCP/IP Guide, by Charles M. Kozierok, Free online Resource, http://www.tcpipguide.com/free/index.htm

Videos and Multimedia Tutorials

S. No.	Description
1	https://www.youtube.com/watch?v=VDkYgGGtDnc
2	https://www.youtube.com/watch?v=UXMIxCYZu8o

(CM406) COMPUTER LABORATORY-II

1. AIM: To introduce various tools and technologies to create professional and interactive websites.

2. COURSE OBJECTIVES: In this course the students will learn the following:

1. Select and use web-based applications.
2. Manage web content and develop graphical user interfaces of website.
4. Create and publish web documents.

3. PRE-REQUISITES: Knowledge of Web Designing

4. TEACHING AND EXAMINATION SCHEME

Semester	IV	Periods/Week (in hours)			Total Hours	Examination Scheme				
Course code & course title		L T P			H	Theory Marks		Practical Marks		Total Marks
						TH	TM	TW	PR/OR	
CM406 Computer Laboratory II		-	-	2	2	-	-	25	50	75

5. COURSE OUTCOMES: Student will be able to:

CM406.CO1: Discuss web based applications, web Content Management Systems, animation and data reporting tools.

CM406.CO2: Use web based applications, web Content Management Systems, animation and data reporting tools.

CM406.CO3: Prepare Graphical user interfaces, animations and informative reports.

CM406.CO4: Design and publish web documents.

6. MAPPING COURSE OUTCOMES WITH PROGRAM OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
	Basic & Discipline Specific Knowledge	Problem Analysis	Design and Development of Solutions	Engg. Tools, Experimentati on & Testing	Engg. Practices for Society, Sustainability & Environment	Project Management	Life -long Learning
CO1	1	0	1	1	0	0	1
CO2	1	0	1	2	1	0	1
CO3	1	1	2	2	1	1	1
CO4	1	1	2	2	2	1	1

Relationship: Low-1 Medium-2 High-3

	PSO1	PSO2
CO1	1	1
CO2	2	2
CO3	2	2
CO4	2	2

7. DETAILED COURSE CONTENTS / MICRO-LESSON PLAN

M=Marks	Thr = Teaching hours	CO = Course Outcomes			
UNIT		M	Thr	CO	
UNIT I	<p>1. INTRODUCTION TO WEB BASED APPLICATIONS</p> <p>1.1 Creating Email account (like Gmail)</p> <p>1.2 Email compose and reply</p> <p style="padding-left: 20px;">1.2.1 Streamlined compose pane</p> <p style="padding-left: 20px;">1.2.2 Checking mail while typing</p> <p style="padding-left: 20px;">1.2.3 Formatting options</p> <p style="padding-left: 20px;">1.2.4 Keyboard shortcuts</p> <p style="padding-left: 20px;">1.2.5 Drag and drop addresses, files</p> <p style="padding-left: 20px;">1.2.6 Compose two messages at once</p> <p style="padding-left: 20px;">1.2.7 Draft</p> <p style="padding-left: 20px;">1.2.8 Create signatures, labels, filters</p> <p style="padding-left: 20px;">1.2.9 Contacts</p> <p style="padding-left: 20px;">1.2.10 Create groups and mailing lists</p> <p style="padding-left: 20px;">1.2.11 Import contacts, contacts picker</p> <p>1.3 Chat</p> <p>1.4 Calendar</p> <p style="padding-left: 20px;">1.4.1 Scheduling</p> <p style="padding-left: 20px;">1.4.2 Setting up reminders</p> <p style="padding-left: 20px;">1.4.3 Sharing</p> <p>1.5 Working with Documents</p> <p style="padding-left: 20px;">1.5.1 Word, Excel</p> <p style="padding-left: 20px;">1.5.2 Creating form</p> <p>1.6 Drive</p> <p style="padding-left: 20px;">1.6.1 Setting up file storage and synchronization services (like Google drive)</p> <p style="padding-left: 20px;">1.6.2 Organize, find, share, open and preview files</p>	10	4	CO1, CO2, CO4	
UNIT II	<p>2. WORKING WITH CONTENT MANAGEMENT SYSTEM (LIKE WORDPRESS)</p> <p>2.1. Introduction to Content management system (CMS)</p> <p>2.2. Downloading and Installing CMS on web server (like XAMPP)</p> <p>2.3. Menus on the Administration Screen</p> <p>2.4. Dashboard: Website management functions of CMS</p> <p>2.5. Themes</p> <p style="padding-left: 20px;">2.5.1. Installing and handling themes</p> <p style="padding-left: 20px;">2.5.2. Editing the appearance of themes</p>	10	8	CO1, CO2, CO4,	

	<p>2.5.3. Theme configurations</p> <p>2.5.4. Adjusting different elements of installed themes like slideshow, post, pages</p> <p>2.6. Posts</p> <p>2.6.1. Adding new post</p> <p>2.6.2. Modifying existing posts</p> <p>2.6.3. Placing images, videos to the posts</p> <p>2.6.4. Adding categories to publishing the posts on the websites</p> <p>2.7. Pages</p> <p>2.7.1. Adding new webpages</p> <p>2.7.2. Modifying existing webpages</p> <p>2.7.3. Placing images, videos, mp3 on the pages</p> <p>2.7.4. Publishing the pages on the websites</p> <p>2.8. Menus</p> <p>2.8.1. Creating Custom Menus</p> <p>2.8.2. Modifying themes default menu</p>			
UNIT III	<p>3. WORKING WITH CONTENT MANAGEMENT SYSTEM (LIKE WORDPRESS)</p> <p>3.1. Media</p> <p>3.1.1. Uploading pictures, videos</p> <p>3.1.2. Editing images and publishing them on the websites</p> <p>3.1.3. Embedding videos from external source (like YouTube) to website</p> <p>3.2. Links</p> <p>3.2.1. Adding New links</p> <p>3.2.2. Editing the links</p> <p>3.2.3. Adding categories to the links</p> <p>3.2.4. Managing Categories</p> <p>3.3. Widgets</p> <p>3.3.1. Adding widgets to the theme</p> <p>3.3.2. Editing widgets to the theme</p> <p>3.4. Plugins</p> <p>3.4.1. Introduction to plugins</p> <p>3.4.2. Installing plugins</p> <p>3.4.3. Editing plugins.</p> <p>3.5. Managing the user accessibility to the website/blog.</p>	10	6	CO1, CO2, CO4,
UNIT IV	<p>4. USING ANIMATION CREATION TOOL (LIKE ALICE)</p> <p>4.1. Code Editor, methods panel, control panel/tiles,</p>	10	8	CO1, CO2, CO3,

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	<p>scene editor, galleries</p> <p>4.2. Camera Navigation control: turn camera left/right, forward/backward, Move camera</p> <p>4.3. Creating first animation: open, save and run the project, add and position objects</p> <p>4.4. Animation using Do in order, on together, Move up, down, forward, backward, right, left</p> <p>4.5. Animation using control structures</p> <p>4.6. Using memory variables</p> <p>4.7. Using user-defined procedures</p> <p>4.8. Add rotation and randomization: Examples of human objects walk, sit, run</p> <p>4.9. Use keyboard controls</p> <p>4.10. Develop small animation</p>			CO4,
UNIT V	<p>5. DATA REPORTING TOOL (LIKE DATA VISION)</p> <p>5.1. Introduction</p> <p>5.2. Installing Data Reporting Tool</p> <p>5.3. Starting Data Reporting Tool</p> <p> 5.3.1. Launching Data Reporting Tool</p> <p> 5.3.2. Running Data Reporting Tool from Command Line</p> <p>5.4. Data Reporting Tool User Interface</p> <p> 5.4.1. The File Menu</p> <p> 5.4.2. The Edit Menu</p> <p> 5.4.3. The Insert Menu</p> <p> 5.4.4. The Format Menu</p> <p> 5.4.5. The Database Menu</p> <p> 5.4.6. The Report Menu</p> <p> 5.4.7. The Help Menu</p> <p>5.5. Creating Report</p> <p> 5.5.1. Connecting to a Database</p> <p> 5.5.2. Adding fields and text</p> <p>5.6. Running Report</p> <p> 5.6.1. Displaying a Report On-screen</p> <p> 5.6.2. Saving a Report's Output</p> <p> 5.6.3. Printing a Report's Output</p>	10	6	CO1, CO2, CO3, CO4,
	Total	50	32	

8. COURSE DELIVERY:

The Course will be delivered through lectures, class room interactions, exercises and case studies

9. SPECIFICATION TABLE FOR PRACTICAL PLAN

Unit No	Unit	Number of Practical Hours	Marks
I	1 INTRODUCTION TO WEB BASED APPLICATIONS 1.1 Creating Email account 1.2 Email compose and reply 1.3 Chat 1.4 Calendar 1.5 Working with Documents 1.6 Drive	4	10
II	2. WORKING WITH CONTENT MANAGEMENT SYSTEM (LIKE WORDPRESS) 2.1. Introduction to CMS 2.2. Downloading and Installing CMS on web Server 2.3. Menus on the Administration Screen 2.4. Dashboard: Website management functions of CMS 2.5. Themes 2.6. Posts 2.7. Pages 2.8. Menus 2.9. Modifying themes default menu	8	10
III	3. WORKING WITH CONTENT MANAGEMENT SYSTEM (LIKE WORDPRESS) 3.1. Media 3.2. Links 3.3. Widgets 3.4. Plugins 3.5. Managing the user accessibility to the website/blog.	6	10

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IV	4. USING ANIMATION CREATION TOOL (LIKE ALICE) 4.1 Code Editor, methods panel, control panel/tiles, scene editor, galleries 4.2 Camera Navigation control 4.3 Animation using Do in order, on together, Move up, down, forward, backward, right, left 4.4 Animation using control structures 4.5 Using memory variables 4.6 Using user-defined procedures 4.7 Add rotation and randomization 4.8 Use keyboard controls 4.9 Develop small animation	8	10
V	5. DATA REPORTING TOOL (LIKE DATA VISION) 5.1. Introduction 5.2. Installing Data Reporting Tool 5.3. Starting Data Reporting Tool 5.4. Data Reporting Tool User Interface 5.5. Creating Report 5.6. Running Report	6	10
Total		32	50

10. SPECIFICATION TABLE FOR TERM WORK & PRACTICALS HOURS

No	Practical
1	Create Email Account. Test various mail utilities such as compose mail, send mail, forward mail, reply mail, attach a file, creating signature, draft.
2.	Test calendar functionality.
3.	Test Online documents, file storage and synchronization services.
4.	Create group, share information, send messages to a group.
5.	Download and install Content Management System on web server.
6.	Work with Content Management System administration menu and Dashboard
7.	Create page and post with text and images.
8.	Create a menu to help visitors navigate pages and posts.
9.	Install animation creation application and study code editor, scene editor, methods panel, control panel and galleries.
10.	Write, debug and test control statement-based programs using animation creation application.
11.	Develop animation using Do in order, on together, Move up, down, forward, backward, right, left
12.	Develop and test small animation applications.
13.	Install and study Data Reporting Tool user interface.
14.	Create reports using Data Reporting Tool.
15.	Mini Project to demonstrate use of animations, reports in website developed using Content Management System.

11. LEARNING RESOURCES

Text Books

S. No.	Author	Title of Books	Publishers
1	Sams Teach Yourself WordPress 3 in 10 Minutes	Chuck Tomasi, Kreg Steppe	SAMS
2	Learning to Program with Alice, 3rd Edition	Dann, Cooper and Pausch	Prentice Hall (Pearson Education)

Reference Books for further study

S. No.	Author	Title of Books	Publishers
1	Hal Stern, David Damstra, Brad Williams	Professional Wordpress Design and Development	Wrox
2	Joel Adams	Alice 3 in Action Computing Through Animation	Cengage Learning

Internet and Web Resources

S. No.	Description
1	http://learn.wordpress.com
2	http://www.1stwebdesigner.com/wordpress/wordpress-step-by-step-beginners-guide/
3	http://www.graphicrating.com/2009/07/31/wordpress-tutorials-and-resources-for-designers-and-developers/
4	http://www.alice.org/3.1/materials_download (Lab exercises for Alice)
5	http://datavision.sourceforge.net/DataVision/DataVision.html
6	http://www.learn-it-with-examples.com/development/reporting-tools/other-tools/data-vision-reporting-tool.html

Videos and Multimedia Tutorials

S. No.	Description
1	http://www.alice.org/3.1/materials_videos (Video tutorial for Alice)
2	http://www.andrew.cmu.edu/user/dslater/screencasts/index.html (Video tutorial for Alice)