FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A++" Grade by NAAC (4th Cycle)
Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT : DEPARTMENT OF MCA

NAME OF THE PROGRAMME : MCA

PROGRAMME CODE : MCA

ACADEMIC YEAR : 2022 – 2023

FATIMA COLLEGE (AUTONOMOUS), MADURAI

Minutes of the Board of Studies

Name of the Department : PG Dept. of Computer Applications

To be implemented From : 2022 - 2023 onwards
Venue : SJ 16
Convened on : 16.3.2022
Convened at : 10 a.m.

Members Present

S.NO	NAME	DESIGNATION
1.	Ms. S. Mary Helan Felista	Head of the Departmen
2.	Dr. Sivakumar Principal & Assoc. professor CPA College	University Nominee
3.	Dr. A. Meenakshi Head & Assoc. professor Dept. of CSE Kamaraj College of Engg. & Tech. Virudhunagar	Subject Expert
4.	Dr. K. Kavitha Asst. proffesor Dept. of comp. science Mother Teresa Women's University Research & Extn. Center Madurai	Subject Expert
5.	Mr. Manikumar Senior Software Developer Ericsson India Global pvt. Ltd. Chennai	Industrialist

NAME	DESIGNATION
6. Ms. R. G. Sobitha Business Manager BSETech, Bangalore	Alumna
7. Ms. Mable Jasmine Shobha	Dean of academic affairs
8. Ms. R. Smeeta Mary	Staff member
9. Ms. S. Jeba Priya	staff member
10. Ms. B. Usha	Staff member
11. Ms. S. Selvarani	Staff member
12. Ms. P. Nancy Vincentina Mary	Staff member

ACTION TAKEN REPORT FOR 2021-2022

S.NO.	Common Suggestions offered in the Previous Board	Action taken for the academic year 2021-2022
1.	Bridge courses to be offered at the beginning of each semester.	Bridge course were planned and offered at the beginning of each semester.
2.	DBMS to be offered as a core paper	Course on RDBMS planned to be offered from the academic year 2022-2023

CHANGE OF COURSE TITLE

NIL

NEW COURSES INTRODUCED

S. NO.	COURSE CODE	COURSE TITLE	RELEVANCE TO L	R	N	G	SCOPE FOR EMP	ENTR	SD	NEED FOR INTRODUCTION
1.	20MCAIDC-01	IT for Management				G1		✓		IT components are vital in business
2.	20MCAIDC-02	Web Analytics				G1		✓		Ecommerce based web analytics is the trend

REVISED COURSES

S. NO.	COURSE CODE	COURSE TITLE	UNITS REVISED	% OF REVISION	NEED FOR REVISION	RELEVANCE TO	SCOPE
1.	20MCA101	Mathematical Foundation of Comp. Science	Unit V Graph Theory	20%	To include GT Concept	Global	Skill Develop
2.	20MCA102	Software Engineering	Unit I to V	80%	Additional concepts added & realigned	Global	Skill Develop-ment
3.	20MCA104	Programming in Python	Unit IV - Data Modelling, Dictionary	20%	Concepts are detailed	Global	EMP
4.	20MCA302	Software Quality & Testing	Unit I to V	80%	Industry Oriented Techniques are introduced	Global	SD

5.	20MCA304	Enterprise Application Development	Unit I - V	20%	Topics realigned for easy learning	Global	SD
6.	20MCAAM03	Machine Learning	Unit V	20%	Tools included	Global	SD

Minutes 2022 onwards

1. Updation of Open Educational Resources in the list of references of each course

NIL

2. Revision of Courses

	REVISED COURSES						
S.NO.	Course code	Course Title	Units Revised	% of Revision	Need for Revision	Relevance L/R/N/G	Scope EMP/ ENT/SD
1.	20MCA101	Mathematical Foundation of Comp. science	Unit V - Trees, Properties Spanning Tree	10%	Trees to be included in Graph Theory	Global	SD
2.	20MCA104	Programming in Python	Unit V - Exception, Constructors	20%	Concepts are more detailed	Global	EMP
3.	20MCA202	Web Technologies	Unit I	20%	Basics moved to bridge course	Global	EMP

REVISED COURSES

S.NO.	Course Code	Course Title	Units Revised	% of Revision	Need for Revision	Relevance L	Relevance R	Relevance N	Relevance G	Scope EMP	Scope ENT	Scope SD
4.	20MCA203	Programming in Java	Unit I&II rearranged	20%	Topics re-aligned for easy learning				Global	EMP		
5.	20MCA304	Enterprise Application Development	Unit II - Spring, Hibernate framework	20%	Topics re-vamped to facilitate learning				Global	EMP		
6.	20MCAGE11	Cloud Computing	Unit I - Unit V	20%	Topics revamped for easy learning				Global			SD

3. New Courses Introduced

NEW COURSES

S.NO.	Course Code	Course Title	Relevance TO L	Relevance TO R	Relevance TO N	Relevance TO G	Scope For EMP	Scope For ENT	Scope For SD	Need For Introduction
1.	22MCA102	Relational Database Management System				G	✓			RDBMS concep to be offered as core to meet t industry requirem
2.	22MCA302	Software Engineering Principles				G			✓	Principles of advanced softw engineering cas in the industr to be imparted

S.NO.	Course code	Course Title	Relevance To				Scope For			Need for Introduction
			L	R	N	G	EMP	ENTRE	SD	
3.	22MCA401	UIX Design Programming				G			✓	Career opportunities in UIX design rapidly increasing

4. Introduction of purely skill embedded certificate / Diploma / Advanced Diploma value added course

S.NO.	Course code	Course Title	MOU with Industry / Organization	Skills Sharpened	Course Outcome
1.	22PGVAMCA4	Campus To Corporate Training	-	1. Oral and written communication 2. Quantitative & Reasoning Techniques 3. Inter Personal Skills	1. Display competence in oral & written communication 2. To improve aptitude, problem solving & reasoning skills 3. To impart the importance of inter personal skills in the working environment

5. Approval of Ph.D Course Work Syllabus

5.

NIL

6. Rubrics for Internship / Project

Internship / Mini Project / Major Project

Internal / External

External		Internal	
Novelty	10	Literature Review	15
Functionality	10	Modularity	10
System Analysis	10	Coding	15
Presentation	10	Algorithms	10
Queries	10		
Total	50 Marks		50 Marks

DETAILS OF PROPOSED / SIGNED MOU's

1. PG Department of computer application has proposed to extend the Memorandum of understanding with Brick Steel Enterprises Infotech Pvt. Ltd, Bangalore. As per the understanding, the following activities are decided to be carried on in the upcoming year

→ In plant Training

→ Guest Lectures

→ Placement

→ Faculty Development Programme

→ Curriculum Design

→ Skill Embedded Value Added Course

OTHER SUGGESTIONS

* Title of the course Programming in Java with code 20MCA203 to be changed to "Object Oriented Programming in Java".

* Coures offered in the final semester can be offered in the previous semesters to facilitate project cum placement.

Bridge Courses offered

I Semester → C & C++
→ Computer Organization

II Semester → Core Java
→ HTML & CSS

III Semester → Computer Networks
→ Internet Programming Framework

1. Ms. Mary Helan Felista	S. Mayhn
2. Dr. Sivakumar	Absent
3. Dr. Meenakshi. A	16/3/2022.
4. Dr. K. Kavitha	16/3/2022
5. Mr. Manikumar	Absent
6. Ms. Sobitha R. G.	SHt
7. Ms. Mable Jasmine Shobha	
8. Ms. Smeeta Mary. R	
9. Ms. Jeba Priya. S	
10. Ms. Usha. B	
11. Ms. Selvarani. S	
12. Ms. Nancy Vincentina Mary	

1. Ms. Mary Helan Felista	S. Mary
2. Dr. Sivakumar	Absent
3. Dr. Meenakshi. A	16/3/2022
4. Dr. K. Kavitha	16/3/2022
5. Mr. Manikumar	Absent
6. Ms. Sobitha R. G.	Sht.
7. Ms. Mable Jasmine Shobha	Mable Jasmine Shobha
8. Ms. Smeeta Mary. R	
9. Ms. Jeba Priya. S	
10. Ms. Usha. B	
11. Ms. Selvarani. S	
12. Ms. Nancy Vincentina Mary	

VISION

Being women of communion, contemplative and prophetic, empower women and children through faith formation and value-based education for societal equality, harmony and to care for our common home.

MISSION

To energize Women and Children towards Academic excellence through Quality Education. To endow them with character, competence, creativity & commitment. To enkindle in them inclusive love, building fraternal communities and stand for the cause of those at the periphery with compassion.

VISION OF THE DEPARTMENT

To Empower women by providing them unique learning experience with ethical values in computer applications to meet the industrial standards and societal expectations.

MISSION OF THE DEPARTMENT

Training in the cutting edge technologies to adapt to the Dynamic IT world

Promoting a learning community in a supportive and caring environment that lead students to successfully complete their goals

Build up Leadership traits among students

Craft responsible Computer Professionals with strong Moral Values

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1	**Subject Proficiency -** Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and desirous for the “more” in all aspects
PEO 2	**Professional Growth -** They will be efficient individual and team performers, exhibiting progress, flexibility, transparency and accountability in their professional work
PEO 3	**Managerial Skills** - The graduates will be effective managers of all sorts of real – life and professional circumstances, making ethical decisions, pursuing excellence within the time framework and demonstrating apt leadership skills
PEO 4	**Needs of the Society-** They will engage locally and globally evincing social and environmental stewardship demonstrating civic responsibilities and employing right skills at the right moment.

PROGRAMME OUTCOMES (PO)

The learners would be able to

PO 1	Apply the knowledge of computing maths and science for the solution of problems and requirements
PO 2	Identify, critically analyze, formulate and develop computer applications using fundamental principles of relevant domain disciplines
PO 3	Design and evaluate solutions for computer based problems to meet the desired needs within realistic constraints such as safety, security and applicability
PO 4	Use research based knowledge to conduct experiments and interpret data to attain well-defined conclusions.
PO 5	Create, select and apply modern computing tools by understanding the limitations, with dexterity.
PO 6	Demonstrate the competency in programming skills as per industry expectations.
PO 7	Understand the impact of system solutions in societal, environmental and cultural issues within local and global contexts for sustainable development
PO 8	Commit to professional ethics and cyber regulations, responsibilities & norms.
PO 9	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary environment to manage projects.
PO 10	Communicate effectively with the society about computing technologies.
PO 11	Demonstrate knowledge and understanding of the management principles and apply these to manage projects.
PO 12	Appreciate the importance of goal setting and to recognize the need for life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of MCA programme, the graduates would be able to

PSO 1	Ability to design and develop applications in the computing discipline to meet the customer's business objectives.
PSO 2	Ability to Integrate various system components to provide user interactive solutions for various challenges
PSO 3	Ability to test and maintain the software applications with latest computing tools and technologies.
PSO 4	Ability to understand the evolutionary changes in the practices and strategies in software project development.
PSO 5	Ability to enhance teamwork and leadership skills to solve time critical problems

DEPARTMENT OF MCA

2022 – 2023

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
SEMESTER - I						
20MCA101	Mathematical Foundation of Computer Science	4	4	50	50	100
22MCA102	Relational Database Management System	4	4	50	50	100
20MCA103	Operating Systems	4	4	50	50	100
20MCA104	Programming in Python	4	4	50	50	100
*	Elective I–General	4	4	50	50	100
20MCA105	Lab I–Python Programming	4	2	50	50	100
20MCA106	Lab II -RDBMS	4	2	50	50	100
20MCA107	Skill Based lab I–Linux	2	1	25	25	50
20MCA108	Soft Skills I - Professional Communication	2	1	25	25	50
SEMESTER - II						
20MCA201	Data Structures and Algorithms	4	4	50	50	100
20MCA202	Web Technologies	4	4	50	50	100
20MCA203	Programming in Java	4	4	50	50	100
*	Elective I – Specialization	4	4	50	50	100
*	Elective II–General	4	4	50	50	100

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
20MCA204	Lab III –Web Technologies	4	2	50	50	100
20MCA205	Lab IV –Java Programming	4	2	50	50	100
20MCA206	Skill Based Lab II – R Programming	2	1	25	25	50
20MCA207	Soft Skills II – Numerical Aptitude	2	1	25	25	50
SEMESTER - III						
20MCA301	Internship & Mini Project	4	4	50	50	100
22MCA302	Software Engineering **Principles**	**4**	**4**	50	50	100
20MCA303	Mobile Application Development	4	4	50	50	100
20MCA304	Enterprise Application Development	4	4	50	50	100
	Elective II – Specialization	4	4	50	50	100
	Elective III - General	6	3	50	50	100
20MCA305	Lab V - Mobile Application Development	6	3	50	50	100
20MCA306	Lab VI- Enterprise Application Development	2	1	25	25	50
20MCA307	Skill Based Lab III- Computer Aided Software Engineering Tools	2	1	25	25	50

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
20MCA308	Soft Skills III – Technical Aptitude	2	1	25	25	50
SEMESTER - IV						
22MCA401	UIX Design Programming	4	2	50	50	100
*	Elective III – Specialization	4	4	50	50	100
20MCA403	Soft Skill IV- Interpersonal Skills for Corporate Readiness	2	2	25	25	50
20MCA402	Project Viva Voce	-	6	50	50	100

ELECTIVES

SPECIALIZATION ELECTIVE – DATA ANALYTICS

S.NO	SEMESTER	COURSECODE	COURSE TITLE	HRS/WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	II	20MCADA01	Data Mining Techniques	4	4	50	50	100
2.	II	20MCADA02	Data Analytics and Visualization Using Spreadsheets	4	4	50	50	100
3.	III	20MCADA03	Big Data Analytics	4	4	50	50	100
4.	III	20MCADA04	Data Analytics Tools & Techniques	4	4	50	50	100
5.	IV	20MCADA05	Business Analytics Using R	4	4	50	50	100
6.	IV	20MCADA06	Big Data Security	4	4	50	50	100

SPECIALIZATION ELECTIVE – DISTRIBUTED SYSTEM SECURITY

S.NO	SEMESTER	COURSECODE	COURSE TITLE	HRS/WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	II	20MCADS01	Data Communication & Networking	4	4	50	50	100
2.	II	20MCADS02	Wireless Communication & Security	4	4	50	50	100
3.	III	20MCADS03	Cryptography & Network Security	4	4	50	50	100
4.	III	20MCADS04	Cyber Forensics	4	4	50	50	100
5.	IV	20MCADS05	Cloud Security	4	4	50	50	100
6.	IV	20MCADS06	High Speed Networks	4	4	50	50	100

SPECIALIZATION ELECTIVE – AI & MACHINE LEARNING

S.NO	SEMESTER	COURSECODE	COURSETITLE	HRS/WK	CREDIT	CIA Mks	ESE Mks	TOT. MKS
1.	II	20MCAAM01	Artificial Intelligence& Expert System	4	4	50	50	100
2.	II	20MCAAM02	Soft Computing	4	4	50	50	100
3.	III	20MCAAM03	Machine Learning	4	4	50	50	100
4.	III	20MCAAM04	Neural Networks	4	4	50	50	100
5.	IV	20MCAAM05	Human Computer Interaction	4	4	50	50	100
6.	IV	20MCAAM06	Deep Learning	4	4	50	50	100

GENERALELECTIVES

S.NO	COURSE CODE	COURSETITLE	HR/ WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	20MCAGE01	Office Automation Tools	4	4	50	50	100
2.	20MCAGE02	Financial Management And Accounting	4	4	50	50	100
3.	20MCAGE03	Organizational Behavior	4	4	50	50	100
4.	20MCAGE04	E-Commerce	4	4	50	50	100
5.	20MCAGE05	Ethics in Computing	4	4	50	50	100
6.	20MCAGE06	Resource Management Techniques	4	4	50	50	100
7.	20MCAGE07	Entrepreneurship Development	4	4	50	50	100
8.	20MCAGE08	Wireless Sensor Networks	4	4	50	50	100
9.	20MCAGE09	Research Methodology	4	4	50	50	100
10.	20MCAGE10	Digital Image Processing	4	4	50	50	100
11.	20MCAGE11	Cloud Computing	4	4	50	50	100
12.	20MCAGE12	Agile Software Engineering	4	4	50	50	100

EMPLOYABILITY-100%

I MCA

SEMESTER – I

(For those who join in 2022 onwards)

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
MCA	22MCA102	RELATIONAL DATABASE MANAGEMENT SYSTEM	MAJOR CORE	4	4

COURSE DESCRIPTION

This course provides knowledge on different issues involved in the design of a database system and it Provide strong foundation of database concepts and to introduce students to application development in DBMS.

COURSE OBJECTIVE

- The course describes the data, organizing the data in database, database administration..
- To study the physical and logical database designs, integrity and normalization.
- It also gives introduction to SQL language to retrieve the data from the database with suitable application development.

UNIT – I INTRODUCTION (12 Hours)

Database system applications - Purpose of Database Systems - View of data - Database languages – Relational Databases - Database design –Data Storage and Querying – Transaction Management – Database Architecture - Data Mining and Information Retrieval- Specialty Databases - Database Users and administrators - Introduction to Relational Model –

Structure of Relational Databases - Database Schema – Keys – Schema Diagrams- Relational query languages.

SELF STUDY : Relational Operations

UNIT- II RELATIONAL DATABASE DESIGN (12 Hours)

Formal Relational Query Languages - Relational Algebra - The Tuple relational calculus - Domain relational calculus - Database design and the E-R Model - The Entity-Relationship Model- Constraints – Entity-Relationship Diagrams - Extended E-R features - Relational Algebra - The Tuple relational calculus - Domain relational calculus - Atomic Domains and First Normal form- Decomposition using Functional dependencies - Decomposition Using Multivalued Dependencies

SELF STUDY : Entity-Relationship Design Issues

UNIT - III SQL BASICS (12 Hours)

Introduction to SQL – Components – DDL – DML – Data types – Set Operations – SQL Operators – Arithmetic – Logical - Query Expression Operators – SQL Functions – Group By Clause – Having Clause – With Clause – Order by Clause – Update Statements – Delete Statements – Table Operations – Views – Creating Views – Formatting data – Integrity Constraints – Domain – Key – Joins – Natural – Cross – Outer – Full Outer join.

SELF STUDY : Aggregate Functions

UNIT - IV PL/SQL PROGRAM FEATURES AND CURSOR (12 Hours)

Program Features – Block Structured Language – Control structures – Modularity – External Procedures – Data Abstraction – Information Hiding – Error Handling – Database Triggers – Data types – User-defined – Conversion – Declaration – Naming Convention - Scope Visibility – Expressions and comparisons – Functions – Iterative Statements – Unconditional Branching statements – Cursors – Attributes – Variables – Expressions – Transaction Control Statements.

SELF STUDY : Control Statements

UNIT- V **(12 Hours)**

PL/SQL EXCEPTION, PACKAGES AND TRIGGERS

Error Handling – User defined – built in – Handled and unhandled Exceptions – Subprograms – Procedure – Functions – Stored subprograms Built in Functions - Recursion – Package – Specification – Advantages – elements – Reusable– Trigger – save point – Trigger operations – reversing Update – Deleting Cascade – Altering – Enabling – Disabling – Information on Triggers.

SELF STUDY : Built in packages

REFERENCE BOOKS

1. Abraham Silberschatz, Henry F. Korth, S.Sudarshan, "Database System Concepts" ,
   Tata McGraw Hill publishers, 6th Edition, 2018.
2. SQL and PL/SQL - Dr.P.S.Deshpande , Dream tech Press, 2011 Edition.
3. R. Elmasri, S.B. Navathe, "Fundamentals of Database Systems", Pearson Education, Seventh Edition, 2017.
4. Raghu Ramakrishnan, —Database Management Systems, 4th Edition, McGraw-Hill College Publications, 2015.

WEB RESOURCES

1. http://www.unix.org.ua/orelly/oracle/langpkt/index.htm
2. http://www.lc.leidenuniv.nl/awcourse/oracle/appdev.920/a96624/toc.htm
3. http://www.ss64.com/ora/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				

1.1	Database system Applications & Purpose	1	Chalk & Talk	Black Board
1.2	Relational Databases	2	Chalk & Talk	Black Board
1.3	Transaction Management	1	Lecture	PPT
1.4	Database Architecture	1	Chalk & Talk	Black Board
1.5	Database Users and administrators	2	Discussion	Black Board
1.6	Structure of Relational Databases	2	Lecture	White board
1.7	Database Schema Diagrams	1	Discussion	Google classroom
1.8	Relational query languages & operations	2	Lecture	White board
UNIT - 2 RELATIONAL DATABASE DESIGN				
2.1	Formal Relational QueryLanguages	1	Lecture	PPT
2.2	The Tuple relational calculus	2	Chalk & Talk	Black Board
2.3	Domain relational calculus	2	Lecture	PPT
2.4	Database design &the E-R Model	2	Lecture	White board
2.5	Expression Trees	1	Discussion	Black Board
2.6	The E-R Model & Diagrams	1	Chalk & Talk	Black Board
2.7	First Normal form	1	Chalk & Talk	Black Board
2.8	Decomposition Using functional and Multivalued Dependencies	2	Lecture	PPT
UNIT – 3SQL BASICS				

3.1	SQL Components	1	Lecture	White board
3.2	DDL , DML, Set Operations	1	Chalk & Talk	Black Board
3.3	SQL Functions	2	Lecture	PPT
3.4	Aggregate Functions	1	Lecture	White board
3.5	SQL Clauses	1	Discussion	Google classroom
3.6	SQL Statements	1	Lecture	PPT
3.7	Table Operations	1	Chalk & Talk	Black Board
3.8	Integrity Constraints, Domain, Key	2	Lecture	White board
3.9	Joins, Natural, Cross, Outer & Full Outer	2	Chalk & Talk	Black Board
UNIT – 4PL/SQL PROGRAM FEATURES AND CURSOR				
4.1	Block Structured Language	1	Lecture	PPT
4.2	Control structures	2	Lecture	PPT
4.3	Data Abstraction, Information Hiding	1	Chalk & Talk	Black Board
4.4	Database Triggers	2	Chalk & Talk	Black Board
4.5	Data types, Conversion	1	Discussion	Black Board
4.6	Scope Visibility	1	Lecture	PPT
4.7	Control & Iterative Statements	2	Chalk & Talk	Black Board
4.8	Cursors, Attributes	2	Lecture	PPT
UNIT – 5PL/SQL EXCEPTION, PACKAGES AND TRIGGERS				
5.1	Error Handling	1	Chalk & Talk	Black Board

5.2	Procedure, Functions	2	Lecture	PPT
5.3	Stored subprograms, Built in Functions	2	Lecture	PPT
5.4	Package Specification, Elements	2	Lecture	White board
5.5	Built in packages, Trigger	2	Lecture	White board
5.6	Trigger operations	1	Lecture	White board
5.7	Enabling & Disabling Triggers	1	Lecture	White board
5.8	Information on Triggers	1	Discussion	Google classroom

Levels	**C1**	**C2**	**C3**	**C4**	**Total Scholastic Marks**	**Non Scholastic Marks C5**	**CIA Total**	**% of Assessment**
	10 Mks	**15 Mks**	**5+5=10 Mks .**	**10 Mks**	**45 Mks .**	**5 Mks .**	**50 Mks .**	
K1	-	-	-	-	-		-	-
K2	-	**5**	**5**	**2.5**	**12.5**		**12.5**	**25%**
K3	**5**	-	-	**5**	**10**		**10**	**20%**
K4	**5**	**5**	-	**2.5**	**12.5**		**12.5**	**25%**
K5	-	**5**	**5**	-	**10**		**10**	**20%**
Non-Scho.	-	-	-	-	-	**5**	**5**	**10%**
Total	**10**	**15**	**10**	**10**	**45**	**5**	**50**	**100%**

CIA	
Scholastic	**45**
Non Scholastic	**5**
	50

✔ **All the course outcomes are to be assessed in the various CIA components.**

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy for MCA are :**

K2*-Understand,* ***K3****-Apply,* ***K4****-Analyse, K5 – Evaluate*

EVALUATION PATTERN

SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	CIA	ESE	Total
10	15	10	10	5	50	50	100

- **CIA Components**

			Nos		
C1	–	Test (CIA 1)	2*	-	10 Mks
C2	-	Test (CIA 2)	1	-	15 Mks
C3	-	Assignment / Open Book Test	2	-	10 Mks
C4	-	Seminar	1	-	10 Mks
C5	-	Attendance	1	-	5 Mks

- **The Average of two will be taken into account**

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the basic concepts of Relational Data Model, Entity Relationship Model and process of Normalization.	K2, K4	PSO1 & PSO 2
CO 2	Attain a good practical skill of managing and retrieving of data using Data Manipulation Language (DML)	K2, K3, K4	PSO2 & PSO4
CO 3	Understand and construct database using Structured Query Language (SQL) in Oracle9i environment..	K2 , K4	PSO1 & PSO3
CO 4	Learn basics of PL/SQL and develop Programs using Cursors, Exceptions, Procedures and Functions.	K2, K3,K4& K5	PSO2 & PSO4
CO 5	Understand and use built-in functions and enhance the knowledge of handling multiple tables	K2,K3,K4& K5	PSO 4 & PSO 5

Mapping COs Consistency with PSOs

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

Note: Strongly Correlated – **3** Moderately Correlated – **2**

 Weakly Correlated -**1**

Mapping of C0s with POs

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

COURSE DESIGNER: **Forwarded By**

S. JEBAPRIYA **HOD'S Signature & Name**

S. Mary Helan Felista

EMPLOYABILITY - 40 %

SKILL DEVELOPMENT – 60%

II MCA

SEMESTER – III

(For those who join in 2022 onwards)

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
MCA	22MCA302	SOFTWARE ENGINEERING PRINCIPLES	MAJOR CORE	4	4

COURSE DESCRIPTION

This course provides the fundamental perception of Software Engineering which includes system requirements, finding the effective methods to analyze, design, code, test and implement the full application with appropriate tools

COURSE OBJECTIVE

- To provide an insight into software life cycle and various software process models.
- To understand the methodologies for constructing software with high quality and reliability.
- To be familiar with estimation and scheduling of projects.

UNIT–I INTRODUCTION TO SOFTWARE ENGINEERING (12 Hours)

Software Engineering Concepts – Development Activities – Managing Software Development – Modelling with UML – Project Organization and Communication Concepts – Organizational Activities.

UNIT–II REQUIREMENTS ELICITATION AND ANALYSIS (12 Hours)

Elicitation Concepts – Elicitation Activities – Analysis Activities – Use Cases to Objects –System Design

UNIT–III SYSTEM DESIGN (12 Hours)

Overview – Design Concepts – Objects to Subsystems – Addressing Design Goals – Managing System Design

UNIT–IV DESIGN INTERFACES AND MAPPING (12 Hours)

Interface Specification – Specification Activities – Managing Object Design – Mapping Models to Code – Mapping Activities – Managing Implementation

UNIT–V TESTING & PROJECT MANAGEMENT (12 Hours)

Testing Concepts – Activities – Managing Test cases –Overview of Project Management – Concepts of Project Management – Classical & Agile Project Management Activities

REFERENCES:

1. Bernd Bruegge Allen H. Dutoit, "Object Oriented Software Engineering Using UML, Patterns and Java", Third Edition, Prentice Hall, 2010
2. Roger S.Pressman, "Software Engineering (A Practitioner's Approach)", Tata McGraw-Hill Publishers, 6th Edition, 2014.
3. Bob Hughes and Mike Cotterell, Software Project Management, Fifth Edition,Tata McGraw-Hill Edition 2015
4. Muthuramachandran, Zaigham,. Mohammed, "Software Engineering in the Era of Cloud Computing, Springer Publishers, 2019.

WEB REFERENCES:

1. https://www.tutorialspoint.com/software_engineering/
2. https://www.geeksforgeeks.org/software-engineering/

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION TO SOFTWARE ENGINEERING				
1.1	Software Engineering Concepts	2	Chalk & Talk	Black Board
1.2	Development Activities	2	Lecture	PPT & White board
1.3	Managing Software Development	2	Lecture	PPT & White board
1.4	Modelling with UML	2	Lecture	PPT & White board
1.5	Project Organization and Communication Concepts	2	Lecture	PPT
1.6	Organizational Activities	2	Lecture	PPT
UNIT 2 - REQUIREMENTS ELICITATION AND ANALYSIS				
2.1	Elicitation Concepts	2	Discussion	Black Board
2.2	Elicitation Activities	2	Lecture	Google classroom
2.3	Analysis Activities	2	Lecture	PPT
2.4	Use Cases to Objects	3	Lecture	Smart Board
2.5	System Design	3	Lecture	Black Board
UNIT 3 – SYSTEM DESIGN				
3.1	Overview	2	Discussion	Black Board

3.2	Design Concepts	2	Lecture	PPT
3.3	Objects to Subsystems	2	Lecture	PPT & White board
3.4	Addressing Design Goals	3	Lecture	Smart Board
3.5	Managing System Design	3	Lecture	Black Board
UNIT 4 – DESIGN INTERFACES AND MAPPING				
4.1	Interface Specification	3	Lecture	PPT
4.2	Specification Activities	3	Lecture	PPT
4.3	Managing Object Design	1	Lecture	PPT
4.4	Mapping Models to Code	2	Lecture	PPT
4.5	Mapping Activities	2	Discussion	White Board
4.6	Managing Implementation	1	Lecture	PPT
UNIT -5 – TESTING & PROJECT MANAGEMENT				
5.1	Testing Concepts	2	Lecture	PPT
5.2	Activities – Managing Test cases	2	Lecture	PPT
5.3	Overview of Project Management	2	Lecture	PPT
5.4	Concepts of Project Management	3	Lecture	PPT
5.5	Classical & Agile Project Management Activities	3	Lecture	PPT

Levels	C1	C2	C3	C4	Total Scholastic Marks	Non Scholastic Marks C5	CIA Total	% of Assessment
	10 Mks	15 Mks	5+5=10 Mks .	10 Mks	45 Mks .	5 Mks .	50 Mks .	
K1	-	-	-	-	-		-	-
K2	-	5	5	2.5	12.5		12.5	25%
K3	5	-	-	5	10		10	20%
K4	5	5	-	2.5	12.5		12.5	25%
K5	-	5	5	-	10		10	20%
Non-Scho.	-	-	-	-	-	5	5	10%
Total	10	15	10	10	45	5	50	100%

CIA	
Scholastic	45
Non Scholastic	5
	50

- ✔ **All the course outcomes are to be assessed in the various CIA components.**
- ✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy for MCA are :**

K2-*Understand,* ***K3-****Apply,* ***K4-****Analyse,* ***K5****– Evaluate*

EVALUATION PATTERN

SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	CIA	ESE	Total
10	15	10	10	5	50	50	100

- **CIA Components**

			Nos		
C1	–	Test (CIA 1)	2*	-	10 Mks
C2	-	Test (CIA 2)	1	-	15 Mks
C3	-	Assignment / Open Book Test	2	-	10 Mks
C4	-	Seminar	1	-	10 Mks
C5	-	Attendance	1	-	5 Mks

- **The Average of two will be taken into account**

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand basic software engineering methods and practices.	K2, K4	PSO1 & PSO2
CO 2	Analyse on software requirements and the SRS documents.	K2, K3, K4	PSO2
CO 3	Identify the data, class and flow oriented modelling concepts.	K2 , K4	PSO3 & PSO4
CO 4	Analyse on the design oriented concepts	K2, K3,K4 & K5	PSO1 & PSO4
CO 5	Identify the managerial aspects of Software development.	K2,K3,K4 & K5	PSO1 & PSO2

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO 1	3	2	1	1	1
CO 2	1	3	1	1	1
CO 3	1	1	3	2	1
CO 4	3	1	1	2	1
CO 5	3	2	1	1	1

Mapping of COs with POs

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

Note: □Strongly Correlated – **3** □Moderately Correlated – **2**

□Weakly Correlated -**1**

COURSE DESIGNER

S. SELVARANI

Forwarded By

HOD'S Signature & Name

S. Mary

(S. MARY HELAN FELISTA)

EMPLOYABILITY – 100 %

II MCA

SEMESTER – IV

(For those who join in 2022 onwards)

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
MCA	22MCA401	UIX DESIGN PROGRAMMING	MAJOR CORE	4	4

COURSE DESCRIPTION

This course provides an overview of client-side web UI frameworks of Bootstrap 4. It focuses on grids and responsive design using CSS pre-processors, Less and Sass and the basics of Node.js. It takes the students to move to the next level by building data-driven web apps using React.

COURSE OBJECTIVES

- To develop rich interactive web pages.
- To understand the modern technologies, components and frameworks for developing web pages.
- To build websites by apply markup languages for processing, identifying, and presenting of information in web pages.

UNIT- I REACT JS (12 Hours)

Overview - Environment Setup –JSX- Components – State – Props overview – Probs Validation – Component API –Component life cycle – Forms – Events – Refs – Keys

UNIT- II ANGULAR (12 Hours)

Architecture Overview–Environment Setup - Components-Modules - Data Binding- Event Binding – Templates – Directives -Pipes –Routing – Services – HTTP Service – Forms

UNIT- III NODE.JS & BOOTSTRAP 4 (12 Hours)

Bootstrap 4

Introduction – Grid System – Theme - Basic Template

Node.js

Node.js - Introduction – Modules – HTTP Module – File System - URL Module - NPM-Events – Upload files – Email.

UNIT - IV NODE.JS MYSQL & NODE.JS MONGODB (12 Hours)

Node.js MySQL

Creating Database – Creating Table - Insert - Select - Where-Order By - Delete- Drop Table - Update - Limit - Join

Node.js MongoDB

Creating Database – Creating Collection- Insert – Find - Query- Sort- Delete- Drop Collection- Update-Limit- Join

UNIT - V LESS & SASS BASICS (12 Hours)

Less Basics

Overview – Variables – Mixins – Nesting – Operators – Escaping – Functions – Namespaces and Accessors – Maps – Scope – Comments – Importing

Sass Basics

Preprocessing – Variables – Nesting – Partials – Import – Mixins – Inheritance - Operators

JSON

Introduction- Syntax - JSON vs XML - Data Types - Parse - Stringify- Objects - Arrays - PHP - HTML- JSONP

SELF STUDY

Props overview – Directives – Theme – Creating table – Functions

REFERENCES:

1. Alex Banks, Eve Porcello, “Learning React: Functional Web Development with React and Redux”, O'Reilly Media, 1 edition, 2017.

2. Chandermani Arora, “Angular 6 by Example, Packt Publishing Limited, 3rd edition, 2018.
3. Basarat Syed, “Beginning Node.js”, Apress, 1st edition, 2014.
4. Lindsay Bassett , “Introduction to JavaScript Object Notation”, O'Reilly Media, 1st edition , 2015

WEB REFERENCES:

https://nodejs.org/

https://angular.io/docs

https://reactjs.org/

https://www.json.org/

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 REACT JS				
1.1	Overview - Environment Setup	2	Chalk & Talk	Black Board
1.2	JSX- Components – State	2	Lecture	PPT & White board
1.3	Props overview –Probs Validation	2	Lecture	PPT & White board
1.4	Component API	2	Lecture	PPT & White board
1.5	Component life cycle - Forms	2	Lecture	PPT

1.6	Events – Refs – Keys	2	Lecture	PPT
UNIT 2 - ANGULAR				
2.1	Architecture Overview	2	Discussion	Black Board
2.2	Environment Setup	2	Lecture	Google classroom
2.3	Components-Modules	2	Lecture	PPT
2.4	Data Binding- Event Binding	2	Lecture	Smart Board
2.5	Templates – Directives - Pipes – Routing	2	Lecture	Black Board
2.6	Services – HTTP Service – Forms	2	Lecture	PPT &Black board
UNIT 3 – NODE.JS & BOOTSTRAP 4				
3.1	**Bootstrap 4 -**Introduction	1	Discussion	Black Board
3.2	Grid System – Theme	2	Lecture	PPT
3.3	Basic Template	2	Lecture	PPT & White board
3.4	Node.js - Introduction – Modules.	3	Lecture	Smart Board
3.5	HTTP Module – File System	2	Lecture	Black Board
3.6	URL Module - NPM-Events – Upload files – Email	2	Lecture	PPT
UNIT 4 – NODE.JS MYSQL & NODE.JS MONGODB				
4.1	Creating Database – Creating Table	3	Lecture	PPT
4.2	Insert - Select	3	Lecture	PPT

4.3	Where-Order By - Delete- Drop Table	1	Lecture	PPT
4.4	Update - Limit - Join	2	Lecture	PPT
4.5	Creating Database – Creating Collection.	1	Discussion	White Board
4.6	Insert – Find - Query	1	Lecture	PPT
4.7	Sort- Delete- Drop Collection- Update-Limit- Join	1	Lecture	PPT
UNIT -5 – LESS & SASS BASICS				
5.1	Overview – Variables – Mixins	2	Lecture	PPT
5.2	Nesting – Operators – Escaping	2	Lecture	PPT
5.3	Functions – Namespaces and Accessors	1	Lecture	PPT
5.4	Maps – Scope – Comments – Importing	1	Lecture	PPT
5.5	Preprocessing – Variables – Nesting - Partials	1	Lecture	PPT
5.6	Import – Mixins – Inheritance - Operators	1	Lecture	PPT
5.7	Introduction- Syntax - JSON vs XML - Data Types	1	Lecture	PPT
5.8	- Parse - Stringify- Objects - Arrays	1	Lecture	PPT
5.9	PHP - HTML - JSON	2	Demo	PPT

Levels	C1	C2	C3	C4	Total Scholastic Marks	Non Scholastic Marks C5	CIA Total	% of Assessment
	10 Mks	15 Mks	5+5=10 Mks .	10 Mks	45 Mks .	5 Mks .	50 Mks .	
K1	-	-	-	-	-		-	-
K2	-	5	5	2.5	12.5		12.5	25%
K3	5	-	-	5	10		10	20%
K4	5	5	-	2.5	12.5		12.5	25%
K5	-	5	5	-	10		10	20%
Non-Scho.	-	-	-	-	-	5	5	10%
Total	10	15	10	10	45	5	50	100%

CIA	
Scholastic	45
Non Scholastic	5
	50

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EVALUATION PATTERN

SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	CIA	ESE	Total
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- **CIA Components**

			Nos		
C1	–	Test (CIA 1)	2*	-	10 Mks
C2	-	Test (CIA 2)	1	-	15 Mks
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C4	-	Seminar	1	-	10 Mks
C5	-	Attendance	1	-	5 Mks

- **•The Average of two will be taken into account**

COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Analyze React Components, the building blocks and its interaction with other web applications	K2, K4	PSO1 & PSO2
CO 2	Design websites using various Angular features including directives, components and services	K2, K3, K4	PSO2
CO 3	Compute and build applications using Node.JS along with the combination of Bootstrap	K2 , K4	PSO3 & PSO4
CO 4	Apply the concepts of MongoDB & MySQL, the back-end databases	K2, K3,K4 & K5	PSO1 & PSO4
CO 5	Utilize the conceptual and practical aspects of CSS Pre-processors and JSON	K2,K3,K4 & K5	PSO1 & PSO2

Mapping COs Consistency with PSOs

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

Mapping of COs with POs

CO / PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	1	3	1	1	2	1	1	1	1	1	2	1
CO 2	1	2	1	1	2	1	2	1	1	1	3	1
CO 3	1	2	1	1	2	3	1	1	1	1	3	1
CO 4	1	3	1	1	3	1	2	1	1	1	2	1
CO 5	3	2	1	1	2	2	3	1	1	1	2	1

Note: Strongly Correlated – **3** Moderately Correlated – **2**

 Weakly Correlated -**1**

COURSE DESIGNER **Forwarded By**

S. Mary Helan Felista **HOD'S Signature & Name**

S. Mary Helan Felista

(S. MARY HELAN FELISTA)