

**Osmania University**

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**Faculty of Informatics**  
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**Two years MCA Program**

**Master of Computer Applications 2022-23**  
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**Syllabi for Semesters – I and II**

**With Effect from Academic Year 2022 – 2023**

**Osmania University  
Hyderabad**

**SCHEME OF INSTRUCTION**  
**MASTER OF COMPUTER APPLICATIONS (MCA)**  
**SEMESTER- I**

SN o	Course Code	Course Title	Hours/ Week			Scheme of Examination				No of Credits
						Max Marks			Duration (hrs)	
						CIE	SEE	Total Marks	SEE	
<b>THEORY</b>			<b>L</b>	<b>T</b>	<b>P</b>					
1	PCC101	Discrete Mathematics	4	-	-	30	70	100	3	4
2	PCC102	Data Structures using C	4	-	-	30	70	100	3	4
3	PCC103	Object Oriented Programming using Java	3	1	-	30	70	100	3	4
4	PCC104	Computer Architecture	3		-	30	70	100	3	3
5	PCC105	Probability & Statistics	3	1	-	30	70	100	3	4
6	MGC106	Managerial Economics and Accountancy	3		-	30	70	100	3	3
<b>PRACTICALS</b>										
7	LCC151	Data Structures using C Lab	-	-	3	25	50	75	3	1.5
8	LCC152	Java Programming Lab	-	-	3	25	50	75	3	1.5
9	HSC153	Soft Skills Lab	-	-	2	25	50	75	3	1
			20	2	8	255	570	825	27	26

Abbreviation	Full Form	Abbreviation	Full Form
PCC	Professional Core Course	CIE	Continuous Internal Evaluation
PEC	Professional Elective Course	SEE	Semester End Evaluation
MGC	Management Course	L	Lecture
LCC	Laboratory Core Course	P	Practical

**Note : Each lab should be made with 30 students for batch**

**SCHEME OF INSTRUCTION**  
**MASTER OF COMPUTER APPLICATIONS (MCA)**  
**SEMESTER – II**

SNo	Course Code	Course Title	Hours/Week			Scheme of Examination				No of Credits
			L	T	P	Max Marks		Duration (hrs)	Cr	
<b>THEORY</b>			<b>L</b>	<b>T</b>	<b>P</b>	<b>CIE</b>	<b>SEE</b>	<b>Total Marks</b>	<b>SEE</b>	<b>Cr</b>
1	PCC 201	Operating Systems	4		-	30	70	100	3	4
2	PCC 202	Database Management System	4	-	-	30	70	100	3	4
3	PCC 203	Design and Analysis of Algorithms	3	1	-	30	70	100	3	4
4 *	PCC 204	Data Engineering with Python	4	-	-	30	70	100	3	4
5	PCC 205	Machine Learning	3	-	-	30	70	100	3	3
6	MGC 206	Operations Research	3		-	30	70	100	3	3
<b>PRACTICALS</b>										
7	LCC 251	Operating Systems Lab	-	-	3	25	50	75	3	1.5
8 *	LCC 252	Data Engineering with Python	-	-	3	25	50	75	3	1.5
9	LCC 253	Database Management Systems Lab	-	-	3	25	50	75	3	1.5
10	SIP 321	Summer Internship/ Mini Project*	-	-	-	-	-	-	-	-
			21	1	9	255	570	825	27	26.5

**\*Summer Internship/ Mini Project** : After second semester, the students are expected to do summer internship/ Mini Project and Its grade will be credited in the third semester memo after evaluation.

Abbreviation	Full Form	Abb	Full Form
PCC	Professional Core Course	CIE	Continuous Internal Evaluation
PEC	Professional Elective Course	SEE	Semester End Evaluation
HSC	Humanities and Social Science Course	L	Lecture
LCC	Laboratory Core Course	P	Practical

**Note : Each lab should be made with 30 students for batch**

**SCHEME OF INSTRUCTION**  
**MASTER OF COMPUTER APPLICATIONS (MCA)**  
**SEMESTER- III**

SNo	Course Code	Course Title	Hours/ Week			Scheme of Examination			No of Credits
						Max Marks		Duration (hrs)	
<b>THEORY</b>			<b>L</b>	<b>T</b>	<b>P</b>	<b>CIE</b>	<b>SEE</b>	<b>SEE</b>	<b>Cr</b>
1	PCC301	Software Engineering	4	-	-	30	70	3	4
2	PCC302	Computer Networks	4	-	-	30	70	3	4
3	PCC303	Data Science	3	1	-	30	70	3	4
4	PCC304	Web Technologies	3		-	30	70	3	3
5	PEC**	Professional Elective–I	3	-	-	30	70	3	3
6	PEC**	Professional Elective–II	3	-	-	30	70	3	3
<b>PRACTICALS</b>									
7	LCC351	Computer Networks Lab	-	-	3	25	50	3	1.5
8	LCC352	Software Engineering Lab	-	-	3	25	50	3	1.5
9	LCC353	Data science Lab	-	-	3	25	50	3	1.5
10	SIP321	Summer Internship/ Mini Project	-	-	-	50		-	2
			<b>20</b>	<b>1</b>	<b>9</b>	<b>305</b>	<b>570</b>	<b>27</b>	<b>27.5</b>

<b>Professional Electives</b>	<b>Course Code-PEC**</b>	<b>Professional Elective -1</b>	
	PEC311	Information Security	
	PEC312	Distributed Systems	
	PEC313	Internet of Things	
	PEC314	Information Retrieval System	
<b>Professional Electives</b>	<b>Course Code-PEC**</b>	<b>Professional Elective – II</b>	
	PEC321	Network Security	
	PEC322	Software Quality Testing	
	PEC323	Image Processing	
	PEC324	Natural Language Processing	
<b>Abbreviation</b>	<b>Full Form</b>	<b>Abbreviation</b>	<b>Full Form</b>
PCC	Professional Core Course	CIE	Continuous Internal Evaluation
PEC	Professional Elective Course	SEE	Semester End Evaluation
MGC	Management Course	L	Lecture
LCC	Laboratory Core Course	P	Practical

**SCHEME OF INSTRUCTION**

**MASTER OF COMPUTER APPLICATIONS (MCA)**

**SEMESTER- IV**

SNo	Course Code	Course Title	Hours/ Week		Scheme of Examination			No of Credits
					Max Marks		Duration (hrs)	
<b>THEORY</b>			<b>L</b>	<b>P</b>	<b>CIE</b>	<b>SEE</b>	<b>SEE</b>	<b>Cr</b>
<b>1</b>	<b>PEC**</b>	<b>Professional Elective –III</b>	<b>3</b>	<b>-</b>	<b>30</b>	<b>70</b>	<b>3</b>	<b>3</b>
<b>2</b>	<b>PEC**</b>	<b>Professional Elective –IV</b>	<b>3</b>	<b>-</b>	<b>30</b>	<b>70</b>	<b>3</b>	<b>3</b>
<b>3</b>	<b>OE**</b>	<b>Open Elective</b>	<b>2</b>	<b>-</b>	<b>30</b>	<b>70</b>	<b>3</b>	<b>2</b>
<b>PRACTICALS</b>								
<b>4</b>	<b>Proj401</b>	<b>Project Work</b>	<b>-</b>	<b>24</b>	<b>50</b>	<b>100</b>	<b>3</b>	<b>12</b>
		<b>Total</b>	<b>8</b>	<b>24</b>	<b>140</b>	<b>310</b>	<b>12</b>	<b>20</b>

## Professional Electives

<b>Course Code- PEC**</b>	<b>Professional Elective – III</b>
PEC411	Block Chain Technologies
PEC412	Big Data Analytics
PEC413	Cloud Computing
PEC413	Deep Learning

<b>Course Code- PEC**</b>	<b>Professional Elective – IV</b>
PEC421	Cyber Security
PEC422	Digital Forensics
PEC423	Optimization Techniques
PEC424	Enterprise Architecture

### **Course Code-**

### **OE\*\***

OE 431

OE 432

OE 433

OE 434

OE 435

OE 436

### **Open Elective**

Professional Ethics

Constitution of India

Disaster Management

Organization Behaviour

Intellectual Property & Cyber Law

Environmental Science

## **SIP321**

## **Summer Internship/ Mini Project \***

### **Program Description**

The Internship Program/ Mini Project allows MCA students to gain practical experience in the workplace before receiving their graduate degrees.

The internship is a required academic course. The student identifies companies willing to hire him/her on a full time basis for 6-week period (minimum required), usually in the summer. The Internship Program supervises the students and awards academic credits (2) upon successful completion of all the required assignments.

Those students who wish to do a Mini Project can use Problem statements and Data Sources from good quality sources and implement a solution. The Student will be evaluated based on the working system that is presented in Semester III of this course.

### **Intended Learning Outcomes**

Upon successful completion of the internship, you should be able to

1. Communicate a practical understanding of how a technology actually operates
2. Demonstrate the ability to integrate and apply theoretical knowledge and skills developed in various courses to real-world situations in a business organization
3. Exhibit the ability to effectively work in a professional environment and demonstrate work ethic and commitment in a work-based environment
4. Demonstrate the ability to successfully complete internship assignments.
5. Reflect on personal and professional development needs and set strategic goals for advancing along an intended career path
6. Communicate effectively in a professional environment in both English and regional language, orally and in writing.



With effect from academic year 2023-2024

## Proj401

## Project Work

Credits : 12

Instruction 24hrs per week  
CIE 50 marks

Duration of SEE 3 hours  
SEE 100 marks

Project has to be carried out by each student individually in a period of 15 weeks of duration. Students should submit a synopsis at the end of 2<sup>nd</sup> week in consultation with the Project Guide. The synopsis should consist of definition of the problem, scope of the problem and plan of action. After completion of eight weeks students are required to present a Project Seminar on the topic covering the aspects of analysis, design and implementation of the project work.

At the end of the semester the students are required to present themselves for a University Viva-voce examination. Evaluation guidelines for the award of SEE marks are mentioned in the Rules and Regulations book.

A committee consisting of two faculty members of the respective college along with a guide will evaluate the project and award CIE marks.

Each student will be required to:

1. Submit one page of synopsis on the project work for display on notice board.
2. Give a 20 minutes presentation followed by 10 minutes discussion.
3. Submit a technical write-up on the project.

At least two teachers will be associated with the Project Seminar to evaluate students for the award of CIE marks which will be on the basis of performance in all the 3 items stated above.

The project seminar presentations should include the following components of the project:

- Problem definition and specification.
- Literature survey, familiarity with research journals.
- Broad knowledge of available techniques to solve a particular problem.
- Planning of the work, preparation of bar (activity) charts, Presentation both oral and written.

Course Objectives:

The aim of the course is to

- Enhance the previous knowledge of database systems by deepening the understanding of the theoretical and practical aspects of the database technologies, and showing the need for distributed database technology to tackle deficiencies of the centralized database systems; Introduce basic principles and implementation techniques of distributed database systems
- Expose active and emerging research issues in distributed database systems and application development, Apply theory to practice by building and delivering a distributed database query engine,
- • subject to remote Web service calls. Course Outcomes: After the completion of the course, the students are expected to 1. Get familiar with the currently available models, technologies for and approaches to building distributed database systems and services; 2. Have developed practical skills in the use of these models and approaches to be able to select and apply the appropriate methods for a particular case; 3. Be aware of the current research directions in the field and their possible outcomes; 4. Be able to carry out research on a relevant topic, identify primary references, analyze them, and come up with meaningful conclusions 5. Be able to apply learned skills to solving practical database related tasks.