

M.C.A

LOCF SYLLABUS – 2025-2026

CHOICE BASED CREDIT SYSTEM

The credit based semester system provides flexibility in designing curriculum and assigning credits based on the course content and hours of teaching. The choice based credit system provides a ‘cafeteria’ type approach in which the students can take courses of their choice, learn at their own pace, undergo additional courses and acquire more than the required credits, and adopt an interdisciplinary approach to learning. Our College have has moved to CBCS and implemented the grading system.

OUTCOME-BASED EDUCATION (OBE)

LEARNING OUTCOME-BASED CURRICULUM FRAMEWORK (LOCF)

The fundamental premise underlying the learning outcomes-based approach to curriculum planning and development is that higher education qualifications are awarded on the basis of demonstrated achievement of outcomes (expressed in terms of knowledge, understanding, skills, attitudes and values) and academic standards expected of graduates of a programme of study. Learning outcomes specify what graduates completing a particular programme of study are expected to know, understand and be able to do at the end of their programme of study. The expected learning outcomes are used as reference points that would help formulate graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes which in turn will help in curriculum planning and development, and in the design, delivery and review of academic programmes. They provide general guidance for articulating the essential learnings associated with programmes of study and courses with in a programme, maintain national standards and international comparability of learning outcomes and academic standards to ensure global competitiveness, and to facilitate student/graduate mobility and provide higher education institutions an important point of reference for designing teaching- learning strategies, assessing student learning levels, and periodic review of programmes and academic standards.

Some important aspects of the Outcome Based Education

Course: is defined as a theory, practical or theory cum practical subject studied in a semester.

Course Outcomes (COs): are statements that describe significant and essential learning that learners have achieved, and can reliably demonstrate at the end of a course. Generally three or more course outcomes may be specified for each course based on its weightage.

Programme: is defined as the specialization or discipline of a Degree.

Programme Outcomes (POs): Programme outcomes are narrower statements that describe what students are expected to be able to do by the time of graduation. POs are expected to be aligned closely with Graduate Attributes.

Programme Specific Outcomes (PSOs): PSOs are what the students should be able to do at the time of graduation with reference to a specific discipline.

Some important terminologies repeatedly used in LOCF.

Core Courses (CC) A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course. These are the courses which provide basic understanding of their main discipline. In order to maintain a requisite standard certain core courses must be included in an academic program. This helps in providing a universal recognition to the said academic program.

Discipline Specific Elective Courses (DSE) Elective course may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective (DSE). These courses offer the flexibility of selection of options from a pool of courses. These are considered specialized or advanced to that particular programme and provide extensive exposure in the area chosen; these are also more applied in nature.

Generic Elective Courses An elective course chosen generally from an **unrelated discipline/subject**, with an intention to seek exposure is called a Generic Elective. Generic Elective courses are designed for the students of **other disciplines**. Thus, as per the CBCS policy, the students pursuing particular disciplines would have to opt Generic Elective courses offered by other disciplines, as per the basket of courses offered by the college. The scope of the Generic Elective (GE) Courses is positively related to the diversity of disciplines in which programmes are being offered by the college.

Non Major Elective (NME): A student shall choose at least two Non-major Elective Courses (NME) from outside his/her department.

Skill Enhancement Courses (SECs) These courses focus on developing skills or proficiencies in the student, and aim at providing hands-on training. Skill enhancement courses can be opted by the students of any other discipline, but are highly suitable for students pursuing their academic programme. These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge.

Field Study/Industrial Visit/Case Study: It has to be completed during the fifth semester of the degree programme. Credit for this course will be entered in the fifth semester's marks statement.

Internship: Students must complete internship during summer holidays after the fourth semester. They have to submit a report of internship training with the necessary documents and have to appear for a viva-voce examination during fifth semester. Credit for internship will be entered in the fifth semester's mark statement.

Extra Credit Courses: In order to facilitate the students, gaining knowledge/skills by attending online courses

MOOC, credits are awarded as extra credits, the extra credit are at three semesters after verifying the course completion certificates. According to the guidelines of UGC, the students are encouraged to avail this option of enriching their knowledge by enrolling themselves in the Massive Open Online Courses (MOOC) provided by various portals such as SWAYAM, NPTEL etc.

Post graduate Programme:

Programme Pattern: The Post Graduate degree programme consists of FIVE vital components. They are as follows:

Part –A : Core Course (Theory) Project

Part-B (i) : Elective courses

Part-B (ii) : Non Major Elective, Soft Skills, Professional Competency course

Part-B (iii) : Internship

Part –C : Extension activity

EXAMINATION

Continuous Internal Assessment (CIA): PG - Distribution of CIA Marks

Passing Minimum: 50 % Assignments – 3 = 30% Tests- 2= 50%

Seminar = 10 % Attendance = 10 %

Question Paper Pattern

Part A:

Part A 1 (10X1=10 marks)

One word question/ Fill in/ True or False/ Multiple Choice Questions

Two Questions from Each unit

Part A 2 (5X2=10 marks)

Match the following/ Short Answers

One question from Each unit

Total Marks – 20

Part B: (5X5=25 marks) Paragraph Answers

Either/ or type, One Questions from each unit

Part C: (10X3=30)

Essay Type Answers

Answer 3 out of 5 Questions

One Question from each unit

Part A: K1 Level

Part B: K2, K3 and K4 Level

Part C: K5 and K6 Level

Knowledge levels for assessment of Outcomes based on Blooms Taxonomy

S. No.	Level	Parameter	Description
1	K1	Knowledge/Remembering	It is the ability to remember the previously learned
2	K2	Comprehension/ Understanding	The learner explains ideas or concepts
3	K3	Application/Applying	The learner uses information in a new way
4	K4	Analysis/Analysing	The learner distinguishes among different parts
5	K5	Evaluation/Evaluating	The learner justifies a stand or decision
6	K6	Synthesis /Creating	The learner creates a new product or point of view

WEIGHTAGE of K – LEVELS IN QUESTION PAPER

(Cognitive Level) K- LEVELS →	Lower Order Thinking			Higher Order Thinking			Total
	K1	K2	K3	K4	K5	K6	
END SEMESTER EXAMINATIONS (ESE)	20	25			30		75
Continuous Internal Assessment (CIA)	20	25			30		75

QUESTION PATTERN FOR SEMESTER EXAMINATION/ Continuous Internal Assessment		
PART		MARKS
PART –A I. (No choice ,One Mark) TWO questions from each unit (10x1 =10) II. (No choice ,Two Mark) ONE question from each unit (5x2 =10)		20
PART -B (Either/ or type ,5-Marks) ONE questions from each unit (5x5 =25)		25
PART -C (3 out of 5) (10 Marks) ONE question from each unit (3x10 =30)		30
Total		75

BLUE PRINT OF QUESTION PAPER FOR SEMESTER EXAMINATION							
DURATION: 3. 00 Hours.				Max Mark : 100			
K- LEVELS	K1	K2	K3	K4	K5	K6	Total Marks
PART							
PART –A (One Mark, No choice) (10x1 =10)	10						10
(2-Marks, No choice) (10x2=20)	10						10
PART –B (5- Marks) (Either/or type) (5x5=25)		5	10	10			25
PART -C (10 Marks) (3 out of 5) (3x10=30)					20	10	30
Courses having only K5,K6 levels, K5 level- 3 Questions, K6 level- 2 Questions (One K6 level question is compulsory)							
Total	20	05	10	10	20	10	75

EVALUATION

GRADING SYSTEM

Once the marks of the CIA and the end-semester examination for each of the courses are available, they will be added and converted as final mark. The marks thus obtained will then be graded as per the scheme provided in Table-1.

Grade Point Average (GPA) will be calculated from the first semester onwards for all semester. From the second semester onwards, the total performance within a semester and the continuous performance starting from the first semester are indicated by semester Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA) , respectively. These two are calculated by the following formulae:

$GPA = \frac{\sum_{i=1}^n C_i G_i}{\sum_{i=1}^n C_i}$	$WAM (Weighted Average Marks) = \frac{\sum_{i=1}^n C_i M_i}{\sum_{i=1}^n C_i}$
Where, C_i is the Credit earned for the Course i G_i is the Grade Point obtained by the student for the Course i M_i is the marks obtained for the course i and n is the number of Courses Passed in that semester.	

CGPA: Average GPA of all the Courses starting from the first semester to the current semester.

CLASSIFICATION OF FINAL RESULTS:

- For each of the first three parts, there shall be separate classification on the basis of CGPA, as indicated in Table-2.
- For the purpose of declaring a candidate to have qualified for the Degree of Bachelor of Arts/Science/Commerce/Management as Outstanding/Excellent/Very Good/Good/Above Average/Average, the marks and the corresponding CGPA earned by the candidate in Part-III alone will be the criterion, provided the candidate has secured the prescribed passing minimum in the all the Five parts of the Programme.

- iii) Grade in Part –IV and Part-V shall be shown separately and it shall not be taken into account for classification.
- iv) A Pass in PART- V will be mandatory although the marks will not count for the calculation of the CGPA.
- v) Absence from an examination shall not be taken an attempt.

Table-1: Grading of the Courses - UG

Marks Range	Grade Point	Corresponding Grade
90 and above	10	O
80 and above and below 90	9	A+
70 and above and below 80	8	A
60 and above and below 70	7	B+
50 and above and below 60	6	B
40 and above and below 50	5	C
Below 40	0	RA

Table- 2: Grading of the Courses - PG

Marks Range	Grade Point	Corresponding Grade
90 and above		O
80 and above and below 90	9	A+
70 and above and below 80	8	A
60 and above and below 70	7	B+
50 and above and below 60	6	B
Below 50	0	RA

Table-3: Final Result

CGPA	Corresponding Grade	Classification of Final Result
9.00 and above	O	Outstanding
8.00 to 8.99	A+	Excellent
7.00 to 7.99	A	Very Good
6.00 to 6.99	B+	Good
5.00 to 5.99	B	Above Average
4.00 to 4.99	C	Average
Below 4.00	RA	Re-appearance

Vision

- To empower the women students by providing excellent software engineering skills to meet the global needs of IT industry

Mission

- providing quality education in computer science and its applications by updated knowledge through technology transfer
- Enhancing professional skills to satisfy the needs of the Software industries and Technical skills of the individual towards competitive world.

PROGRAMME OUTCOMES FOR M.C.A., DEGREE PROGRAMMES

PO.No	Programme Outcomes (Upon completion of the M.C.A.,Degree Programme, the Post Graduate will be able to)
PO-1	Disciplinary Knowledge: demonstrate in-depth knowledge and understanding of theories, policies, and practices in one or more disciplines that form a part of a Post Graduate program of study in Master of Computer Applications.
PO-2	Critical Thinking and Problem Solving: apply analytic thought to a body of knowledge, analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence, identify relevant assumptions or implications, formulate coherent arguments, critically evaluate practices, policies and theories by following scientific approach to knowledge development: solve problems and extrapolate the same to real life situation
PO-3	Information/digital literacy and Communication Skills: use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources, and use appropriate software for analysis of data: communicate thoughts and ideas analytically and effectively in writing and orally using appropriate media, and present complex information in a clear and concise manner to different groups..
PO-4	Research-related skills: conduct independent inquiry in a chosen scientific discipline, demonstrate sense of inquiry and capability for asking relevant/appropriate questions, problematising, synthesizing and articulating; recognize cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; plan, execute and report the results of an experiment or
PO-5	Scientific reasoning and Reflective Thinking: analyse, interpret and draw conclusions from quantitative/qualitative data and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective; critically and sensibly evaluate life experiences, with self awareness and reflexivity of both self and society.
PO-6	Multidisciplinary Approach, Innovation and Entrepreneurship: propose novel ideas of interdisciplinary approach in providing better solutions and new ideas for the sustainable developments; identify opportunities, entrepreneurship vision and use of innovative ideas to create value and wealth for the betterment of the individual and society.
PO-7	Moral and ethical awareness/reasoning: embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work, demonstrate the ability to identify ethical issues related to one's work, avoid unethical behavior such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights, appreciate environmental and sustainability issues, and adopt objective, unbiased and truthful actions in all aspects of work.
PO-8	Self directed Learning: work independently, identify appropriate resources required for age a project till completion.
PO-9	Lifelong Learning: engage in continuous learning for professional growth and development, acquire knowledge and skills, adapt to changing environment and to changing trades and demands of work place through knowledge/skill development/reskilling.
PO-10	Multicultural Competence, Social Interaction and Effective Citizenship: understand the values and beliefs of multiple cultures, global perspectives, engage and interact respectfully with diverse groups and elicit views of others, mediate disagreements and help reach conclusions in group settings, and demonstrate empathetic social concern and equity centered national development

PROGRAMME SPECIFIC OUTCOME (PSO)

PSO No.	Program Specific Outcomes (<u>M.C.A.,DEGREE</u>)
PSO1	Design, Develop, Analyse, and implement systems and to deliver the application Software.
PSO2	Pursue the research in computer science and computer applications.
PSO3	Develop techniques for independent and lifelong learning in computer application.
PSO4	Analyze and Plan systematic planning, development, testing and executing of complex computing applications in Social Media and Analytics, Web Application Development and Data Interpretations.
PSO5	Utilize current technologies, skills and models for computing practice
PSO6	Formulate diverse software engineering practices , project management , work as a team leader/team member and communicate efficiently with team in developing software of multidisciplinary nature.
PSO7	Appraise emerging technologies and provide innovative solutions to real time problems within the constraints such as financial, environmental, social and Ethical.

M.C.A SYLLABUS

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Syllabus



2025-2026

Programme Code: 2PSMCA

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE (AUTONOMOUS)

(Affiliated to Bharathidasan University, Tiruchirappalli)
(Accredited by NAAC) | (An ISO 9001:2015 Certified Institution)

**Sundarakkottai, Mannargudi-614016,
Thiruvarur(Dt.), Tamil Nadu, India.**

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(AUTONOMOUS)

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SUNDARAKKOTTAI, MANNARGUDI-614016, TAMILNADU, INDIA.

MASTER OF COMPUTER APPLICATIONS COURSE STRUCTURE UNDER CBCS

(For the candidates admitted in the academic year 2025-2026)

LEARNING OUTCOMES BASED CURRICULUM FRAME WORK (CBCS-LOCF)

ELIGIBILITY: Those who have completed any degree with Mathematics as one of the core subjects in degree or in +2 levels.

Sem.	Part	Nature of the Course	Course Code	Title of the Course	Ins. Hrs / Week	L	T	P	O	Credit	Exam	Marks		Total
												Int.	Ext.	
I	Part A	Core Course(CC)-I	P25CA101	Discrete Mathematics	5	4	1	-	-	4	3	25	75	100
		Core Course(CC)-II	P25CA102	Linux and Shell Programming	5	4	1	-	-	4	3	25	75	100
		Core Practical(CP)-I	P25CA103P	Linux and Shell Programming Lab	5	2	-	3	-	3	3	25	75	100
		Core Practical(CP)-II	P25CA104P	Python Programming Lab	5	2	-	3	-	3	3	25	75	100
	Part B(i)	Elective Course(EC)-I	P25CAE11A/ P25CAE11BP/ P25CAE11C/ P25CAE11DP/	Dot Net Technologies /Dot Net Technologies Lab/Architecture and Frameworks/ Architecture and Frameworks Lab	4	3	1	-	-	3	3	25	75	100
		Elective Course(EC)-II	P25CAE12A/ P25CAE12BP/ P25CAE12C/ P25CAE12DP	Cryptography and Network Security / Cryptography and Network Security Lab / Soft Computing/ Soft Computing Lab	4	3	1	-	-	3	3	25	75	100
	Part B(ii)	Non Major Elective (NME)-I			2	2	-	-	-	2	3	25	75	100
		Total			30	20	4	6	-	22	-		-	700
II	Part A	Core Course(CC)-III	P25CA205	Data Structures and Algorithms	5	4	1	-	-	4	3	25	75	100
		Core Course(CC)-IV	P25CA206	Accounting and Financial Management	5	4	1	-	-	4	3	25	75	100
		Core Practical(CP)-III	P25CA207P	Data Structures and Algorithms Lab	5	2	-	3	-	3	3	25	75	100
		Core Practical(CP)-IV	P25CA208P	Big Data Analytics Lab	5	2	-	3	-	3	3	25	75	100
	Part B(i)	Elective Course(EC)-III	P25CAE23A/ P25CAE23BP/ P25CAE23C/ P25CAE23DP	Network Protocols / Network Protocols Lab/ Computer Vision/ Computer Vision Lab	4	3	1	-	-	3	2	25	75	100
		Elective Course(EC)-IV	P25CAE24A/ P25CAE24BP/ P25CAE24C/ P25CAE24DP	Block Chain Technologies/ Block Chain Technologies Lab/Solution Architecture/Solution Architecture Lab	4	3	1	-	-	3	3	25	75	100
	Part B(ii)	Non Major Elective(NME)-II			2	2	-	-	-	2	3	25	75	100
	Part B(iii)	Internship /Industry activity			-	-	-	-	-	-	-	-	-	-
		Total			30	20	4	6	-	22	-		-	700

III	Part A	Core Course(CC)–V	P25CA309	Java Programming	6	5	1	-	-	5	3	25	75	100
		Core Industry Module		Full Stack Development	6	5	1	-	-	3	3	25	75	100
			P25CAI31											
		Core Practical(CP)–V	P25CA310P	Java Programming Lab	6	3	-	3	-	3	3	25	75	100
	Core Practical(CP)–VI	P25CA311P	Full Stack Development Lab	6	3	-	3	-	3	3	25	75	100	
	Part B (i)	Elective Course(EC)–V	P25CAE35A/ P25CAE35BP/ P25CAE35C/ P25CAE35DP	Open Source Technologies / Open Source Technologies Lab / Mobile Computing / Mobile Computing Lab	4	3	1	-	-	3	3	25	75	100
Part B (ii)	Skill Enhancement course	P25SECA31	Managerial Skills	2	2	-	-	-	2	3	25	75	100	
Part B (iii)	Internship/ Industry activity	P25CAIA31			-	-	-	-	-	2	-	-	-	-
		Total			30	21	3	06	-	21	-	-	-	600
IV	Part A	Core Course(CC)-VI	P25CA412	Research Methodology	6	5	1	-	-	5	3	25	75	100
		Core Course(CC)-VII	P25CA413	Machine Learning	5	4	1	-	-	5	3	25	75	100
			P25CA414P	Machine Learning Lab	5	2	-	3	-	3	3	25	75	100
	Core Project	P25CAPW	Project	8	2	-	6	-	7	3	25	75	100	
	Part B(i)	Elective Course(EC)–VI (Industry Entrepreneurship)	P25CAE46A/ P25CAE46BP/ P25CA46C/ P25CA46DP	High Performance Computing/ High Performance Computing lab/Social Networking/Social Networking Lab	4	3	1	-	-	3	3	25	75	100
	Part B(ii)	Professional Competency Course	P25PCCA41	Digital Marketing	2	2	-	-		2	3	25	75	100
	Part C		P25CAEA	Extension Activity	-	-	-	-		1	-	-	-	
			TOTAL	30	18	3	9	-	26	-	-	-	600	
			GRAND TOTAL	120	80	14	26	-	91	-	-	-	2600	
	*Extra credit		MOOC	-	-	-	-	-	2	-	-	-		
			/SWAYAM/NPTEL											
			Value Added											
			Course											
			(At least one per year)											

Student submit report of Industrial Internship Program after completion during summer.

S.No	Course Component	No. of Courses	Total Credits
1	Core Courses	7	31
2	Core Practical	7	21
3	Core Project	1	7
4.	Core Industry Module	1	3
4	Elective Courses	6	18
5	Skill Enhancement Course	1	2
6	Professional Competency Course	1	2
7	Non major Elective	2	4
8	Internship	1	2
9	Extension Activity	1	1
	Total	28	91

S.no	Particulars	CIA	ESE
1.	Theory	25	75
2.	Practical	25	75

Separate Passing Minimum is prescribed for Internal and External marks

FOR THEORY

1. The passing minimum for CIA shall be 40% out of 25 marks [i.e.10marks]
2. The passing minimum for ESE shall be 40% out of 75 marks [i.e.30marks]
3. The passing minimum not less than 50% in the aggregate

FOR PRACTICAL

1. The passing minimum for CIA shall be 40% out of 25 marks [i.e.10marks]
2. The passing minimum for ESE shall be 40% out of 75marks [i.e.30marks]
3. The passing minimum not less than 50% in the aggregate.

NON MAJOR ELECTIVE (NME) OFFERED BY THE DEPARTMENT

S.NO	SEMESTER	COURSE CODE	NON MAJOR ELECTIVE COURSE(EC)
1	I	P25NMECA11	Data Mining and Data Warehousing
2.	II	P25NMECA22	Python Programming

ELECTIVE COURSES (EC)

S.NO	SEM	COURSE CODE	ELECTIVE COURSE
1.	I	P25CAE11A P25CAE11BP P25CAE11C P25CAE11DP	Elective I Dot Net Technologies Dot Net Technologies Lab Architecture and Frameworks Architecture and Frameworks Lab
		P25CAE12A P25CAE12BP P25CAE12C P25CAE12DP	Elective II Cryptography And Network Security Cryptography And Network Security Lab Soft Computing Soft Computing Lab
2.	II	P25CAE23A P25CAE23BP P25CAE23C P25CAE23DP	Elective III Network Protocols Network Protocols Lab Computer Vision Computer Vision Lab
		P25CAE24A P25CAE24BP P25CAE24C P25CAE24DP	Elective IV Block Chain Technologies Block chain Technologies Lab Solution Architecture Solution Architecture Lab
3	III	P25CAE35A/ P25CAE35BP/ P25CAE35C/ P25CAE35DP	Elective V Open Source Technologies Open Source Technologies Lab Mobile Computing Mobile Computing Lab
4.	IV	P25CAE46A/ P25CAE46BP/ P25CA46C/ P25CA46DP	Elective VI High Performance Computing High Performance Computing Lab Social Networks Social Networks lab



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COLLEGE
(AUTONOMOUS) SUNDARAKKOTTAI,
MANNARGUDI-614016.**

(For the Candidates admitted in the academic year 2025–2026)

**DEPARTMENT OF COMPUTER APPLICATIONS
MASTER OF COMPUTER APPLICATIONS (MCA)**

Semester: III-CC-V Java Programming

Ins. Hrs./Week:6

Course Credit:5

Course Code: P25CA309

UNIT - I : Introduction

(18 Hours)

Object Oriented Programming- Data Types, Variables, and Arrays: Primitive Types-Literals Variables
- Type Conversion and Casting- Arrays-Operators: Control Statements-Classes and Methods –
Inheritance- Exception Handling.

UNIT -II : String Handling

(18 Hours)

The String Constructors - String Length - Special String Operations - Character Extraction - String
Comparison- Searching Strings - Modifying a String - Input/ Output: The I/O Classes and Interfaces – File
- Byte Streams - Character Streams.

UNIT -III : Applet Class

(18 Hours)

Basic Architecture -Applet Skeleton - Display methods - Status Window – Passing
Parameters. Introducing GUI Programming with Swing– Introducing Swing - Swing Is Built on the
AWT- Two Key Swing Features - The MVC Connection - Components and Containers - The Swing
Packages - A Simple Swing Application - Exploring Swing.

UNIT- IV : Java Beans

(18 Hours)

Introduction - Advantages of Beans – Introspection - The JavaBeans API - A Bean Example. Servlets:
Life Cycle Simple Servlet- Servlet API-Packages-Cookies session tracking.

UNIT - V: Network Programming

(18 Hours)

Network Programming: Working with URLs- Working with Sockets - Remote Method
Invocation. Introduction to Database Management Systems - Tables, Rows, and Columns - Introduction
to the SQL SELECT Statement - Inserting Rows - Updating and Deleting Existing Rows - Creating
and Deleting Tables - Creating a New Database with JDBC - Scrollable Result Sets.

Total Lecture Hours : 90

COURSE OUTCOMES

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

1. Understand the Object Oriented Program including classes and methods; inheritance and exception handling
2. Complete comprehension of String functions and I/O Streams
3. Creation of graphical representation using Applet
4. Application of Servlets for designing Web based applications
5. Usage of JDBC connectivity and implementation of the concept to get desired results from database

TEXT BOOK(S)

1. Herbert Schildt, “Java the Complete Reference”, 9th edition, McGraw Hill Publishing Company Ltd, New Delhi, 2017.
2. Tony Goddis, “Starting out with Java from Control Structures Through Objects” 6th Edition, Pearson Education Limited, 2016

REFERENCE BOOK(S)

1. Herbert Schildt, Dale Skrien, “Java Fundamentals – A Comprehensive Introduction”, TMGH Publishing Company Ltd, New Delhi, 2013
2. John Dean, Raymond Dean, “Introduction to Programming with JAVA – A Problem Solving Approach”, TMGH Publishing Company Ltd, New Delhi, 2012.
3. Schildt, Herbert. *Java: The Complete Reference*. 11th ed., McGraw-Hill Education, 2018.
4. Horstmann, Cay S., and Gary Cornell. *Core Java Volume I: Fundamentals*. 11th ed., Prentice Hall, 2018.
5. Deitel, Paul, and Harvey Deitel. *Java: How to Program*. 11th ed., Pearson, 2017.

E-RESOURCES

1. <https://docs.oracle.com/javase/tutorial/>
2. <https://www.codecademy.com/learn/learn-java>
3. <https://www.coursera.org/specializations/java-programming>
4. <https://stackify.com/java-tutorials/>
5. <https://www.w3schools.com/java/>

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO5	PSO6	PSO7
CO1	3	3	3	3	3	3		2		2	3	2	2	3	3		3
CO2	3	3	3	3	3	3		2		3	3	2	2	3	2	3	
CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3
			S-Strong (3)						M-Medium (2)						L-Low (1)		

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(AUTONOMOUS)**



SUNDARAKKOTTAI, MANNARGUDI - 614016.

(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS (MCA)

Semester: III-Core Industry Module – Full Stack Development

Ins. Hrs./Week: 6

Course Credit: 3

Course Code: P25CAI31

UNIT – I web Development Basics

(18 Hours)

Web Development Basics: Web development Basics - HTML & Web servers Shell - UNIX CLI Version

Control - Git & Github HTML, CSS

UNIT - II Frontend Development:

(18 Hours)

Frontend Development Javascript basics OOPS Aspects of JavaScript Memory usage and Functions in JS AJAX for data exchange with server jQuery Framework jQuery events, UI components etc. JSON data format.

UNIT - III REACT JS:

(18 Hours)

Introduction to React React Router and Single Page Applications React Forms, Flow Architecture and IT Introduction to Redux More Redux and Client-Server Communication

UNIT- IV Java Web Development:

(18 Hours)

JAVA PROGRAMMING BASICS, Model View Controller (MVC) Pattern MVC Architecture using Spring RESTful API using Spring Framework Building an application Using Maven

UNIT - V Databases & Deployment:

(18 Hours)

Relational schemas and normalization Structured Query Language (SQL) Data persistence using Spring JDBC Agile development principles and deploying application in Cloud

Total Lecture Hours: 90

COURSE OUTCOMES

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

1. Develop a fully functioning website and deploy on a web server.
2. Gain Knowledge about the front end and back end Tools
3. Find and use code packages based on their documentation to produce working results in a project.
4. Create web pages that function using external data.
5. Implementation of web application employing

TEXT BOOK(S)

1. Web Design with HTML, CSS, JavaScript and JQuery Set Book by Jon Duckett Professional
JavaScript for Web Developers Book by Nicholas C. Zakas
2. Learning PHP, MySQL, JavaScript, CSS & HTML5: A Step-by-Step Guide to Creating Dynamic Websites by Robin Nixon
3. Full Stack JavaScript: Learn Backbone.js, Node.js and MongoDB. Copyright © 2015 BYAZAT MARDAN

REFERENCE BOOK(S)

1. Full-Stack JavaScript Development by Eric Bush.
2. Mastering Full Stack React Web Development Paperback – April 28, 2017 by Tomasz Dyl , Kamil Przeorski , Maciej Czarnecki

E-RESOURCES

1. <https://github.com/bmorelli25/Become-A-Full-Stack-Web-Developer>
2. <https://www.coursera.org/courses?query=full%20stack%20web%20development>
3. <https://bayone.com/best-resources-for-fullstack-development/>
4. <https://www.boardinfinity.com/blog/best-resources-to-learn-full-stack-development/>
5. <https://www.scribd.com/document/833719865/Free-Resources-to-Become-Full-Stack-Web-Developer>

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	3	3	3	3	3	3		2		2	3	2	2	3	3		3
CO2	3	3	3	3	3	3		2		3	3	2	2	3	2	3	
CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

M-Medium (2)

L-Low (1)



**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)**

SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS (MCA)

Semester: III-CP-V- Java Programming Lab

Ins. Hrs./Week:6

Course Credit:3

Course Code:P25CA310P

LIST OF EXPERIMENTS:

1. Write a java program to find the factorial of a given number.
2. Write a Java program to perform arithmetic operations using Switch Case.
3. Write a Java program to find the largest of three numbers.
4. Write a Java program to check whether a number is prime or not.
5. Write a Java program to check whether a number is a palindrome.
6. Write a Java program to find the sum of elements in an array.
7. Write a Java program to perform matrix addition.
8. Write a Java program to reverse a string.
9. Write a Java program to implement method overloading.
10. Write a Java program to implement method overriding.

Total Lecture Hours:90

COURSE OUTCOMES

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

1. Implement classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem.
2. Apply Applets and Swing programs
3. Develop Servlets and JSP for creating Web based applications using JDBC
4. Complete comprehension of String functions and I/O Streams
5. Application of Servlets for designing Web based applications

TEXT BOOK(S)

1. Herbert Schildt, “Java the Complete Reference”, 10th edition, McGraw Hill Publishing Company Ltd, New Delhi, 2017.
2. Tony Goddis, Starting out with Java from Control Structures Through Objects” 6th Edition, Pearson Education Limited, 2016

REFERENCE BOOK(S)

1. Herbert Schildt, Dale Skrien, “Java Fundamentals – A Comprehensive Introduction”, TMGH Publishing Company Ltd, New Delhi, 2013
2. John Dean, Raymond Dean, “Introduction to Programming with JAVA – A Problem Solving Approach”, TMGH Publishing Company Ltd, New Delhi, 2012.
3. Schildt, Herbert. *Java: The Complete Reference*. 11th ed., McGraw-Hill Education, 2018.
4. Horstmann, Cay S., and Gary Cornell. *Core Java Volume I: Fundamentals*. 11th ed., Prentice Hall, 2018.
5. Deitel, Paul, and Harvey Deitel. *Java: How to Program*. 11th ed., Pearson, 2017

E-RESOURCES

1. <https://docs.oracle.com/javase/tutorial/>
2. <https://www.codecademy.com/learn/learn-java>
3. <https://www.coursera.org/specializations/java-programming>
4. <https://stackify.com/java-tutorials>
5. <https://www.w3schools.com/java/>

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	3	3	3	3	3	3		2		2	3	2	2	3	3		3
CO2	3	3	3	3	3	3		2		3	3	2	2	3	2	3	
CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

M-Medium (2)

L-Low (1)



**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S
COLLEGE (AUTONOMOUS)**

SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS (MCA)

Semester: **III-CP-VI** –Full Stack Development Lab

Ins. Hrs./Week:6

Course Credit:3

Course Code: P25CA311P

LIST OF EXPERIMENTS

1. Write a program to create a simple webpage using HTML.
2. Write a program to create a website using HTML CSS and JavaScript?
3. Write a program to build a Chat module using HTML CSS and JavaScript?
4. Write a program to create a simple calculator Application using React JS
5. Write a program to create a voting application using React JS
6. Write a program to create and Build a Password Strength Check using JQuery.
7. Write a program to create and Build a star rating system using JQuery.
8. Create a Content Management System (CMS)
9. Develop a Grocery Delivery Application
10. Create a Project Management Application

Total Lecture Hours:90

COURSE OUTCOMES

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

1. Develop a fully functioning website and deploy on a web server.
2. Gain Knowledge about the front end and back end Tools
3. Find and use code packages based on their documentation to produce working results in a project.
4. Create web pages that function using external data.
5. Implementation of web application employing

TEXT BOOK(S)

1. Web Design with HTML, CSS, JavaScript and jQuery Set, Jon Duckett, John Wiley & Sons, 2014.
2. Professional JavaScript for Web Developers, Nicholas C. Zakas, Wrox Press, 2023.
3. Learning PHP, MySQL, JavaScript, CSS & HTML5: A Step-by-Step Guide to Creating Dynamic Websites by Robin Nixon
4. Full Stack JavaScript: Learn Backbone.js, Node.js and MongoDB. Copyright © 2015 BY AZAT MARDAN

REFERENCE BOOK(S)

1. Full-Stack JavaScript Development by Eric Bush.
2. Mastering Full Stack React Web Development Paperback – April 28, 2017 by Tomasz Dyl, Kamil Przeorski, Maciej Czarnecki

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1. <https://github.com/bmorelli25/Become-A-Full-Stack-Web-Developer>
2. <https://www.coursera.org/courses?query=full%20stack%20web%20development>
3. <https://bayone.com/best-resources-for-fullstack-development/>
4. <https://www.boardinfinity.com/blog/best-resources-to-learn-full-stack-development/>
5. <https://www.scribd.com/document/833719865/Free-Resources-to-Become-Full-Stack-Web-Developer>

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	3	3	3	3	3	3		2		2	3	2	2	3	3		2
CO2	3	3	3	3	3	3		2		3	3	2	2	3	2	3	
CO3	3	3	3	3	3	3		2		3	3	2	2	3	2	2	2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		2

S-Strong (3)

M-Medium (2)

L-Low (1)



SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S

COLLEGE (AUTONOMOUS)

SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS (MCA)

Semester: III-EC- V-Open Source Technologies

Ins. Hrs./Week:4

Course Credit:3

Course Code:P25CAE35A

UNIT – I OPEN SOURCE & FREE SOFTWARE LICENSING:

(12 Hours)

Open Source Licensing: Basic Principles of Copyright Law – Contract and Copyright – Open Source Software Licensing – Issues with Copyrights and Patents – Open Source Definition – MIT License – BSD License – Apache License – GNU General Public License – Free and Open Source Software Development: Models of Open Source and Free Software Development – Choosing an Open Source or Free Software License

UNIT – II BASICS OF PHP PROGRAMMING:

(12 Hours)

Basics of PHP Programming: Introduction – syntax and variables – controls and functions – passing information between pages – strings – numbers – arrays, array functions and advanced array functions

UNIT – III ADVANCED FEATURES AND TECHNIQUES:

(12 Hours)

Advanced PHP Programming: Object-Oriented Programming with PHP – String and Regular Expression Functions – Filesystem and System Functions – Sessions, Cookies and HTTP – Exceptions and Error Handling

UNIT – IV PHP AND MySQL:

(12 Hours)

Why PHP and MySQL? – Server-Side Web Scripting – SQL Tutorial MySQL Database Administration – PHP/MySQL Functions – Displaying Queries in Tables – Building Forms from Queries

UNIT – V PHP &AJAX AND GITHUB HOSTING SERVICE:

(12 Hours)

PHP and AJAX: JavaScript and AJAX Client – JavaScript and DOM – XML Http Request Object – AJAX form validation – Uploading a file using AJAX – Displaying a table in AJAX – Building Pagination using PHP and AJAX Hosting Open Source Projects using Github: Introduction – Viewing Github Graphs- Editing Files – Collaborating on Pull Requests – Creating a Repository – Configuring a Repository

Total Lecturer Hours :60

COURSE OUTCOMES:

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

1. Understand the concepts, principles, and importance of Open Source Software and FOSS.
2. Analyze open source licenses, copyright, copyleft, patents, and software freedom.
3. Examine popular open source projects such as Linux, Apache, Mozilla Firefox, and Wikipedia.
4. Develop knowledge on starting, maintaining, and managing open source projects and communities.
5. Evaluate the ethical, social, and technological impact of open source software in modern computing.

TEXT BOOK(S):

1. Andrew M. St. Laurent, 'Understanding Open Source & Free Software Licensing', O'Reilly Media, 2004.
2. Tim Converse and Joyce Park, 'PHP 5 and MySQL Bible', Wiley Publishing, 2004.
3. K.Meena, R.Slvakumar,A .B.KarthickAnand Babu, Web Programming with PHP and Mysql, Himalaya Publications. Mumbai, 2012.(ISBN :978- 93 - 5051 - 581• 5)

REFERENCE BOOK(S):

1. BogdanBrinzarea-Lamandi, CristianDarie and Audra Hendrix, 'AJAX and PHP', Packt Publishing, 2009.
2. Peter Bell and Brent Beer, 'Introducing Github: a Non-Technical Guide', O'Reilly Media, 2014 6. Gordon Haff, 'How Open Source Ate Software', Apress, 2018.
3. Rao M. N., 'Fundamentals of Open Source Software', PHI Learning Pvt Ltd, 2014
4. Robin Nixon, 'Learning PHP, MySQL & JavaScript with jQuery, CSS & HTML5', O'Reilly Media, 2015.
5. Steven Holzner, 'PHP: The Complete Reference', McGraw Hill Education, 2017

E-RESOURCES:

1. https://oms.bdu.ac.in/ec/content-bucket/29-2-9-196-20241109_102410.pdf
2. https://ebooks.lpude.in/computer_application/bca/term_4/D
3. https://www.cusrinagar.edu.in/FolderManager/Syllabus/OpenSource_OpenSourceTechnologies.pdf
4. https://howisonlab.github.io/open_source_software_course/current/oss_syllabus.html
5. <https://www.bu.edu/csmet/files/2010/11/CS893-Fall-2008-Syllabus.pdf>

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI-614016.
(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS
MASTER OF COMPUTER APPLICATIONS (MCA)

Semester: III-EC-V- **Open Source Technologies Lab**

Ins. Hrs./Week: 4

Course Credit: 3

Course Code: P25CAE35BP

1. Develop a server side PHP program that displays marks, total, grade of a student in tabular format by accepting
2. user inputs for name, number and marks from a HTML form.
3. Develop a PHP program that adds products that are selected from a web page to a shopping cart.
4. Develop a PHP program to access the data stored in a mysql table.
5. Develop a PHP program interface to create a database and to insert a table into it.
6. Develop a PHP program using classes to create a table.
7. Develop a PHP program to upload a file to the server.
8. Develop a PHP program to create a directory, and to read contents from the directory.
9. Develop a shell program to find the details of an user session.
10. Develop a shell program to change the extension of a given file.
11. Create a mysql table and execute queries to read, add, remove and modify a record from that table.

Total Lecturer Hours :60

COURSE OUTCOMES:

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

1. Understand the concepts, principles, and importance of Open Source Software and FOSS.
2. Analyze open source licenses, copyright, copyleft, patents, and software freedom.
3. Examine popular open source projects such as Linux, Apache, Mozilla Firefox, and Wikipedia.
4. Develop knowledge on starting, maintaining, and managing open source projects and communities.
5. Evaluate the ethical, social, and technological impact of open source software in modern computing.

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1. Andrew M. St. Laurent, 'Understanding Open Source & Free Software Licensing', O'Reilly Media, 2004.
2. Tim Converse and Joyce Park, 'PHP 5 and MySQL Bible', Wiley Publishing, 2004.
3. K.Meena, R.Slvakumar,A .B.KarthickAnand Babu, Web Programming with PHP and Mysql, Himalaya Publications. Mumbai, 2012.(ISBN :978- 93 - 5051 - 581• 5)

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1. BogdanBrinzarea-Lamandi, CristianDarie and Audra Hendrix, 'AJAX and PHP', Packt Publishing, 2009.
2. Peter Bell and Brent Beer, 'Introducing Github: a Non-Technical Guide', O'Reilly Media, 2014 6. Gordon Haff, 'How Open Source Ate Software', Apress, 2018.
3. Rao M. N., 'Fundamentals of Open Source Software', PHI Learning Pvt Ltd, 2014
4. Robin Nixon, 'Learning PHP, MySQL & JavaScript with jQuery, CSS & HTML5', O'Reilly Media, 2015.
5. Steven Holzner, 'PHP: The Complete Reference', McGraw Hill Education, 2017

E-RESOURCES:

1. https://oms.bdu.ac.in/ec/content-bucket/29-2-9-196-20241109_102410.pdf
2. https://ebooks.lpude.in/computer_application/bca/term_4/D
3. https://www.cusrinagar.edu.in/FolderManager/Syllabus/OpenSource_OpenSourceTechnologies.pdf
4. https://howisonlab.github.io/open_source_software_course/current/oss_syllabus.html
5. <https://www.bu.edu/csmet/files/2010/11/CS893-Fall-2008-Syllabus.pdf>

MAPPING WITH PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO5	PSO6	PSO7
CO1	3	3	3	3	3	3		2		2	3	2	2	3	3		3
CO2	3	3	3	3	3	3		2		3	3	2	2	3	2	3	
CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

M-Medium (2)

L-Low (1)

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS (MCA)

Semester: III-EC -V- Mobile Computing

Ins. Hrs./Week: 4

Course Credit: 3

Course Code: P25CAE35C

UNIT-I: Introduction

(12 Hours)

Introduction – Applications – History of wireless communication – A Simplified reference model - Wireless transmission – Frequencies for radio transmission – Regulations – Signals – Antennas - Signal propagation: Path loss of radio signals - Additional signal propagation effects - Multi-path propagation – Multiplexing – Modulation

UNIT-II : Spread Spectrum

(12 Hours)

Spread spectrum – Direct sequence spread spectrum – Frequency hopping spread spectrum – Cellular systems. Medium access control: Hidden and exposed terminals – Near and far terminals SDMA, FDMA, TDMA, Fixed TDM, Classical Aloha, slotted Aloha, Carrier sense multiple access – Reservation TDMA – Multiple access with collision avoidance – Polling – CDMA – Spread Aloha multiple access.

UNIT-III : Services

(12 Hours)

GSM – Mobile services – System architecture – Radio interface – Protocols – Localization and calling – Handover – Security – New Data services. UMTS and IMT-2000 - Satellite Systems: Applications – Basics – Routing – Localization – Handover.

UNIT-IV : Wireless LAN

(12 Hours)

Wireless LAN: Infra red vs. radio transmission – Infrastructure and ad-hoc network – IEEE 802.11 – System architecture – Protocol architecture – Physics layer – Medium access control layer – MAC management – Blue tooth. Mobile network layer: Mobile IP: Goals, assumptions and requirements – entities and terminology – packet delivery – Agent discovery – Registration – Tunneling and encapsulation Recent technologies

UNIT-V: Routing Protocols

(12 Hours)

WAP: Architecture – wireless datagram Protocol, Wireless transport layer security, Wireless transaction protocol, Wireless session protocol, Wireless application environment, Mobile ad-hoc networks – MANET Characteristics – Classification of MANETs, Routing of MANETs, Proactive Routing Protocol - DSDV, Reactive Routing Protocols – DSR, AODV.

Total Lecture Hours- 60

COURSE OUTCOMES:

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

1. Understanding the basic concepts of Wireless Communication
2. Understanding the basic concepts of Spread Spectrum
3. Analyzing the concepts of Global System for Mobile Communication
4. Understanding the basic concepts of Wireless LAN
5. Analyzing the concepts of Routing Protocols in MANET

TEXT BOOK(S):

1. Jochen Schiller, "Mobile Communications", Second Edition, Pearson Education, 2013.
2. Kum KumGarg, "Mobile Computing Theory and Practice", Pearson Education, 2014.

REFERENCE BOOKS(S):

1. Rifaat A. Dayen, "Mobile Data & Wireless LAN Technologies", Prentice Hall, 1997.
2. Steve Mann and Scoot Schibli, "The Wireless Application Protocol", John Wiley & Inc., 2000.
3. Sharma, Raj Kamal. *Mobile Computing*. 2nd ed., Oxford University Press, 2012.
4. Agrawal, Dharma P., and Qing-An Zeng. *Introduction to Wireless and Mobile Systems*. 4th ed., Cengage Learning, 2015.
5. Schiller, Jochen. *Mobile Communications*. 2nd ed., Pearson Education, 2003.

E-RESOURCE(S):

1. <https://www.techtarget.com/searchmobilecomputing/definition/nomadic-computing>
2. https://www.tutorialspoint.com/mobile_computing/mobile_computing_overview.htm
3. <https://www.inderscience.com/jhome.php?jcode=ijwmc>
4. <https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=7755>
5. <https://www.interaction-design.org/literature/topics/mobile-computing>

MAPPING WITH PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO5	PSO6	PSO7
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CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

M-Medium (2)

L-Low (1)

**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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SUNDARAKKOTTAI, MANNARGUDI-614016.
(For the Candidates admitted in the academic year 2025–2026)
DEPARTMENT OF COMPUTER APPLICATIONS
MASTER OF COMPUTER APPLICATIONS (MCA)

Semester :III-EC -V- Mobile Computing Lab

Ins. Hrs./Week: 4

Course Credit: 3

Course Code: P25CAE35DP

LIST OF PROGRAMS

1. Implement the WML tags and Image using WML/J2ME.
2. Design of simple Calculator having +, -, * and / using WML/J2ME.
3. Design of Calendar for any given month and year using WML/J2ME.
4. Design a Timer to System Time using WML/J2ME.
5. Design of a simple game using WML/J2ME.
6. Animate an image using WML/J2ME.
7. Design a personal phone book containing the name, phone no., address, e-mail, etc
8. Browsing the Internet using a Mobile phone simulator.
9. Develop a Mobile application to view the live streaming using video view.
10. Develop a mobile application that makes use of any database.

Total Lab Hours-60

COURSE OUTCOMES

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

1. Apply the knowledge of mobile application development with WML/J2ME.
2. Design real life situational problems and think creatively about solutions of them.
3. Appraise the best features Programs for creating dynamic and interactive web pages using forms.
4. Create a Mobile application to view the live streaming using video view.
5. Create a mobile application that makes use of any database.

TEXT BOOK(S):

1. Jochen Schiller, "Mobile Communications", Second Edition, Pearson Education, 2013.
2. Kum Kum Garg, "Mobile Computing Theory and Practice", Pearson Education, 2014.

REFERENCE BOOKS(S):

1. Rifaat A. Dayen, "Mobile Data & Wireless LAN Technologies", Prentice Hall, 1997.
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3. Sharma, Raj Kamal. *Mobile Computing*. 2nd ed., Oxford University Press, 2012.
4. Agrawal, Dharma P., and Qing-An Zeng. *Introduction to Wireless and Mobile Systems*. 4th ed., Cengage Learning, 2015.
5. Schiller, Jochen. *Mobile Communications*. 2nd ed., Pearson Education, 2003.

E-RESOURCES:

1. <https://www.techtarget.com/searchmobilecomputing/definition/nomadic-computing>
2. https://www.tutorialspoint.com/mobile_computing/mobile_computing_overview.htm
3. <https://www.inderscience.com/jhome.php?jcode=ijwmc>
4. <https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=7755>
5. <https://www.interaction-design.org/literature/topics/mobile-computing>

MAPPING WITH PROGRAM OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PS O1	PS O2	PS O3	PS O4	PSO 5	PSO6	PSO7
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CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

M-Medium (2)

L-Low (1)



**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)**

SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2025–2026)

**DEPARTMENT OF COMPUTER APPLICATIONS
MASTER OF COMPUTER APPLICATIONS (MCA)**

Semester : III-SEC- Managerial Skills

Ins. Hrs./Week:2

Course Credit:2

Course Code: P25SECA31

UNIT-I: Thinking Strategies

(6 Hours)

Strategic thinking – meaning – questions-things included in Strategic thinking Process consideration in Strategic thinking– Strategic thinking competencies importance of Strategic thinking–characteristics of Strategic Thinkers– Points to be kept in mind in Strategic thinking. Lateral Thinking–meaning–why Lateral Thinking–when to use Lateral Thinking– Benefits of Lateral Thinking – Techniques used in Lateral Thinking – Who needs Lateral Thinking – How to use Lateral Thinking? – Conventional Vs Lateral Leaders – Questions asked by Lateral Leaders–becoming a Lateral leader

UNIT- II :Interpersonal Strategies

(6 Hours)

Conflict Resolution–meaning–points to be understood before studying conflict resolution – sources of conflict – common reactions to conflict – role of perception in conflict–steps for Conflict Resolution– Conflict handling matrix Functional and Dys functional outcome of conflict. Negotiation skills–process– styles–outcome– principles involved– negotiation model–being a negotiator–qualities of a negotiator.

UNIT- III: Implementation Strategies

(6 Hours)

Facing changes – meaning – characteristics –why changes –pace of changes – impact of resistance – Reasons for resistance – types of people in facing changes – introducing change. Facing challenges – meaning – importance –path to facing challenges – benefits of facing challenges.

UNIT- IV: Action Based Strategies

(6 Hours)

Risk taking–meaning–factors determining Risk Taking – Risk management–users of Risk Management– Steps in Risk Management. Effective decision making–meaning–approaches–methods–steps–Decision making at the work place.

UNIT-V: Behavioral Strategies

(6 Hours)

Motivation and Staying motivated–meaning–finding reason for being motivated – staying motivated at work place – staying motivated in negative work environment – staying motivated during crisis. Balancing work and life – meaning – work satisfaction – gender differences – responsibility of the employers and employees– way so balancing work and life –handling professional and personal demands–organizing your desk.

Total Lecture Hours-30

COURSE OUTCOMES:

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

1. Apply the knowledge of thinking strategies
2. Master interpersonal strategies, including conflict resolution and negotiation skills
3. Acquire implementation strategies to navigate organizational changes, overcome resistance, and effectively introduce and manage change initiatives.
4. Cultivate action-based strategies such as risk management and effective decision-making techniques to identify, assess, and mitigate risks, and make timely and well-informed decisions.
5. Enhance behavioral strategies, including motivation, resilience, and work-life balance, to stay motivated, productive, and maintain a healthy balance between personal and professional life amidst challenges.

TEXTBOOK(S):

1. Alex K. (2012) Soft Skills – Know Yourself& Know the World, S.Chand& Company LTD, RamNagar, New Delhi- 110 055. (Dr. K. Alex)

REFERENCE BOOK(S):

1. Meena. K and V.Ayothi (2013) A Book on Development of Soft Skills (Soft Skills : A Road Map to Success), P.R. Publishers& Distributors, No, B-20&21, V.M.M.Complex, Chatiram Bus Stand, Tiruchirappalli-620002
2. Emotional Quotient–Daniel Goleman
3. Power of the Plusfactor–Norman Vincent Peale.
4. The Seven Habits of Highly Effective people–Stephen Covey
5. Whetten, David A., and Kim S. Cameron. Developing Management Skills. 10th ed., Pearson, 2019.

E-RESOURCES:

1. <https://corporatefinanceinstitute.com/resources/management/management-skills/>
2. <https://www.pfh.de/en/blog/three-types-managerial-skills>
3. <https://www.betterup.com/blog/functions-of-management>
4. <https://in.indeed.com/career-advice/career-development/management-skills>
5. <https://www.coursera.org/enterprise/articles/essential-managerial-skills>

MAPPING WITH PROGRAM OUTCOMES

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PS O1	PS O2	PS O3	PS O4	PSO 5	PSO6	PSO7
CO1	3	3	3	3	3	3		2		2	3	2	2	3	3		3
CO2	3	3	3	3	3	3		2		3	3	2	2	3	2	3	
CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

M-Medium (2)

L-Low (1)

SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)



SUNDARAKKOTTAI, MANNARGUDI-614016.
(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS
MASTER OF COMPUTER APPLICATIONS (MCA)

Semester: IV-CC-VI- Research Methodology

Ins. Hrs./Week:6

Course Credit:5

Course Code:P25CA412

UNIT-I : Introduction To Research (18 Hours)

Research - Objectives-Motivation-Types of Research- Research Approaches – Process – Research Problem: Selecting the Problem-Defining the problem-Techniques. Research Design: Need-Features-Concepts-Research Design –Principles.

UNIT-II : Measurement And Scaling Techniques (18 Hours)

Measurement- Measurement Scales-Sources of Error-Tests of Sound Measurement -Techniques of Measurement-Scale Classification Bases- Rating Scales-Scale Constructing Techniques- Arbitrary Scales- Differential Scales-Summated Scales-Cumulative Scales-Factor Scales-Multidimensional Scaling

UNIT-III: Data Collection Analysis and Interpretation (18 Hours)

Collection of Primary Data : Observation Method ,Interview Method, Through Questionnaires, Through Schedules-Difference between Questionnaires and schedules-Other Methods-Collection of Secondary Data- Method for Data Collection – Guidelines for Questionnaire design – Interview technique. Processing and Analysis of Data: Processing Operations: Editing, Coding, Classification, Tabulation

UNIT IV: Hypothesis and Statistical Techniques (18 Hours)

Hypothesis-Concepts-Procedure-Flow Diagram-Power of Hypothesis Test- Test of hypothesis- Parametric Tests: "t" Test-"F" Test- "Z" Test, Chi- Square Test-Analysis of Variance. Non Parametric: Sign Test, U Test, HTest, Rank Sum Test.

UNIT - V: Research Report Writing (18 Hours)

Meaning of Report Writing Importance Interpretation – Techniques of Interpretation –Precaution in Interpretation - Significance of Report Writing- Different Steps In Writing Report – Layout of Research Report– Types – Oral Presentation – Mechanics of Writing a Research Report – Precautions for Writing Research Reports – Role of Computers in Research.

Introduction to copyediting, objectives of copyediting (correctness, consistency, coherence and clarity), editing your own paper (fixing grammar and usage errors, basic punctuation, consistent style and clear sentences), creating and using a style sheet for effective copyediting, tools available (MS Editor, Grammarly, Quillbot)

Total Lecture Hours:90

COURSE OUTCOME(S)

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

1. Understand the concepts and application area of research and research ethics.
2. Build a skills to converting the qualitative data into quantitative data
3. Execute the use of Research design techniques.
4. Enumerate the concepts and procedures of sampling, data collection, and analysis.
5. Apply the Statistical techniques for analysis of research data.

TEXT BOOK(S)

1. C.R. Kothari, Research Methodology: Methods and Techniques, Second Edition, New Age International Publishers, Chennai.
2. Vivek kumar, "Discover the editor in you" First published in India in 2023 978-93-94887-31-2, Saurabh printers ,UP.

REFERENCE BOOK(S)

1. Donald H.Mc burney and Theresa,2018, Research methods,Cengage learning,UK.
2. Mathukutty M Monippally, Badrinarayan Shankar Pawar,2008,AcademicWriting:AGuide for Management StudentsandResearchers,SagePublicationsPvt.Ltd,NewYork.
3. Ranjit Kumar,2010,ResearchMethodology:AStep-By- step Guide for Beginners, Sage Publications, NewYork.
4. Rashmi Agrawal,2013,ResearchMethodsConcepts,Process and Practice, Shipra Prakashan Publication, New Delhi.
5. SantoshGupta,2018,ResearchMethodology And Statistical Techniques, Deep &Deep Publications, New Delhi.

E-RESOURCE(S):

1. <http://arts.brainkart.com/subject/research-methodology-4/>
2. http://www2.ift.ulaval.ca/~chaib/IFT-6001/articles/RMethodology_Marzuki_1.pdf
3. <http://bbamantra.com/research-methodology/>
4. <http://arts.brainkart.com/article/introduction-of-data-collection---sources-of-data-570/>
5. <https://www.brainkart.com/menu/mba/>

MAPPING WITH PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
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CO2	3	3	3	3	3	3		2		3	3	2	2	3	2	3	
CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

M-Medium (2)

L-Low (1)



**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)**

SUNDARAKKOTTAI, MANNARGUDI - 614016.

(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS (MCA)

Semester: IV-CC-VII - Machine Learning

Ins. Hrs./Week: 6

Course Credit: 3

Course Code: P25CA413

UNIT I: Introducing Machine Learning

(18 Hours)

The Origins of Machine Learning, Uses and Abuses of Machine Learning _ Basics of Machine Learning Algorithm Model Works - Steps to apply Machine Learning - Choosing a Machine Learning Algorithm - Using Machine Learning concepts. **Managing and Understanding Data:** Data Structures, Vectors And Factors: Lists, Data frames, Matrixes and arrays - Managing Data - Exploring and Understanding Data: Exploring the Structure of Data, Exploring Numeric variables - Exploring Categorical Variables- Exploring Relationships between Variables.

UNIT II: Classification Algorithm

(18 Hours)

Lazy Learning – Classification Using Nearest Neighbors :The kNN Algorithm- Diagnosing Breast Cancer with the kNN Algorithm- Probabilistic Learning – Classification Using Naive Bayes: Basic concepts of Bayesian Methods- The Naïve Bayes Algorithm- Example – filtering Mobile Phone Spam with the Naive Bayes Algorithm. Divide and Conquer – Classification Using Decision Trees and Rules: Understanding Decision Trees- Example– Identifying Risky Bank Loans using C5.0 Decision Trees- Understanding Classification Rules- Example – Identifying Poisonous Mushrooms with Rule Learners.

UNIT III: Regression Methods

(18 Hours)

Forecasting Numeric Data – Regression Methods: Understanding Regression- Example–Predicting Medical Expenses using Linear Regression- Understanding Regression Trees and Model Trees- Example – Estimating the Quality of Wines with Regression Trees and Model Trees. Black Box Methods Neural Networks and Support Vector Machines: Understanding Neural Networks, from Biological to Artificial Neurons, Activation Functions, Network Topology, Training Neural Networks with Back propagation - Modeling the Strength of Concrete with ANNs- Understanding Support Vector Machines- Performing OCR with SVMs- Finding Patterns – Market Basket Analysis Using Association Rules: Understanding Association Rules- Example – Identifying Frequently Purchased Groceries with Association Rules

UNIT IV: Clustering

(18 Hours)

Finding Groups of Data – **Clustering with K-Means:** Understanding Clustering- The k-means Algorithm for clustering- Finding teen market segments using k-means Clustering- Evaluating Model Performance: Measuring Performance for Classification- Beyond Accuracy – other Measures of Performance, Visualizing Performance Tradeoffs.

Improving Model Performance: Tuning Stock Models for Better Performance-Using Caret for Automated Parameter Tuning- Creating a simple Tuned Model- Customizing the Tuning Process- Improving Model Performance with meta-learning- Understanding Ensembles- Bagging- Boosting- Random forests.

UNIT V: Deep Learning

(18 Hours)

Introduction to Deep Learning: Introduction to Deep Learning, Single Layer Perception Model (SLP), Multilayer Perception Model (MLP), Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Restricted Boltzmann Machines (RBMs).

Convolutional Neural Networks (CNNs): Structure and Properties of CNNs - Components of CNN Architectures- Convolutional Layer, Pooling Layer, Rectified Linear Units (ReLU) Layer, Fully Connected (FC) Layer, Loss Layer - Tuning Parameters ,Notable CNN Architectures, Regularization- Recurrent Neural Networks (RNNs): Fully Recurrent Networks, Training RNNs with Back-Propagation Through Time (BPPT)- Elman Neural Networks, Neural History Compressor, Long Short-Term Memory (LSTM), Traditional and Training LSTMs - Structural Damping Within RNNs, Tuning Parameter Update Algorithm.

Total Lecture Hours:90

COURSE OUTCOMES

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

1. To understand, impart and analyze the concepts and of Machine Learning Techniques and types of data
2. To comprehend, apply and evaluate the classification techniques for real-world applications
3. To understand, use and perform evaluation of Regression methods
4. To recognize, implement and analyze the unsupervised techniques for real-world applications
5. To understand, identify, implement and review the deep learning techniques for real-time applications.

TEXT BOOK(S):

1. Brett Lantz, “Machine Learning with R”, Addison-Wesley Packte Publishing, 2013.
2. Taweh Beysolow, “Introduction to Deep Learning Using R: A Step-by-Step Guide to Learning and Implementing Deep Learning Models Using R”, San Francisco, California, USA, 2017.

REFRENECE BOOK(S)

1. Daniel T. Larose, Chantal D. Larose, "Data mining and Predictive analytics", Second Ed., WileyPublication, 2015.
2. Bertt Lantz, "Machine Learning with R: Expert techniques for predictive modeling", 3rd Edition, April15,2019,
3. Jason Bell, "Machine Learning: Hands-On for Developers and Technical Professionals", Wiley Publication,2015.
4. **Bostock, James.** Machine Learning with Java: Build and Deploy Machine Learning and Deep Learning Models Using Java Frameworks. *Packt Publishing, 2020.*
5. **Yegulalp, Serdar.** Beginning Machine Learning with Java. *Apress, 2017.*

E-RESOURCES

1. <https://www.geeksforgeeks.org/machine-learning/>
2. <https://www.coursera.org/learn/advanced-machine-learning-algorithms>
3. <https://monkeylearn.com/machine-learning/>
4. <https://www.coursera.org/learn/machine-learning>
5. <https://developers.google.com/machine-learning/crash-course>

MAPPING WITH PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
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CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

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**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS (MCA)



Semester: IV-CP-VII -Machine Learning Lab

Ins. Hrs./Week: 6

Course Credit: 3

Course Code:P25CA414P

1. Given a dataset. Write a program to compute the Covariance, Correlation between a pair of attributes.
Extend the program to compute the Covariance Matrix and Correlation Matrix.
2. Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.
3. Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Python ML library classes can be used for this problem.
4. Write a program to implement feature reduction using Principle Component Analysis
5. Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering a few test data sets.
6. Given a dataset for classification task. Write a program to implement Support Vector Machine and estimate its test performance.
7. Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.
8. Write a program to implement K means clustering algorithm. Select your own dataset to test the program.
Demonstrate the nature of output with varying value of K.

Total Lab Hours-60

COURSE OUTCOMES

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

1. To understand, impart and analyze the concepts and of Machine Learning Techniques and types of data
2. To comprehend, apply and evaluate the classification techniques for real-world applications
3. To understand, use and perform evaluation of Regression methods
4. To recognize, implement and analyse the unsupervised techniques for real-world applications
5. To understand, identify, implement and review the deep learning techniques for real-time applications.

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1. Brett Lantz, “Machine Learning with R”, Addison-Wesley Packt Publishing, 2013.
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1. Daniel T. Larose, Chantal D. Larose, “Data mining and Predictive analytics”, Second Ed., Wiley Publication, 2015.
2. Bertt Lantz, “Machine Learning with R: Expert techniques for predictive modeling”, 3rd Edition, April 15, 2019,
3. Jason Bell, “Machine Learning: Hands-On for Developers and Technical Professionals”, Wiley Publication, 2015.
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5. **Yegulalp, Serdar.** Beginning Machine Learning with Java. *Apress*, 2017.

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1. <https://www.geeksforgeeks.org/machine-learning/>
2. <https://www.coursera.org/learn/advanced-machine-learning-algorithms>
3. <https://monkeylearn.com/machine-learning/>
4. <https://www.coursera.org/learn/machine-learning>
5. <https://developers.google.com/machine-learning/crash-course>

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

S-Strong (3)

M-Medium (2)

L-Low (1)



SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)

SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS
MASTER OF COMPUTER APPLICATIONS (MCA)

Semester: IV-EC-VI- High Performance Computing

Ins. Hrs./Week: 4

Course Credit: 3

Course Code: P25CAE46A

UNIT-I : Modern processors

(12 Hours)

Stored-program computer architecture-General purpose cache based microprocessor architecture-Memory hierarchies-Multi core processors-Multithreaded processors-Vector processors. Basic optimization techniques for serial code: Scalar profiling-Common sense optimizations-Simple measures, large impact-The role of compilers- C++ optimizations.

UNIT-II : Data access optimization

(12 Hours)

Balance analysis and light speed estimates-Storage order-Algorithm classification and access optimizations-The Jacobi algorithm-Algorithm classification and access optimizations-Sparse matrix-vector multiply. Parallel computers: Taxonomy of parallel computing paradigms-Shared-memory computers-Distributed memory computers-Hierarchical systems-Networks.

UNIT-III: Basics of parallelization

(12 Hours)

Introduction to Parallelism -Parallel scalability. Shared memory parallel programming with OpenMP: Short introduction to Open MP-Open MP-parallel Jacobi algorithm.

UNIT-IV: Efficient Open MP programming

(12 Hours)

Profiling Open MP programs-Performance pitfalls-Parallel sparse matrix-vector multiply. Locality optimizations on cc NUMA architectures: Locality of access on cc NUMA-cc NUMA optimization of sparse MVM-Placement pitfalls-cc NUMA issues with C++.

UNIT-V : Distributed-memory parallel programming with MPI

(12 Hours)

Message passing-A short introduction to MPI-MPI parallelization of a Jacobi solver. Efficient MPI programming: MPI performance tools-Communication parameters-Synchronization, serialization, contention- Reducing communication overhead-Understanding intranode point-to-point

Total Lecture Hours: 60

COURSE OUTCOMES:

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

1. Understand of the HPC and NUMA concepts
2. Design and develop a parallel programming with modern C, C++ and new version of FORTRAN
3. Apply with parallel computing
4. Develop an efficient Open MP programming
5. Evaluate an efficient MPI programming

TEXT BOOK:

1. Georg Hager, Gerhard Wellein “Introduction to High Performance Computing for Scientists and Engineers”, CRC Press, 2011. **Chapters:** 1 to 10.

REFERENCE BOOKS:

1. 1. Boyd, Danah, and Nicole B. Ellison, editors. *Social Network Sites: Definition, History, and Scholarship*. MIT Press, 2007.
2. Safko, Lon. *The Social Media Bible: Tactics, Tools, and Strategies for Business Success*. 3rd ed., Wiley, 2012.
3. Carrington, Peter J., and John Scott, editors. *The SAGE Handbook of Social Network Analysis*. SAGE Publications, 2011.
4. 1. Miriam Salpeter —Social Networking for Career Success|| Learning Express, 2011.
5. 2. Miles, Peggy, —Internet world guide to webcasting| Wiley, 2008Professionals”, Wiley Publication,2015.

E-RESOURCES

1. <https://www.meity.gov.in/content/high-performance-computinghpc#:~:text=High%20Performance%20Computing%20most%20generally,science%2C%20engineering%2C%20or%20business.>
2. <https://www.geeksforgeeks.org/high-performance-computing/>
3. <https://cloud.google.com/discover/what-is-high-performance-computing>
4. <https://www.intel.com/content/www/us/en/high-performance-computing/what-is-hpc.html>
5. <https://www.geeksforgeeks.org/high-performance-computing/>

MAPPING WITH PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
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CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

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**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)**

SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS(MCA)

Semester : IV-EC-VI- High Performance Computing Lab

Ins. Hrs./Week:2

Course Credit:2

Course Code: P25CAE46BP

LIST OF EXPERIMENTS:

1. Demo: - Access and best practices on HPC
2. Matrix multiplication with Job scheduling (PB or Slurm)
3. Vectors add with malloc shared
4. Vector add program with MPI
5. Hello world task for Multithreading with openMP
6. openMP shared memory on Host and Device
7. openMP Matrix Multiplication with parallelism and Barrier
8. openMP with Reduction on operands and aggregate functionality
9. Vector and Matrix multiplication on CUDA
10. Feed forward computing on CUDA

Total Lab Hours : 30

COURSE OUTCOMES:

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

1. Understand of the HPC and NUMA concepts
2. Design and develop a parallel programming with modern C, C++ and new version of FORTRAN
3. Apply with parallel computing
4. Develop an efficient Open MP programming
5. Evaluate an efficient MPI programming

TEXT BOOK:

1. Georg Hager, Gerhard Wellein "Introduction to High Performance Computing for Scientists and Engineers" CRC Press, 2011. **Chapters:** 1 to 10

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1. Boyd, Danah, and Nicole B. Ellison, editors. *Social Network Sites: Definition, History, and Scholarship*. MIT Press, 2007.
2. Safko, Lon. *The Social Media Bible: Tactics, Tools, and Strategies for Business Success*. 3rd ed., Wiley, 2012.
3. Carrington, Peter J., and John Scott, editors. *The SAGE Handbook of Social Network Analysis*. SAGE Publications, 2011.
4. 1. Miriam Salpeter —Social Networking for Career Success|| Learning Express, 2011.
5. 2. Miles, Peggy, —Internet world guide to webcasting|| Wiley, 2008Professionals”, Wiley Publication,2015.

E-RESOURCES

1. <https://www.meity.gov.in/content/high-performance-computinghpc#:~:text=High%20Performance%20Computing%20most%20generally,science%2C%20engineering%2C%20or%20business.>
2. <https://www.geeksforgeeks.org/high-performance-computing/>
3. <https://cloud.google.com/discover/what-is-high-performance-computing>
4. <https://www.intel.com/content/www/us/en/high-performance-computing/what-is-hpc.html>
5. <https://www.geeksforgeeks.org/high-performance-computing/>

MAPPING WITH PROGRAM OUTCOMES

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

S-Strong (3)

M-Medium (2)

L-Low (1)

**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
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SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS (MCA)



Semester : IV-EC-VI- Social Networking

Ins. Hrs./Week:4

Course Credit:3

Course Code:P25CAE46C

UNIT I: Introduction

(12 Hours)

Social Media Strategy-Important First Decisions -Websites, Blogs - RSS Feeds Mapping -Preparation - Multimedia Items Gathering Content for Blog Posts RSS Feeds & Blogs-RSS Feeds-The Feed Reader-The Feed-Options for Creating an RSS Feed-Planning Feed-Blogs-Options for Starting. Blog and RSS Feed-Feed or Blog Content-Search Engine Optimization (SEO)-Feed Burner-RSS Feed and Blog Directories-An Optimization Plan for Blog or RSS Feed

UNIT II: Building a Word Press Powered Website

(12 Hours)

Word Press as A CMS - Diversity of Word Press Sites-The Anatomy of a Word Press Site -a Brief Look at the Word Press Dashboard Planning - Site Themes Plug-ins setting up Sidebars Building Pages- Posting Blog Entries. Podcasting, Vidcasting, & Webcasting- Publishing Options for Podcast- Creating and Uploading Podcast Episodes-Publishing Podcast Optimizing Podcast- Webcasting

UNIT III: Social Networking & Micro-Blogging

(12 Hours)

Facebook-The Facebook Profile -Myspace LinkedIn-Twitter-Niche Social Networking Sites-Creating Own Social Network-Promoting Social Networking Presence- Social Bookmarking & Crowd-Sourcing - Social Bookmarking-A Social Bookmarking Strategy- Crowd-Sourced News Sites- Preparation And Tracking Progress Media Communities-Image Sharing Sites-Image Sharing Strategy-Video Sharing Sites-Video Sharing Strategy-Searching And Search Engine Placement-Connecting With Others.

UNIT IV: Widgets & Badges

(12 Hours)

Highlighting Social Web Presence-Sharing And Syndicating Content Making Site More Interactive-Promoting Products And Making Money-Using Widgets In Word Press-Widget Communities And Directories- Working Widgets Into Strategy Social Media Newsrooms-Building Social Media Newsroom - Populating The Newsroom-Social Media News Releases-Social Media Newsroom Examples. More Social Tools-Social Calendars-Social Pages Wikis-Social Search Portals-Virtual Worlds.

Unit V: Website optimization

(12 Hours)

A Website Optimization Plan-Streamlining Web Presence-An Integration Plan- Looking to the Future-Life streaming: The Future of Blogging-Distributed Social Networking-Social Ranking, Relevancy, and—Defriending-Web 3.0 or The Semantic Web-Mobile Technology- Measuring Your Success-A Qualitative Framework-A Quantitative Framework-Tools to Help You Measure-Come To Your Own Conclusions

Total Lecture Hours:60

COURSE OUTCOMES

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

1. To understand, impart and summarize the concepts of Social media, Social networking and Webcasts
2. To comprehend, design and develop a Word Press Powered Website
3. To understand, implement and perform evaluation of Social Networking and Micro-Blogging
4. To collaborate, implement and analyse the Widgets and Badges in social networking environment
5. To understand, illustrate and perform evaluation of web optimization for social networks

TEXT BOOK(S):

1. Deltina hay —A Survival Guide To social Media and Web 2.0 Optimization, Dalton Publishing, 2009

REFERENCE BOOK(S):

1. Boyd, Danah, and Nicole B. Ellison, editors. *Social Network Sites: Definition, History, and Scholarship*. MIT Press, 2007.
2. Safko, Lon. *The Social Media Bible: Tactics, Tools, and Strategies for Business Success*. 3rd ed., Wiley, 2012.
3. Carrington, Peter J., and John Scott, editors. *The SAGE Handbook of Social Network Analysis*. SAGE Publications, 2011.
4. 1. Miriam Salpeter —Social Networking for Career Success, Learning Express, 2011.
5. 2. Miles, Peggy, —Internet world guide to webcasting, Wiley, 2008 Professionals”, Wiley Publication, 2015.

E-RESOURCES

1. <https://www.techtarget.com/whatis/definition/social-networking#:~:text=Social%20networks%20are%20websites%20and,uses%20of%20the%20internet%20today>.
2. https://en.wikipedia.org/wiki/Social_networking_service
3. <https://www.psychologytoday.com/us/basics/social-networking>
4. <https://www.britannica.com/technology/social-network>
5. <https://www.investopedia.com/terms/s/social-networking.asp>

MAPPING WITH PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	3	3	3	3	3	3		2		2	3	2	2	3	3		3
CO2	3	3	3	3	3	3		2		3	3	2	2	3	2	3	
CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

M-Medium (2)

L-Low (1)



**SENGAMALATH AYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)**

SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2025–2026)

DEPARTMENT OF COMPUTER APPLICATIONS

MASTER OF COMPUTER APPLICATIONS (MCA)

Semester : IV-EC-VI- Social Networking Lab

Ins.Hrs./Week:4

Course Credit:3

Course Code:P25CAE46DP

LIST OF PROGRAMS

1. Creating and Exploring Twitter's API
2. To analyzing and visualizing tweets and tweet entities with frequency analysis
3. Creating and Exploring Facebook's Social Graph API
4. To analyzing the Facebook's Social Graph connections
5. Creating and Exploring LinkedIn API
6. To downloading LinkedIn connections as a CSV file
7. Creating and Exploring Google+ API
8. To create and querying Human Language Data with TF-IDF
9. Creating and Exploring GitHub's API
10. To analyzing GitHub interest graph

Total Lab Hours :60

TEXT BOOK:

1. Deltina hay —A Survival Guide To social Media and Web 2.0 Optimization, Dalton Publishing, 2009

REFERENCE BOOKS:

1. Boyd, Danah, and Nicole B. Ellison, editors. *Social Network Sites: Definition, History, and Scholarship*. MIT Press, 2007.
2. Safko, Lon. *The Social Media Bible: Tactics, Tools, and Strategies for Business Success*. 3rd ed., Wiley, 2012.
3. Carrington, Peter J., and John Scott, editors. *The SAGE Handbook of Social Network Analysis*. SAGE Publications, 2011.
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E-RESOURCES

1. <https://www.techtarget.com/whatis/definition/social-networking#:~:text=Social%20networks%20are%20websites%20and,uses%20of%20the%20internet%20today>.
2. https://en.wikipedia.org/wiki/Social_networking_service
3. <https://www.psychologytoday.com/us/basics/social-networking>
4. <https://www.britannica.com/technology/social-network>
5. <https://www.investopedia.com/terms/s/social-networking.asp>

MAPPING WITH PROGRAMME OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	3	3	3	3	3	3		2		2	3	2	2	3	3		3
CO2	3	3	3	3	3	3		2		3	3	2	2	3	2	3	
CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

M-Medium (2)

L-Low (1)



**SENGAMALA THAYAAR EDUCATIONAL TRUST WOMEN'S COLLEGE
(AUTONOMOUS)**

SUNDARAKKOTTAI, MANNARGUDI-614016.

(For the Candidates admitted in the academic year 2025–2026)

**DEPARTMENT OF COMPUTER APPLICATIONS
MASTER OF COMPUTER APPLICATIONS (MCA)**

Semester : IV–PCC-I Digital Marketing

Ins. Hrs./Week:2

Course Credit:2

Course Code: P25PCCA41

UNIT I -INTRODUCTION TO ONLINE MARKET

(6 Hours)

Online Market space- Digital Marketing Strategy- Components - Opportunities for building Brand Website - Planning and Creation - Content Marketing.

UNIT II-SEARCH ENGINE OPTIMISATION

(6 Hours)

Search Engine optimization - Keyword Strategy- SEO Strategy - SEO success factors -On-Page Techniques - Off-Page Techniques. Search Engine Marketing- How Search Engine works- SEM components- PPC advertising -Display Advertisement

UNIT IIIE- MAIL MARKETING

(6 Hours)

E- Mail Marketing - Types of E- Mail Marketing - Email Automation - Lead Generation – Integrating Email with Social Media and Mobile- Measuring and maximizing email campaign effectiveness .Mobile Marketing- Mobile Inventory/channels- Location based; Context based; Coupons and offers, Mobile Apps, Mobile Commerce, SMS Campaigns-Profiling and targeting

UNIT IVSOCIAL MEDIA MARKETING

(6 Hours)

Social Media Marketing - Social Media Channels- Leveraging Social media for brand conversations and buzz. Successful/ benchmark Social media campaigns. Engagement Marketing- Building Customer relationships - Creating Loyalty drivers - Influencer Marketing.

UNIT V DIGITAL TRANSFORMATION

(6 Hours)

Digital Transformation & Channel Attribution- Analytics- Ad-words, Email, Mobile, Social Media, Web Analytics - Changing your strategy based on analysis- Recent trends in Digital marketing.

Total Lecture Hours:30

COURSE OUTCOMES :

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

1. Explain the fundamentals of digital and online marketing strategies for brand building and content creation.
2. Apply Search Engine Optimization (SEO) and Search Engine Marketing (SEM) techniques to improve online visibility.
3. Analyze the role of E-mail and Mobile Marketing in customer engagement and lead generation.
4. Demonstrate the use of Social Media Marketing and Influencer Marketing for brand promotion and customer loyalty.
5. Evaluate digital transformation tools, analytics, and channel attribution techniques in digital marketing campaigns.

TEXT BOOK(S)

1. Digital Marketing Essentials, Digital Marketing Essentials, Stukent Publications, Latest Edition.
2. Digital Marketing, Digital Marketing, McGraw Hill Education, Latest Edition.
3. Internet Marketing: Integrating Online and Offline Strategies, Cengage Learning, Latest Edition.
4. Social Media Marketing, Sage Publications, Latest Edition.
5. Marketing 4.0: Moving from Traditional to Digital, Wiley India, Latest Edition.

REFERENCE BOOK(S)

1. The Art of Digital Marketing, Wiley Publications.
2. SEO 2024, SEO Signals Lab Publications.
3. Email Marketing Rules, Wiley Publications.
4. Jab, Jab, Jab, Right Hook, Harper Business.
5. Digital Transformation, Rosetta Books.

E-RESOURCE

1. <https://digitalmarketinginstitute.com/resources>
2. <https://www.coursera.org/courses?query=digital%20marketing>
3. <https://riselymarketing.com/free-digital-marketing-learning/>
4. <https://hookagency.com/blog/digital-marketing-resources/>
5. <https://www.digitaltwentyfour.com/news>

MAPPING WITH PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
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CO2	3	3	3	3	3	3		2		3	3	2	2	3	2	3	
CO3	3	3	3	3	3	3		2		3	3	2	2	3	2		2
CO4	3	3	3	3	3	3		2		3	3	2	2	3	2	2	
CO5	3	3	3	3	3	3		3		2	3	2	2	3	3		3

S-Strong (3)

M-Medium (2)

L-Low (1)