GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Computer Applications

Level: Post Graduate

Course / Subject Code: MC03094171

Course / Subject Name: Research Work(Phase-1)/Minor Project

w. e. f. Academic Year:	2025-26
Semester:	3
Category of the Course:	Core Courses

Prerequisite:	• Completion of core courses in the MCA program • Basic understanding of software development life cycle, research methodology, and programming tools • Exposure to domain-specific electives (e.g., AI, Web Development, Mobile Applications, Cloud Computing, etc.)
Rationale:	This phase serves as a foundation for the final semester research project or major software development project. It allows students to identify research problems or software development challenges, perform background research or feasibility studies, define objectives, and propose methodologies. The aim is to foster analytical thinking, domain knowledge, project planning, and ethical considerations in applied research and development. **Pedagogy:** • Problem-based Learning • Self-Directed and Mentor-Guided Research • Regular Review Meetings (Weekly) • Design Thinking Workshops • Collaborative Documentation & Feedback • Presentations and Peer Review • Use of Project Management Tools (e.g., GitHub, Trello, JIRA)

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Identify and define a clear research problem or project challenge aligned with academic and societal needs	AN
02	Conduct literature review or market survey to assess state-of-the-art in chosen area	AP
03	Formulate project objectives, scope, and methodology with clear deliverables	AP
04	Design initial project architecture, model, or prototype as per domain-specific standards	CR
05	Prepare a detailed project proposal including timeline, tools, risks, and resources	AP
06	Demonstrate communication, planning, and presentation skills through interim reviews	AP

**Revised Bloom's Taxonomy (RBT)*

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
0	0	6	3	0	0	50	50	100

Guidelines for Student Work:

1. **Project Selection:**
   - Individual or group (max 2-3 students)
   - Should be from chosen domain/elective
   - Must be feasible and implementable within time and resource constraints
2. **Proposal Components:**
   - Title, Abstract, Introduction
   - Problem Statement, Objectives, and Scope
   - Literature Review / Market Survey
   - Proposed Solution/Methodology
   - Tools/Technologies/Hardware
   - Tentative Timeline and Work Plan
   - Expected Outcomes
   - Ethical, Legal, and Environmental Considerations
3. **Milestones:**
   - Week 1–2: Topic Finalization and Approval
   - Week 3–5: Literature Review / Survey
   - Week 6–9: Methodology Development and Planning
   - Week 10–12: Initial Design/Model/Architecture
   - Week 13–14: Final Proposal Document Preparation
   - Week 15: Internal Presentation and Evaluation

Assessment Method:

Component	Weightage	Description
Topic Approval & Synopsis	10%	Relevance, clarity, and originality
Literature/Survey Review	20%	Depth and justification of problem
Interim Review & Progress	20%	Methodology, work done, clarity
Proposal Report	30%	Quality of planning and documentation
Final Presentation & Viva	20%	Delivery, justification, readiness

References/Suggested Learning Resources:
(a) Books:

Reference Books:

1. Ranjit Kumar, Research Methodology: A Step-by-Step Guide for Beginners, Sage Publications
2. C.R. Kothari, Research Methodology: Methods and Techniques, New Age International
3. Ian Sommerville, Software Engineering, Pearson
4. Pressman & Maxim, Software Engineering: A Practitioner's Approach, McGraw-Hill
5. Field-specific journal papers, technical blogs, white papers

(b) Tools & Platforms:

- Reference Managers: Mendeley, Zotero
- Documentation: LaTeX, MS Word
- Collaboration: GitHub, Overleaf, Google Drive
- Project Management: Trello, JIRA, Notion
- Survey: Google Forms, SurveyMonkey

CO- PO Mapping:

Semester 3	**Course Name: Research Work(Phase-1)/Minor Project**							
	POs							
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	3	2	2	2	2	1	2
CO2	3	3	2	2	1	1	1	3
CO3	2	3	3	2	2	3	2	2
CO4	3	2	3	3	2	2	1	2
CO5	2	2	3	2	2	3	2	3
CO6	2	2	2	2	3	3	2	3

*Legend: '**3**' for high, '**2**' for medium, '**1**' for low and '**-**' for no correlation of each CO with PO.*

Note: The CO-PO mapping is indicative; the institute/faculty member can change as required.

* * * * * * *