

Branch Name:	Bachelor of Computer Application (BCA)
Program Code:	CS101
Course Title:	Research Project - I
Course Code:	17-CAM404-4C
Pre-requisite Course:	Basic understanding of UML and system design concepts, Hands-on programming experience, Knowledge of documentation and report writing

Course Objective (CO):

This course is intended to make the students:

- To enable students to undertake a significant research-oriented software project.
- To apply theoretical knowledge to analysis, design and development.
- To develop skills in research planning, implementation and documentation.
- To demonstrate technical proficiency through project presentation and viva.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
--	--	12	6	--	--	75	75	150

Course Contents:

Sr. No	Topics	Total Hours	Weightage (%)
1.	Project Topic Finalization ● Selection of problem in emerging technology areas ● Submission and approval of project synopsis ● Identification of tools and technologies.	10	20
2.	Literature Review ● Survey of research papers, reports and case studies. ● Study of existing systems and gap analysis.	10	20
3.	System Analysis and Design ● Requirement gathering (functional and non-functional). ● Use Case Diagrams, DFDs, ER Diagrams, UML Models. ● Database design and schema preparation.	10	20
4.	Project Development ● Initial implementation of core modules. ● Coding, testing and debugging. ● Prototype demonstration.	09	20
5.	Case Study ● Research Analysis and finding ● Preparation of progress report. ● Description of objectives, methodology and implementation. ● Interim project presentation.	09	20

Course Learning Outcomes (CLO):

At the end of this course, the student would be able

- **CLO1:** Identify and formulate a research problem in emerging areas of Computer Applications.
- **CLO2:** Conduct literature review and perform gap analysis using research papers and technical reports.
- **CLO3:** Design system architecture using appropriate tools, methodologies, and UML models.
- **CLO4:** Develop and implement core modules of the proposed system using suitable technologies.
- **CLO5:** Prepare technical documentation and present project work effectively through reports and viva-voce.
- **CLO6:** Demonstrate research ethics, originality, and professional responsibility in project work.

List of Text Book:

1. **Research Methodology: Methods and Techniques** – C.R. Kothari & Gaurav Garg, New Age International Publishers.
2. **Software Engineering** – Roger S. Pressman, McGraw Hill Education.
3. **The Craft of Research** – Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams, University of Chicago Press

List of Reference Book:

1. Software Engineering: A Practitioner's Approach – Roger S. Pressman.
2. Fundamentals of Software Engineering – Rajib Mall, PHI Learning.
3. Research Methods for Computer Science – Various Authors (Academic Press).
4. UML Distilled – Martin Fowler, Addison-Wesley

E-Resource / Web Links:

- IEEE Xplore – <https://ieeexplore.ieee.org>
- ACM Digital Library – <https://dl.acm.org>
- Google Scholar – <https://scholar.google.com>
- GitHub – <https://github.com>
- ResearchGate – <https://www.researchgate.net>

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2	PSO 3
CLO1	H	M		M				L					H	M	
CLO2	H	H		M				M					M	H	
CLO3	M	H	H	H	M				M				H	H	M
CLO4	M	H	H	M	H				H	H	M		H	H	H
CLO5		M						M	H	H				M	M
CLO6						M	M	H	H			H			M

H: High, M: Medium, L: Low