

DEPARTMENT OF COMPUTER SCIENCE
Faculty of Sciences, Jamia Millia Islamia (Central University), New Delhi

PhD Coursework-2026 (Min-Credits-Requirement:12/RevOrdOct22,2025/Approved by BoS dated 18-02-2026)

Course Code	Course Title	L-T-P	Credits
CS71	Scientific Research Methodology	3-1-0	04
CS72	Research and Publication Ethics	2-0-0	02
CS73	Systematic Literature Review	0-1-2	02
CS74	Term Paper & Seminar	0-1-2	02
CS75	Elective: <Title>	-	03/04

NOTES

- CS75:** Students may select elective(s) from (non-previously studied) JMI-PG/Online courses, based on their supervisor's recommendation and with approval from the Coordinator/HoD.
- CS73/74:** These are guided study courses: CS73 requires conducting SLR with a minimum of 25 papers and producing a well-organized SLR report, while CS74 requires writing a Term (Review) paper and delivering a seminar presentation.
- PMRF:** The candidates applying for it need to earn 12 additional credits by completing (non-previously studied) pertinent courses, from JMI-PG/Swayam offerings, on recommendation of the supervisor and endorsement by the Coordinator/HoD.

DETAILED SYLLABI

CS71	Scientific Research Methodology	3-1-0	04 Credits
Research Fundamentals: Research Overview, Terminology, Prominent Definitions, Characteristics, Purpose, Goals and Objectives, Beneficiaries and Values, Methodology, Method and Skills; Quantitative and Qualitative Research, Contribution, Findings and Gains; Typical Core and Specific Research Skills. Scientific Research and Methods: Scientific Research and Knowledge, Knowledge Acquisition, Typical Sciences, Pseudoscience, Characteristics and Values, Generic Process; Scientific Methods - Overview, Principles of Scientific Method, Scientific Attitude and Temper, Elements of Scientific Methods, Scientific Process, Scientific Objectivity& Misconceptions. Research Paradigms and Models: Philosophy and Paradigms; Research Paradigms- Overview, Generic Elements, Positivist, Post-Positivist, and Interpretivist; Research Models: Overview, Generic Research Process, Sequential, Generalized, Circulatory, Evolutionary, and Mixed-Methods. Research Design and Instruments: Typical Classifications and Major Designs, Nature, Application, Mode, Objective, Experiment and Other Classifications; Theoretical, Fundamental, Applied, Qualitative, empirical, Experimental, Technological, Action, Evaluative, etc; Research Instruments: Observations, Theory, Modelling, Experiments, CBR, Simulations, and e-Science. Research Context of Computer Science: Dialectic of research, Models of argument; Traditions – Theoretical, Empirical and Engineering; Research Methods: Formal, Experimental, Build, Process and Models; Dominant Paradigms – Scientific, Rationalist and Technocratic; Models of Argument – Observational-Empiricism, Verificational-Demonstration, Mathematical-Proof and Interpretational-Hermeneutics; Grand Research Challenges, Characteristics and Identified Problems. Dawson (2005). Projects in Computing and Information Systems. AWL Walliman (2010). Your Research Project, Vistar publications Mustafa (2021): Scientific Research Primer, Ane Books; and Relevant Research Papers			
CS72	Research and Publications Ethics	2-0-0	02 Credits
Philosophy and Ethics: Philosophy: Introduction, Origin, and Characteristics; Common Sense and Philosophy; Relationship between Philosophy and Science; Ethics and Academics; Academic integrity, research integrity, and responsible conduct. Scientific Conduct: Integrity and Ethics, ethics concerning Science & Research, Intellectual Honesty & Research Integrity: Scientific Misconducts & Redundant Publications, selective Reporting and Misrepresentation of data. Publication Ethics: Best Practices/Standards Setting, Initiatives & Guidelines: COPE, WAME etc., Conflict of Interest; Publication Misconduct, Violation of Publication Ethics, Authorship and Contributorship; Identification of Publication Misconduct, Complaint & Appeals, Predatory Publishers & Journals; Open Access Publishing & management. Publication Misconduct: Publication Misconduct, Ethical issues in various Disciplines, Fabrication, Falsification and Plagiarism (FFP), Authorship: Definition and types, Conflict of Interest, Complaints and Appeals, Software Tools. Database and Research Metrics: Indexing Databases, Citation Databases: Web of Science, Scopus, Google Scholar, Metrics: h-index, g-index, i10 index, Altmetrics, Understanding Citation Metrics for Quality Research: Impact & Visualisation Analysis, Exploring the Citation Network, Rules & Tools. Yadav (2020): Research Publications and Ethics, Ane Books Bird, A. (2006). Philosophy of Sciences. Routledge			
CS73	Systematic Literature Review	0-1-2	02 Credits
Guided-Study: Overview, purpose, goals & Objectives; Sources of Literature; Literature Databases; Citation Formats; Types of Reviews: Scoping, Systematic, critical, Integrative, etc.; Established Guidelines: PRISMA & Kitchenham's Guidelines; Search Strategies; Critical Analysis; Synthesizing Information; Critical Evaluation: Identify Themes and Gaps, Categorization of Findings, Synthesize and Write the Review.			
CS74	Term Paper & Seminar	0-1-2	02 Credits
Guided-Study: Overview, Purpose and Goals, Utility- Skill Development, Preparation for Higher Studies, Deepened Understanding; Typical Research Papers; Key Characteristics-Research-intensity, Format & Structure: Title Page, Introduction, Research Questions, Methodology, Literature Review, Discussion, Results and Discussion, Findings, Conclusion, Implications, and References.			