

COURSE TITLE	RESEARCH METHODOLOGY AND IPR
COURSE CODE	01CO0116
COURSE CREDITS	3

Objective:

- 1 The objective of this course is to equip postgraduate students with the foundational knowledge and practical skills in research methodology, scientific writing, and intellectual property rights. It aims to develop the ability to identify research problems, perform comprehensive literature reviews, apply ethical research practices, and utilize modern tools including AI in the research process. The course also fosters understanding of thesis structuring and the importance of protecting innovations through appropriate IPR frameworks.

Course Outcomes: After completion of this course, student will be able to:

- 1 Identify and recall fundamental concepts of research methodology, literature review, and intellectual property rights.
- 2 Interpret quality indices of journals and authors, and explain ethical considerations in research.
- 3 Apply various methods to identify research problems and conduct effective literature reviews using traditional and electronic resources.
- 4 Evaluate research quality and originality by using plagiarism detection tools, journal indexing parameters, and citation analysis.
- 5 Create well-structured research documents and thesis using tools like LaTeX or MS Word, and integrate AI-based tools to enhance research productivity.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	Research Methodology and skills Definition, types, various methods to identify research problem, skills for research, Review of Research Literature, Purpose and use of literature review, locating relevant information, use of library & electronic databases, preparation & presentation of literature review, research article reviews, theoretical models and frame work, Identification of gaps in research, formulation of research, problem, definition of research objectives	14

Contents : Unit	Topics	Contact Hours
2	Quality indices & Ethics in research Journal quality indices, Impact factor, Immediacy index,, Eigen factor, Scimago journal rank indicator., Author quality indices, H index, G- Index, i10 index, HB index	8
3	Thesis writing Details and sequence of the chapters,, Reference, Bibliography their styles in writing., Use of computer programs like MS word or Latex for thesis writing	6
4	Intellectual Property Rights and plagiarism Fundamentals, Forms of IPR, copyright, patents, trademarks, copyright., Patent filing procedure in India, Plagiarism, use of software to evaluate the plagiarism for the report written, how to do citation for copyrighted material in the report.	8
5	AI Tools for Research AI tools to streamline research,, including platforms for literature review, paper summarization, citation analysis, data analysis, writing and publishing etc.	6
Total Hours		42

Textbook :

- 1 Research Methodology: Methods and Techniques, C.R. Kothari, New age Publishers, 1990

References:

- 1 Essentials of Research Design and methodology, Essentials of Research Design and methodology, Geoffrey R. Marczyk, David DeMatteo, David Festinge, John Wiley & Sons, 2010
- 2 Intellectual Property Rights Under WTO: Tasks Before India, Intellectual Property Rights Under WTO: Tasks Before India, T. Ramappa, S. Chand, Wheeler Pub, 2000

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
0.00	5.00	30.00	25.00	30.00	10.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

Instructional Method:

- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- 3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- 4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

Supplementary Resources:

- 1 <http://www.elsevier.com/online-tools/scopus>
- 2 <http://computationalengineering.mit.edu/research/methodology>
- 3 <https://www.ieee.org/index.html>
- 4 <http://www.asce.org/>
- 5 <http://www.asme.org/>