

(Proposed from A.Y. 2020-2021)

NIRMA UNIVERSITY
Institute of Technology
Bachelor of Technology (ALL)
Semester V/VI

L	T	P	C
3	-	-	3

Course Code	XXXXXX
Course Title	Introduction to Research Methodology

Course Learning Outcomes (CLO):

At the end of the course, students will be able to-

1. develop understanding of the basic framework of research process and design
2. identify technical gaps in the literature and formulate a problem.
3. demonstrate effective technical writing and presentation skills.
4. comprehend the ethical principles of research

Syllabus:

Teaching hours:

UNIT I	05
Introduction to Research: The role of research, research process overview, types of research, outcomes of research, characteristics of a researcher, research terminology	
UNIT II	08
Literature Review Techniques: Searching for the existing literature, reviewing the selected literature, developing a theoretical framework, developing a conceptual framework	
UNIT III	07
Formulating a Research Problem: Importance of formulating a research problem, sources of research problems, identifying a problem, formulation of research objectives and research questions	
UNIT IV	05
Solving the Research Problem: Need for research design, different research designs, experimental test-setups, data sampling, data collection, data analysis & interpretation	
UNIT V	10
Technical Writing and Presentation: Effective technical writing, thesis writing, research paper writing, referencing style, presentation skills, ICT tools for technical writing and presentation	
UNIT VI	05
Intellectual Property Rights: Introduction and significance of intellectual property rights, types of intellectual property rights, introduction to patents, patent drafting and filing, copyright, trademarks	
UNIT VI	05
Research Ethics: Intellectual honesty and research integrity, examples of scientific misconduct, plagiarism and techniques to avoid plagiarism	

Self -Study:

The self-study content will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study content.

Suggested Readings[^]:

1. Stuart Melville, Wayne Goddard, Research Methodology: An Introduction for Science and Engineering Students, Juta & Co. Ltd.
2. David V. Thiel, Research Methods for Engineers, Cambridge University Press, UK
3. Ranjit Kumar, Research Methodology: A Step by Step Guide for Beginners, Pearson.

L = Lecture, T = Tutorial, P = Practical, C = Credit

[^] this is not an exhaustive list