Course Code	RESEARCH METHODOLOGY	L	T	P	C
IC 610002		3	0	0	3

Course Category: Institutive core	Course Type: *Theory*

Course Objective(s): The students should be made:

Impart knowledge on basics of research methodology

Explore knowledge in technical writing in an efficient manner

Understand research problem formulation and analyses the research related information

Understand the importance of IPR

Apply the knowledge of IPR in various research projects

Course Outcomes: (COs):

At the end of the course, the student will be able to,

CO 1	Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
CO 2	Correlate the results of any research article with other published results. Write are view article in the field of engineering
CO 3	Understand research problem formulation & Analyze research related information and Follow research ethics
CO 4	Appreciate the importance of IPR and protect their intellectual property.
CO 5	Understand that PR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits

UNIT I	RESEARCH PROCESS	**9**

Research ethics - Research process: characteristics and requirements, Types of research, Research process: eight step model - formulating research problem, conceptualizing research design, constructing instrument for data collection, Selecting a sample, writing a research proposal, collecting data, processing data, writing research report.

UNIT II	RESEARCH WRITING	**9**

Effective literature studies approaches - technical document structuring - how to write report and research paper - format of research proposal - developing research proposal - presentation and assessment by a review committee.

UNIT III	DESIGN OF EXPERIMENTS	**9**

Strategy of Experimentation - Typical applications of experimental design - Guidelines for designing experiments - Basic statistical concepts - Statistical concepts in experimentation - Regression approach to analysis of variance.

UNIT IV	INTELLECTUAL PROPERTY	**9**

Patents, Industrial designs and IC layout Designs, Trade Marks and Copyright, Geographical Indications, IPR management: 5Cs model of managing IP, Emerging issues in IPR.

UNIT V	ROADMAP FOR PATENT CREATION	**9**

Types of patent - Parts of a patent document - Terminologies and codes used in patent document - Patent searching and analysis – Indicators for patentability - IP identification tool – public patent data base – Transfer and infringement of patent rights – Patent commercialization.

TEXT BOOKS:	
Ranjit Kumar, Research Methodology- A step by step guide for beginners, Pearson Education, Australia, 2005.	
Ann M. Korner, Guide to Publishing a Scientific paper, Bioscript Press 2004.	
T. Ramappa, "Intellectual Property Rights Under WTO", S. Chand, 2008	
REFERENCE(S)	
Kothari, C. R. Research Methodology - Methods and Techniques, New Age International publishers, New Delhi, 2004.	
Robert P. Merges, Peter S. Menell and Mark A. Lemley, "Intellectual Property in New Technological Age", Aspen Publishers, 2016	
WEB REFERENCES	
https://www.youtube.com/watch?v=tBXznU_TPJo	
https://www.youtube.com/watch?v=y-r6ICNqZt4	
https://www.youtube.com/watch?v=k3lUo0XYG3E	
https://www.youtube.com/watch?v=n6jk_r5Qc14	
https://www.youtube.com/watch?v=8NDpujstgNE	