PEN19101 **RESEARCH METHODOLOGY AND IPR** **3 0 0 3**

COURSE OBJECTIVES

To enable the students to

- understand the formulation of research problem
- be familiar with data collection and literature survey process
- know the statistical concepts in experimentation
- acquire knowledge in writing research proposal
- understand about patent rights and its importance

UNIT I RESEARCH PROBLEM FORMULATION **9**

Meaning of research, Objectives of Research, Types of research, Significance of Research, Research process, Selecting the problem, Necessity of defining the problem, Meaning of Research design, Need for research design, features of a good design, Different research designs.

UNIT II LITERATURE SURVEY **9**

Quantitative and Qualitative data, Scaling, Scaling Techniques, Experiments and Surveys, Collection of primary and secondary data, Data preparation process. Research problems, Effective literature studies approaches, Survey for existing literature, Procedure for reviewing the literature, analysis and assessment.

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 RESEARCH PROPOSAL AND WRITING **9**

Contents of a research proposal, Writing a research report- Research writing in general, Referencing, Writing a bibliography, Presentation and assessment by a review committee, Plagiarism, Research ethics.

UNIT V INTELLECTUAL PROPERTY RIGHTS **9**

Intellectual Property- Definition, WTO, Fundamentals of Patent, Copyright, The rights of the owner, Term of copyright, Register of trademark, Procedure for trade mark, Term of trademark; New Developments in IPR- Administration of patent system, IPR of Biological Systems, Computer Software.

TOTAL PERIODS 45

COURSE OUTCOMES

Upon the completion of the course, students will be able to

- identify research problems.
- collect and prepare suitable data for research.
- design experiments for different statistical concepts.
- write research proposals and reports.
- apply their research work for patent through IPR.

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REFERENCES

1. C.R Kothari and Gaurav Garg, "Research Methodology Methods and Techniques", 4th Edition, New Age International Publishers, 2019.
2. Ranjit Kumar, "Research Methodology": A step by Step Guide for beginners, 2nd Edition, Pearson Education, 2010.
3. Douglas C. Montgomery, "Design and Analysis of Experiments", 9th edition, Wiley Publishers, 2017.
4. Neeraj Pandey and Khushdeep Dharni, "Intellectual Property rights", PHI Learning, 2014.
5. Dr.R.Radhakrishnan and Dr.S.Balasubramanian, "Intellectual Property Rights, text and cases", Excel Books, New Delhi.

CO-PO MAPPING :

Mapping of Course Outcomes with Programme Outcomes : (1,2,3 indicates the strength of correlation) 3 – Strong , 2 – Medium , 1 – Weak														
COs	Programme Outcomes (POs)													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	-	-	-	-	1	-	-	1	3	3	3
CO2	3	3	1	-	-	-	-	2	-	3	1	3	3	3
CO3	3	2	3	2	-	-	-	2	-	-	1	3	3	3
CO4	3	3	2	-	-	-	-	1	-	3	1	3	3	3
CO5	3	3	3	2	-	-	-	3	-	1	2	3	3	3

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