

**NIRMA UNIVERSITY**  
**SCHOOL OF TECHNOLOGY, INSTITUTE OF TECHNOLOGY**  
**M.Tech. in Electronics & Communication Engineering (VLSI Design)**  
**M.Tech. Semester - II**

L	T	Practical component				C
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<b>Course Code</b>	<b>6EC152CC22</b>
<b>Course Title</b>	<b>Research Methodology and IPR</b>

**Course Learning Outcomes (CLOs):**

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

1. Formulate a research problem for a given engineering domain.
2. Analyse the available literature for given research problem.
3. Develop technical writing and presentation skills.
4. Comprehend concepts related to patents, trademark and copyright.

**Syllabus:**

**Teaching Hours:30**

**UNIT I: Introduction 04**

Introduction to research problem, sources of finding a research problem, characteristics of a research problem, pitfalls in selecting a research problem, scope and objectives of research problem, approaches of investigation of solutions for research problem.

**UNIT II: Literature Review 04**

Effective literature review approaches, literature analysis, avoiding plagiarism, ethics in research, data collection, analysis, interpretation.

**UNIT III: Technical Writing and Presentation 04**

Effective technical writing, thesis writing, research proposal writing, research paper writing, presentation skills, tools for technical writing and presentation.

**UNIT IV: Intellectual Property Rights 04**

Introduction and significance of intellectual property rights, types of Intellectual Property Rights, copyright and its significance, introduction to patents and its filing, introduction to patent drafting, best practices in national and international patent filing, copyrightable work examples.

**UNIT V: Patent Rights 07**

Patents and its basics, patentable items, designs, process of filing patent at national and international level, process of patenting and development, technological research and patents, innovation, patent and copyright international intellectual property, procedure for grants of patents, need of specifications, types of patent applications, provisional and complete specification, patent specifications and its contents, trade and copyright.

**UNIT VI: New Developments in Intellectual Property Rights (IPR) 07**

Administration of patent system in India, India's stand in the world of IPs, new developments in IPR at national and international level, prosecution (filing) PCT / international filing, national phase filing, scope of patent rights, licensing and transfer of technology, patent information and databases, geographical indications, basic laws related to patent filing, case studies- IPR of Hardware, computer software.

**Self-Study:**

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

**Suggested Readings:**

1. Stuart Melville, Wayne Goddard, Research Methodology: An Introduction for Science and Engineering Students, Juta & Co Ltd.
2. Ranjit Kumar, Research Methodology: A Step by Step Guide for Beginners, Pearson.
3. Halbert, Resisting Intellectual Property, Taylor and Francis Ltd.
4. Asimov, Introduction to Design, Prentice Hall.
5. T. Ramappa, Intellectual Property Rights under WTO: Tasks before India, S. Chand.