

**Year: M. Tech. I (Semester – I)**

**Subject Name:** Research Methodology and IPR

**Subject Code:** MTGN12101

**Type of course:** Dissertation

**Prerequisite:** --

**List of Courses where this course will be prerequisite:** --

**Rationale:** The course of action of the curriculum is to make students aware about the significance of research methodology and property right in their technical arena.

**Teaching and Examination Scheme:**

Teaching Scheme				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	150
1	0	2	2	60	25	15	30	20	

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests CA2: Sincerity in attending classes/class tests/timely submissions of assignments/self-learning attitude/solving advanced problems TEE: Term End Examination TEP: Term End Practical Exam (Performance and viva on practical skills learned in course) CA3: Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course.

**Content:**

Sr. No.	Content	Total Hrs.	Module Weightage
1	Introduction to Research Methodology: Introduction to Research, Objectives, Types of Research, Research Approaches, Significance, Research Methodology, Scientific method, process and criteria of research, Introduction to Research Problem, Definition, Sources of finding a research problem, Problem selection, Characteristics, Technique involved in defining a Problem, Scope and objectives of research problem, Approaches of investigation of solutions for research problem, Analyze the question, Identify the gaps, Formulate the problem statement, Hypothesis, Validation.	3	20 %
2	Effective Literature Review: Reviewing the literature, Sources-differentiate between journals, conferences, books, magazines and their quality, Plagiarism, Ethics in research, Place of the literature review in research, Effective approaches and method to use relevant literature with clarity and focus to research problem, Literature	4	30 %

	analysis, data collection, analysis, interpretation, Developing a theoretical framework and conceptual framework, Writing about the literature reviewed, Research design and its importance, Basic principles of experimental designs and important.		
3	Interpretation and Technical Report Writing :Meaning of Interpretation, Technique of Interpretation, Precaution in Interpretation, Effective technical writing - thesis writing, Research proposal writing, Research paper writing, Report writing and its significance, Different Steps in Writing Report, Layout, Types of Reports, Precautions for Writing Research Reports, Developing a Research Proposal and format, Proof reading of work, Feedback to improve work. Effective presentation, Identify the key point of presentation, Understand the expectations, Prepare the structure and delivery of presentation, tools for technical writing and presentation.	4	25 %
4	Intellectual Property Rights :The Concept, Significance of intellectual property rights, Types of intellectual property rights, Trade and Copyright, Intellectual Property System in India, International cooperation on Intellectual Property, Introduction to patents and its filing and patent drafting, technological research, innovation, procedure for grants of patents, Patenting under PCT, Patent Rights, Licensing and transfer of technology, Patent information and databases.  New Developments in Intellectual Property Rights (IPR) - Administration of patent system in India, New developments in IPR at national and international level, Biological systems, geographical indications, and basic laws related to patent filing, Case studies- IPR of Hardware, computer software.	4	25 %

**Reference Books:**

Sr.No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1	Research Methodology: A Practical and Scientific Approach	Vinayak Bairagi and Mousami V. Munot	CRC Press (978-0815385615)	2019	1 <sup>st</sup> Edition
2	Research Methodology: A Step by Step Guide for beginners	Ranjit Kumar	SAGE publication Ltd ISBN 9781526449894	2019	5 <sup>th</sup> Edition



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3	Research Methods: the concise knowledge base	Trochim	Atomic Dog Publishing ISBN-10 : 1592601464 ISBN-13 : 978- 1592601462	2005	1 <sup>st</sup> Edition
4	Conducting Research Literature Reviews: From the Internet to Paper	Fink A	Sage Publications, ISBN: 9781544318479	2019	5 <sup>th</sup> Edition
5	Research Methodology: Methods and Techniques	C.R. Kothari, Gaurav Garg	New Age International ISBN: 9789379649225, 9379649223	2020	4 <sup>th</sup> Edition,
6	Research Methodology: An introduction	Wayne Goddard and Stuart Melville	Juta and Co Ltd,  ISBN 9780702156601	2001	2 <sup>nd</sup> edition
7	Intellectual Property in New Technological Age	Robert P. Merges, Peter S. Menell, Mark A. Lemley	Clause Publishing ISBN 10-1945555076	2017	1 <sup>st</sup> Edition
8	Intellectual Property Rights Law in India	T. Ramappa	Asia Law House, Hydrabad. ISBN-10 – 9385556819 ISBN-13 - 978-9385556814	2016	2 <sup>nd</sup> Edition

**Course Outcomes:**

Sr.No.	CO Statement	Marks % Weightage
CO-1	Able to formulate and analyze a research problem for a given engineering domain. ( <i>U, A, N – Cognitive level</i> )	15
CO-2	Able to analyze the available literature for given research problem and can develop theoretical and conceptual frameworks to comprehend a research. ( <i>U, A, N – Cognitive level</i> )	30
CO-3	Able to understand research ethics and plagiarism policy. ( <i>U – Cognitive level</i> )	20
CO-4	Able to present and defend the solution obtained in an effective manner in written or spoken form. ( <i>A, N, C – Cognitive level</i> )	15

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CO-5	Apply intellectual property law principles (including copyright, patents, designs and trademarks) to real problems and analyze the social impact of intellectual property law and policy ( <i>U, A- Cognitive level</i> )	20
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**List of Open learning website:**

- <https://nptel.ac.in/courses/121/106/121106007/>
  - Overview of research
  - Literature survey
  - Experimental Skill
  - Data Analysis and Modeling skill
  - Design of Experiments
  - IPR
- <https://nptel.ac.in/courses/110/105/110105139/>
  - Intellectual property rights and competition law.

**FOR LAB SESSIONS:**

**List of Experiments:**

Sr. No.	Practical
1	Make a folder named Stud Name_Practical 1. eg Dipali_Practical 1. In the folder <ul style="list-style-type: none"> <li>i. Submit the theme in word doc . Mention in 2-3 lines what you are searching for .</li> <li>ii. Minimum 5 research papers from reputed Journal/Conference in .pdf form. Kindly rename the pdf with the TITLE of the research paper</li> </ul>
2	Find min 5 good journals of your research domain selected in Practical 1. Justify it with the help of Impact Factor, indexing etc
3	Read and submit the notes of minimum 5 research Papers searched in Practical 1 . Follow the naming convention suggested earlier.
4	Learn and refer different Reference formats and styles
5	Search min 5 Patents related to your research domain. Use the keywords that were used in Practical 1 to search the research papers and summarize each patent in notes form for review purpose. Attach the pdf of min 5 Patent documents. The language of the patent document should be in English only Summary Format -



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8	Write a review paper . Use IEEE paper template to write the Paper
9	Generate the Plagiarism report of review paper written in Practical 8

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