



SRI KRISHNA INSTITUTE OF TECHNOLOGY

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#57, Chimney Hills, Hesaraghatta Main Road, Chikkabanavara Post, Bengaluru- 560090

Department of COMPUTER SCIENCE AND ENGINEERING

Academic Year	:	2026-27	Course Name	:	Research Methodology & IPR
Semester	:	V	Course Code	:	BRMK557
Scheme	:	2022	L: T: P: S	:	3:0:0:0 Credit: 3
Total Contact hours	:	45	CIE Marks	:	50
Course Plan Author	:	Prema C R	SEE Marks	:	50
Date	:	31/08/2026	Total Marks	:	100

Course Prerequisites:

- Basic knowledge of research work and its importance.
- Basic knowledge of technical articles and literature.
- Basic awareness of Copyright and Intellectual Property Rights (IPR).

Course Objectives:

- To understand the basics of research and its types.
- To learn the concepts of Literature Review, Technical Reading, Attributions and Citations.
- To understand Ethics in Engineering Research.
- To discuss the concepts of Intellectual Property Rights in Engineering.

Course Outcomes:

CO	At the end of the course, student should be able to . . .	Blooms' Level
CO1	: Apply the Objectives of engineering research in solution development.	L3
CO2	: Identify the procedure of Literature Review and Technical Reading.	L3
CO3	: Outline the fundamentals of patent drafting procedure and laws.	L2
CO4	: Illustrate the copyright procedure leading to an IPR.	L3
CO5	: Relate the basic principles of design rights with problem solution.	L2

Blooms' Taxonomy:

L1	L2	L3	L4	L5	L6
Remembering	Understanding	Applying	Analyzing	Evaluating	Creating



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Program Outcomes:

PO1	:	Engineering knowledge	PO7	:	Environment and sustainability
PO2	:	Problem analysis	PO8	:	Ethics
PO3	:	Design/development of solutions	PO9	:	Individual and team work
PO4	:	Conduct investigations of complex problems	PO10	:	Communication
PO5	:	Modern tool usage	PO11	:	Project management and finance
PO6	:	The engineer and society	PO12	:	Life-long learning

Program Specific Outcomes:

PSO1:	Model computational problems by applying mathematical concepts and design solutions using suitable data structures & algorithmic techniques.
PSO2:	Demonstrate basic knowledge of computer science in efficient design of problem solutions of varying complexity.
PSO3:	Create career path to become a successful computer science professional, entrepreneur and relish for higher studies.

CO-PO-PSO Mapping:

CO	Program Outcomes														
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2	-	1	-	-	-	2	-	-	-	1	-	-	1	-
CO2	2	-	2	2	-	-	2	-	1	-	2	1	-	1	-
CO3	2	1	1	2	-	-	2	-	-	1	2	1	-	1	-
CO4	2	1	1	-	-	-	2	-	-	-	2	-	1	1	-
CO5	2	2	1	-	-	-	2	-	-	-	2	-	1	1	-

CO-PO Mapping justification

CO	PO / PSO	Correlation Weightage	Justification
CO1	PO1	2	Research methodology builds fundamental engineering knowledge about research objectives, types and practices.
	PO2	2	Students identify and understand worthwhile engineering research problems using systematic approaches.
	PO4	1	The course introduces systematic investigation of engineering research problems.
	PO8	2	Module 1 directly covers research ethics, misconduct and ethical issues related to authorship.



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	PO12	1	Research activities encourage continuous and independent acquisition of knowledge.
	PSO3	1	Research awareness supports higher studies and professional development.
CO2	PO1	2	Literature review and technical reading develop knowledge of existing engineering research.
	PO2	2	Analysis of prior work helps identify relevant information and research gaps.
	PO4	2	Literature review and prior-art analysis form part of systematic research investigation.
	PO5	2	Students use research resources such as Web of Science, Google and Google Scholar.
	PO8	2	Proper citation, attribution and acknowledgment promote ethical research practice.
	PO10	1	Citation and technical reading support clear communication of research information.
	PO12	2	Continuous reading of technical literature develops independent learning.
	PSO1	1	Technical literature supports understanding of computational problems and existing solutions.
	PSO3	1	Literature-review skills support research, higher studies and professional work.
CO3	PO1	2	Students gain fundamental knowledge of intellectual property, patents and patent laws.
	PO2	2	Patentability, prior art and infringement require analysis of inventions and existing knowledge.
	PO3	1	Patent knowledge supports protection of innovative engineering solutions.
	PO4	1	Prior-art and patent searches involve systematic investigation of existing inventions.
	PO5	2	Patent-search resources and databases are used for prior-art search and patent activities.
	PO8	2	Patent rights and infringement involve legal and ethical responsibilities.
	PO11	1	Patent fees, filing and commercialization introduce management aspects of intellectual property.
	PO12	2	Patent laws and procedures require continued learning as regulations evolve.
	PSO1	1	Patent mechanisms can protect innovative computational solutions.



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	PSO3	1	IPR knowledge supports professional practice, innovation and entrepreneurship.
CO4	PO1	2	Students gain fundamental knowledge of copyright, related rights and trademarks.
	PO2	2	Copyright eligibility, infringement and trademark issues require analysis.
	PO3	1	Copyright knowledge supports protection of creative and technical outputs.
	PO4	1	Copyright and trademark case studies develop investigation and interpretation skills.
	PO8	2	Copyright promotes ethical use of others' work and avoidance of infringement.
	PO12	2	Copyright and trademark regulations require continuous updating of knowledge.
	PSO2	1	Copyright knowledge supports protection of computer-science and creative outputs.
	PSO3	1	IPR awareness is relevant to professional practice and entrepreneurship.
CO5	PO1	2	Students gain knowledge of industrial designs, design rights and geographical indications.
	PO2	2	Design eligibility, prior art and registration requirements involve analysis.
	PO3	2	Design rights directly relate to development and protection of engineering solutions.
	PO4	1	Prior-art searches and case studies involve systematic investigation.
	PO8	2	Design ownership and protection involve legal and ethical responsibilities.
	PO12	2	Design laws, GI rules and IPR practices require continuous learning.
	PSO2	1	Design-right awareness supports protection of technology and computer-science outputs.
	PSO3	1	Design registration and IPR knowledge support innovation and entrepreneurship.

Course Content (Syllabus)

Module 1	CH
Introduction: Meaning of Research, Objectives of Engineering Research, and Motivation in Engineering Research, Types of Engineering Research, Finding and Solving a Worthwhile Problem. Ethics in	09



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Engineering Research , Ethics in Engineering Research Practice, Types of Research Misconduct, Ethical Issues Related to Authorship. Textbook 1: Ch. 1 RBT: L2	
Module 2	
Literature Review and Technical Reading , New and Existing Knowledge, Analysis and Synthesis of Prior Art Bibliographic Databases, Web of Science, Google and Google Scholar, Effective Search: The Way Forward Introduction to Technical Reading Conceptualizing Research, Critical and Creative Reading, Taking Notes While Reading, Reading Mathematics and Algorithms, Reading a Datasheet. Attributions and Citations : Giving Credit Wherever Due, Citations: Functions and Attributes, Impact of Title and Keywords on Citations, Knowledge Flow through Citation, Citing Datasets, Styles for Citations, Acknowledgments and Attributions, What Should Be Acknowledged, Acknowledgments in, Books Dissertations, Dedication or Acknowledgments. Textbook 1: Ch 2 & 3 RBT: L2, L3	09
Module 3	
Introduction To Intellectual Property : Role of IP in the Economic and Cultural Development of the Society, IP Governance, IP as a Global Indicator of Innovation, Origin of IP History of IP in India. Major Amendments in IP Laws and Acts in India. Patents : Conditions for Obtaining a Patent Protection, To Patent or Not to Patent an Invention. Rights Associated with Patents. Enforcement of Patent Rights. Inventions Eligible for Patenting. Non-Patentable Matters. Patent Infringements. Avoid Public Disclosure of an Invention before Patenting. Process of Patenting. Process of Patenting . Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post- grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained? Do I Need First to File a Patent in India? Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models. Textbook 1: Ch 4,5,6 RBT: L2	09
Module 4	
Copyrights and Related Rights : Classes of Copyrights. Criteria for Copyright. Ownership of Copyright. Copyrights of the Author. Copyright Infringements. Copyright Infringement is a Criminal Offence. Copyright Infringement is a Cognizable Offence. Fair Use Doctrine. Copyrights and Internet. Non-Copyright Work. Copyright Registration. Judicial Powers of the Registrar of Copyrights. Fee Structure. Copyright Symbol. Validity of Copyright. Copyright Profile of India. Copyright and the word 'Publish'. Transfer of Copyrights to a Publisher. Copyrights and the Word 'Adaptation'. Copyrights and the Word 'Indian Work'. Joint Authorship. Copyright Society. Copyright Board. Copyright Enforcement Advisory Council (CEAC). International Copyright Agreements, Conventions and Treaties. Interesting Copyrights Cases. Trademarks : Eligibility Criteria. Who Can Apply for a Trademark. Acts and Laws. Designation of Trademark Symbols. Classification of Trademarks. Registration of a Trademark is Not Compulsory. Validity of Trademark. Types of Trademark Registered in India. Trademark Registry. Process for Trademarks Registration. Prior Art Search. Famous Case Law: Coca-Cola Company vs. Bisleri International Pvt. Ltd. Textbook 1: Ch 7 & 8 RBT: L3	09
Module 5	
Industrial Designs : Eligibility Criteria. Acts and Laws to Govern Industrial Designs. Design Rights. Enforcement of Design Rights. Non-Protectable Industrial Designs India. Protection Term. Procedure for Registration of Industrial Designs. Prior Art Search. Application for Registration. Duration of the	09



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Registration of a Design. Importance of Design Registration. Cancellation of the Registered Design. Application Forms. Classification of Industrial Designs. Designs Registration Trend in India. International Treaties. Famous Case Law: Apple Inc. vs. Samsung Electronics Co.

Geographical Indications: Acts, Laws and Rules Pertaining to GI. Ownership of GI. Rights Granted to the Holders. Registered GI in India. Identification of Registered GI. Classes of GI. Non-Registerable GI. Protection of GI. Collective or Certification Marks. Enforcement of GI Rights. Procedure for GI Registration Documents Required for GI Registration. GI Ecosystem in India.

Case Studies on Patents. Case study of Curcuma (Turmeric) Patent, Case study of Neem Patent, Case study of Basmati patent. **IP Organizations In India. Schemes and Programmes**

Textbook 1: Ch 9,10,11

RBT: L3

Schedule of Instruction:

Class No	Topic	Date	RBT	CO	Mode
Module-1					
Introduction & Ethics in Engineering Research					
	Introduction to course handouts, vision, mission, co-pos				
1	Meaning of Research and introduction to Engineering Research	7/9/26	L2	CO1	L
2	Objectives of Engineering Research	8/9/26	L2	CO1	L
3	Motivation in Engineering Research	9/9/26	L2	CO1	L
4	Types of Engineering Research	10/9/26	L2	CO1	L
5	Finding and Solving a Worthwhile Problem	15/9/26	L2	CO1	L
6	Ethics in Engineering Research	16/9/26	L2	CO1	L
7	Ethics in Engineering Research Practice and Research Misconduct	17/9/26	L2	CO1	L
8	Ethical Issues Related to Authorship / Discussion	21/9/26	L2	CO1	PPT /GD
9	Revision	22/9/26			GD
Module-2					
Literature Review, Technical Reading, Attributions and Citations					
10	Literature Review and Technical Reading; New and Existing Knowledge	23/9/26	L2	CO2	L
11	Analysis and Synthesis of Prior Art; Bibliographic Databases	24/9/26	L2	CO2	L
12	Web of Science, Google and Google Scholar; Effective Search	28/9/26	L2	CO2	L
13	Conceptualizing Research; Critical and Creative Reading	29/9/26	L2	CO2	L
14	Taking Notes; Reading Mathematics, Algorithms and Datasheets	30/9/26	L2	CO2	L



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15	Attributions and Citations: Functions and Attributes	1/10/26	L3	CO2	L
16	Title, Keywords, Citation Flow, Datasets and Citation Styles	5/10/26	L3	CO2	L
17	Acknowledgments, Attributions and Dedication / Discussion	6/10/26	L3	CO2	PPT /GD
18	Revision	7/10/26			GD
Module-3					
Introduction to Intellectual Property and Patents					
19	Introduction to Intellectual Property; Role and Governance of IP	8/10/26	L2	CO3	L
20	History of IP in India and Major Amendments in IP Laws	12/10/26	L2	CO3	L
21	Patent Protection, Rights and Patentable Inventions	13/10/26	L2	CO3	L
22	Non-Patentable Matters, Infringement and Public Disclosure	14/10/26	L2	CO3	L
23	Process of Patenting and Prior Art Search	15/10/26	L2	CO3	L
24	Patent Application, Publication, Opposition, Examination and Grant	22/10/26	L2	CO3	L
25	Validity, Commercialization, Patent Attorney/Agent, Forms and Fees	24/10/26	L2	CO3	PPT
26	Types of Patent Applications, Patent Bodies and Utility Models	29/10/26	L2	CO3	PPT /GD
27	Revision	3/11/26			GD
Module-4					
Copyrights, Related Rights and Trademarks					
28	Copyrights and Related Rights: Classes, Criteria and Ownership	4/11/26	L3	CO4	L
29	Copyright Infringement, Fair Use, Internet and Registration	5/11/26	L3	CO4	L
30	Validity, Publication, Transfer, Adaptation and Joint Authorship	11/11/26	L3	CO4	L
31	Copyright Society, Board, CEAC, Agreements and Treaties	12/11/26	L3	CO4	L
32	Trademarks: Eligibility, Applicants, Acts, Laws and Symbols	16/11/26	L3	CO4	L
33	Trademark Classification, Registration and Validity	17/11/26	L3	CO4	L
34	Trademark Registry, Registration Process and Prior Art Search	18/11/26	L3	CO4	L
35	Case Study: Coca-Cola Company vs. Bisleri International Pvt. Ltd.	19/11/26	L3	CO4	PPT /GD
36	Revision	23/11/26			GD



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Industrial Designs and Geographical Indications

37	Industrial Designs: Eligibility, Laws, Design Rights and Enforcement	24/11/26	L3	CO5	L
38	Protection Term, Registration Procedure and Prior Art Search	25/11/26	L3	CO5	L
39	Design Registration, Cancellation, Forms and Classification	26/11/26	L3	CO5	L
40	Design Registration Trends, Treaties and Apple vs. Samsung Case	30/11/26	L3	CO5	L
41	Geographical Indications: Laws, Ownership, Rights and Classes	1/12/26	L3	CO5	L
42	GI Protection, Enforcement and Registration Procedure	2/12/26	L3	CO5	L
43	Patent Case Studies: Turmeric, Neem and Basmati	3/12/26	L3	CO5	PPT /GD
44	IP Organizations in India, Schemes and Programmes	9/12/26	L3	CO5	PPT /GD
45	Revision	14/12/26			GD

Self-study hours:

For 3 credits: Self-study hours = 90 hours - Course delivery planned hours = 40 hours = 50 hours

SL#	Self-study content	Hours
1	Literature survey, technical reading, citation and attribution practice.	20
2	Patent, copyright, trademark, industrial design and GI case studies.	25
Total hours		45

Textbooks:

T1	1. Dr. Santosh M Nejar, Dr. Harish Bendigeri "Research Methodology and Intellectual Property Rights", ISBN 978-93-5987-928-4, Edition: 2023-24.
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Reference books:

R1	David V. Thiel "Research Methods for Engineers" Cambridge University Press, ISBN:
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	978-1-107-03488-4
R2	Intellectual Property Rights by N.K. Acharya, Asia Law House, 6th Edition. ISBN: 978-93-81849-30-9

Web links and Video Lectures (e-Resources):

1.	https://sites.google.com/view/brmk557-b-section/course-handouts
2.	VTU e-Learning resources for Research Methodology and IPR
3.	Intellectual Property India resources for patents and IPR
4.	https://www.youtube.com/watch?v=zKcdOFaAucc
5.	https://www.youtube.com/watch?v=XEMyDu_VoeQ
6.	https://www.youtube.com/watch?v=KGbwblzXibc&pp=ygUhcmVzZWZyY2ggZWV0aG9kb2xvZ3kgaW50cm9kdWN0aW9u (Research Methodology)
7.	https://www.youtube.com/watch?v=zKwJAvG6_ME&pp=ygUDSVBS (IPR)
8.	https://www.youtube.com/watch?v=4aEYT6qO-oQ&pp=ygUgcGF0ZW50IGZpbGluZyBwcm9jZWZlcmUgaW4gaW5kaWE%3D (Patent Filing Steps in India)

Assessment Schedule:

S.N.	Assessment Type	Content	CO	Duration	Marks	Date
1.	IA-1	Module 1, Module 2, Module 3 (Half)	1,2,3	1.30 Hours	50	
2.	IA-2	Module 3 (Half), Module 4, Module 5	3,4,5	1.30 Hours		
IA Scaled down to					25	
IA Theory component					25	
3.	Assessment	Poster Presentation Mini Project	1,2		10	
		Review Paper on Mini Project And seminar	3,4,5		15	
Assessment Total					25	
Total (IA + Assessment)					50	



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4.	Semester End Examination	Module 1, Module 2, Module 3, Module 4, Module 5	1-5	3 hours	100	
SEE Scaled down to					50	
Total (IA+ SEE)					100	

RB – Text Book/Reference Book, *L – Interactive Lecture, V- Videos or any other mode, *RBT – Revised Blooms' Taxonomy, L: T: P: C – Theory/Lecture: Tutorial: Practical/Drawing: Credits, SEE: Semester End Examination, CIE: Continuous Internal Evaluation

***Kindly mention Assessment Structure based on the course**

Faculty In charge

Course Coordinator

HoD