



NAGARJUNA COLLEGE OF ENGINEERING AND TECHNOLOGY

NAAC Accredited with “A+” grade

Autonomous Institute under Visvesvaraya Technological University (VTU)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE PLAN

(To be submitted before commencement of semester)

Course Name: Research Methodology & IPR		Course Code: 21ECT56	
Course Credits: 02		Course L:T:P: 2:0:0	Semester: 5
Course Teacher/s: Mrs. Pallavi Singh		Academic Year: 2023-24	
Lab. Instructors (if applicable):		Date of Commencement of Class: 19/10/2023	

COURSE DESCRIPTION: Gives the overviews of the research methodology and different techniques of defining the research problem, explains the importance of literature review in research and also explains the various forms the intellectual property and its importance in business.

PREREQUISITES (if Any): Requirement analysis, Any programming language, General idea of research

LESSON PLAN:

Topic	Topic Details	Lecture No.	Week	Unit/Chapter Text Book / Reference Books	Percentage of Syllabus Coverage
Module-I	Introduction, Meaning of Research, objectives of research ,	1	Week 1	Text Book 1-Chapter 1 1.1,1.2,	20%
	Types of research, Research approaches,	2		1.3,1.4,	
	significance of research Research methods vs Methodology			1.5,1.6,1.7	
	,Research & Scientific Method,Research Process, Criteria of good research	3	Week 2	1.7,1.8,1.9	
	Problems encountered by researchers in India,	4		1.10,	
	what is a research problem? Selecting the problem	5	Week 3	chapter 2(2.1), 2.2,	
	Necessity of Defining the problem, Technique Involved in Defining a problem	6		2.3,2.4,	
An illustration & problem	7	Week 4	2.5,2.6		
Cumulative Coverage					

AAT 1					
Module II	Reviewing the Literature: Place the literature review in research,	8	Week 4	Textbook 4 Chapter 3 3.1	20%
	bringing clarity and focus to research, Improving research methodology, broadening knowledge base in research area,	9	Week 5	Textbook 4 Chapter 3 3.1.1, 3.1.2, 3.1.3,	
	Enabling contextual findings, review of the literature, searching the existing literature	10		Textbook 4 Chapter 3 3.1.4, 3.2, 3.2.1	
	Reviewing the selected literature, developing a theoretical framework, developing a conceptual framework, Writing about the literature reviewed	11	Week 6	Textbook 4 Chapter 3 3.2.2, 3.2.3, 3.2.4	
	Research Design: Meaning of research design	12		Textbook 1 Chapter 3-3.1	
	Need for research design, features of a good design	13	Week 7	Textbook 1 Chapter 3 3.2, 3.3	
	Important concepts relating to research,	14		Textbook 1 Chapter 3 3.4, 3.5	
	Different Research Designs	15	Week 8		
Cumulative Coverage					
Module III	Data Collection: Introduction, Experimental and Surveys,	16	Week 8	Text Book 1 - Chapter 6 – 6.1, 6.2.	20%
	Collection of Primary Data, Collection of Secondary Data	17	Week 9	Text Book 1 - Chapter 6 – 6.3, 6.3.1,6.3.2,6.3.3,6.4	
	Selection of Appropriate Method for Data Collection, Case Study Method	18		Text Book 1 - Chapter 6 – 6.5, 6.6.	
	Ethics in Engineering Research- Ethics in Engineering Research Practice, Types of Research Misconduct	19	Week 10	Text Book 2 - Chapter 5 – 5.1, 5.2	
	Ethical Issues Related to Authorship.	20		Text Book 2 - Chapter 5 – 5.3	
	Group discussion on Case study	21			

	Cumulative Coverage				
Module IV	Ethics in Engineering Research- Ethics in Engineering Research Practice, Types of Research Misconduct, Ethical Issues Related to Authorship.	22	Week 11	Text Book 2 - Chapter 5-5.1,5.2,5.3	20%
	Interpretation and Report Writing- Meaning of Interpretation, Techniques of Interpretation, Precautions in Interpretation	23		Text Book 1 - Chapter 19-19.1,19.2,19.3	
	Significance of Report writing, Different steps in writing report	24	Week 12	Text Book 1 - Chapter 19-19.4,19.5	
	Layout of the research report, Types of reports	25		Text Book 1 - Chapter 19-19.6,19.7	
	Oral presentation, Mechanics of writing a research report, Precautions for writing research reports, Conclusion	26	Week 13	Text Book 1 - Chapter 19-19.8,19.9,19.10,19.11	
	Technical Writing and Publishing - Free Writing and Mining for Ideas, Attributes and Reasons of Technical Writing,.	27		Text Book 2 - Chapter 6-6.1,6.2	
	Patent or Technical Paper?—The Choice, Writing Strategies, Journal Paper: Structure and Approach,	28		Text Book 2 - Chapter 6-6.3,6.4,6.5	
		Language Skills, Writing Style, and Editing, Rules of Mathematical Writing, Publish Articles to Get Cited, or Perish.	29	Week 14	
	Cumulative Coverage				
AAT2					
Module V	Intellectual property: an introduction - Intellectual property types, More	30	Week 15	Text Book 3 - Module 1 - 1, 2.	20%

	patent basics.				
	Patents- Detailed overview of patents-What is a patent, What can be the subject of a patent, Why are patents important.	31			Text Book 3 - Module 2 - 1.1, 1.2, 1.3.
	Legal requirements for patentability - Novelty, Inventive step/non obviousness,	32	Week 16		Text Book 3 - Module 2 - 2.1, 2.2.
	Industrial application/utility, Patentable subject matter, Disclosure requirement.	33			Text Book 3 - Module 2 - 2.3, 2.4, 2.5
	Patent application preparation - Preparing patent applications - Obtaining invention disclosures from Inventors,	34	Week 17		Text Book 3 - Module 3 - 1.1
	Identifying patentable inventions, Understanding the invention (core inventive concept), Inventorship.	35			Text Book 3 - Module 3 - , 1.2, 1.3, 1.4
	Typical parts of the patent Application - Request, Description, Claims, Drawings	36	Week 18		Text Book 3 - Module 3 - , 2.1, 2.2, 2.3, 2.4.
	Abstract, Application format.	37			Text Book 3 - Module 3 - 2.5, 2.6.
Cumulative Coverage					

TEXTBOOKS AND REFERENCE BOOKS:

Book Type	Code	Title & Author	Publication Information		
			Edition	Publisher	Year
Text Books	T1	Research Methodology: Methods and Techniques by C.R. Khotari, Gaurav Garg	4 th	New age International	2019
	T2	Engineering Research Methodology: A practical insight for researchers by Dipankar Deb, Rajeeb Dey, Valentina Balas	1 st	Intelligent systems reference library	2019
	T3	WIPO (2022), WIPO Patent Drafting Manual, 2nd edition. Geneva: WIPO.	Second edition	World Intellectual Property Organization DOI: 10.34667/tind.44657 ISBN: 978-92-805-3264-7	-
	T4	Research Methodology a step-by-step guide for beginners by Ranjit Kumar	3rd Edition	SAGE Publications India Pvt Ltd.	2011.

Reference Books	R1	Research methods for engineers by David v Theil.	-	Cambridge university press	2020

COURSE OUTCOMES:

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

CO1	Explain the meaning of engineering research.
CO2	Explore the procedure of Literature Review and Technical Reading.
CO3	Explain the fundamentals of patent laws and drafting procedure.
CO4	Explore the copyright laws and subject matters of copyrights and designs.
CO5	Comprehend the basic principles of design rights.

CO-PO MAPPING:

POS COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	C103.1	H		M								
C103.2		H					H		M			
C103.3					H		M	H				
C103.4					H		M	H				H
C103.5	M							H		M		H

COURSE EVALUATION SCHEME:

Component		Weightage (%)		
CIE's	CIE 1 5 th week	20	60	(Scaled down to 30 marks) 30 marks
	CIE 2 10 th week	20		
	CIE 3 15 th week	20		
AAT's	AAT1 (Quiz)	20	40	(Scaled down to 20 marks) 20 marks
	AAT2 (Surprise test)	20		
Continuous Internal Evaluation Total Marks: 100. Reduced to 50 Marks				
The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50)				
Semester End Examination (SEE) Total Marks: 100. Reduced to 50 Marks				
The minimum passing mark for the SEE is 35% of the maximum marks (18 marks out of 50)				

Signature of the Course Co-Ordinator

Signature of the HOD

Date:

Note:

1. The Course plan is an attempt to ensure **continuous improvement** in the TLP of the course.
2. The proposed Course Plan shall be submitted to **DAC** before the commencement of the semester.
3. At the end of the semester, the faculty shall submit the **Actual Implemented Lesson Plan**.
4. Calendar of Events shall also be included along with this lesson plan.