RESEARCH METHODOLOGY

Course Code	20EC2701A	**Year**	IV	**Semester**	I
Course Category	Open Elective-III	**Branch**	Common to All	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Nil
Continuous Internal Evaluation:	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Understand basic concepts and its methodologies (L2)
CO2	Demonstrate the knowledge of research processes (L3)
CO3	Apply research articles in their academic projects (L3)
CO4	Analyze various types of testing tools used in research (L4)
CO5	Design a research paper (L4)

Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)

Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation

* - Average value indicates course correlation strength with mapped PO

CO/PO & PSO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO 11**	**PO12**	**PSO1**	**PSO2**
CO-1	2							2		2		2		
CO-2	3							3		3		3		
CO-3	2							2		2		2		2
CO-4		3			3	3		3		3		3	3	3
Average* (Rounded to nearest integer)		2						2		2		2		

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	**Introduction**: Meaning of Research, Objectives of Research,Types of Research, Research Approaches. **Research Ethics:** Objectives, codes, policies, conventions of publications, ethics for editors, reviewers and publishers, IPR. **Research Problem**: What is a Research Problem? , Selectingthe Problem, Necessity of Defining a problem.	CO1, CO2

	Research Design –Features of Good Design, Important Concepts related to Research Design, Basic Principles of Experimental Designs.	
II	**Sampling Design** –Sample Design, Sampling and Non- Sampling errors, Goodness of Measurement scales, Sources of error in measurement. **Data Collection Methods** – Collection of Primary Data – Collection of Secondary data. **Data Preparation**: Data Preparation Process, Some problems in Preparation Process, Missing Values and Outliers, Types of Analysis, Statistics in Research.	CO1-CO3
III	**Descriptive Statistics**: Measures of Central Tendency, Measures of Dispersion, Measures of Skewness, Kurtosis, Measures of Relationship, Association in case of Attributes, Other Measures	CO1, CO4
IV	**Sampling and Statistical Inference**: Parametric vs Statistic, Sampling and Non-Sampling errors, Sampling Distribution, Degrees of Freedom, Standard Error. **Testing of Hypothesis**: What is a Hypothesis, Basic Concepts Concerning Testing of Hypothesis, Testing the Hypothesis, Test Statistic and Critical Region, Critical Value and Decision Value, Procedure for Hypothesis Testing.	CO1, CO4
V	**Interpretation and Report Writing**: Meaning of Interpretation, Techniques of Interpretation, Precautions in Interpretation Significance of Report Writing, Different Steps in Writing Report, Layout of a Research Paper, Types of Reports, Oral Presentation, Mechanics of Writing a Research Report, Precautions for Writing Research Reports.	CO1, CO5

Learning Resources
Text Books:
1. C.R.Kothari, Research Methodology: Methods and Techniques, 2nd Ed., New Age International Publishers,2014. 2. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, An introduction to Research Methodology, RBSA Publishers, U.K., 2002
References:
1. Day, R.A., How to Write and Publish a Scientific Paper, Cambridge University Press,1992 2. Anthony, M., Graziano, A.M. and Raulin, M.L., Research Methods: A Process of Inquiry, Allyn and Bacon, 2009
e- Resources & other digital material
1. https://www.youtube.com/watch?v=8iFfzYVuCuM 2. https://onlinecourses.nptel.ac.in/noc22_ge08 3. https://www.youtube.com/watch?v=GSeeyJVD0JU