

SEMESTER - III

COURSE TITLE	RESEARCH METHODOLOGY
TOTAL HOURS	75
HOURS/WEEK	5
SUBJECT CODE	21PCZO33
COURSE TYPE	DSC - IX
CREDITS	4
MARKS	100

GENERAL OBJECTIVE:

- ❖ Enable them to understand research and impart the knowledge of various techniques in research methodology and to develop the skill of writing and interpret a research report

COURSE OBJECTIVES :

CO.NO.	The learners will be able to
CO-1	Classify the various research methods.
CO-2	Apply the principles and techniques involved in various instruments.
CO-3	Examine the chromatographic technique in writing a research .
CO-4	Evaluate the steps involved in collection of data in research.
CO-5	Compose the steps in writing a research report.

UNIT I: INTRODUCTION TO RESEARCH METHODOLOGY

Introduction to research methodology: meaning of research, objectives of research, types of research, research approaches, significance of research, research methods v/s methodology, research and scientific methods, research process, criteria of good research.

UNIT II: PRINCIPLES OF VARIOUS TECHNIQUES

Microscopy: principles–Electron Microscopes and types – atomic force and magnetic force microscopes; Centrifuge: types, principles and applications; pH meter: types – principles and applications; Colorimeter: principles and applications, Cryopreservation and its applications; Freezing and freeze drying microtomes, cytotechniques.

UNIT III: CHROMATOGRAPHY AND ELECTROPHORESIS TECHNIQUES

Chromatography: Paper, Thin layer, Column, Gas liquid and Affinity Chromatography; Electrophoresis: Paper, Cellulose acetate, Gel –immuno electrophoresis; Blotting techniques: Southern – northern – Western; Radioactive counters: Autoradiography – labeling studies; Spectrophotometer: Spectrofluorometer – ESR –NMR Spectrophotometer – Flame Emission Photometry.

UNIT IV: DATA COLLECTION AND ANALYSIS

Collection of data: methods of data collection, sampling methods, data processing and analysis strategies; tools and data analysis with statistics package (Sigma STAT,SPSS for student t-test, ANOVA, etc.), hypothesis testing.

UNIT V: INTERPRETATION AND REPORT WRITING

Meaning of interpretation: techniques of interpretation, precaution in interpretation, significance of report writing, different steps in writing report, layout of the research report, types of reports, oral presentation, mechanics of writing a research report, precautions for writing research reports.

TEXT BOOKS

1. Prasad W, 2006. Comprehensive text book of biostatistics and research methodology.
2. Kothari C.R. 2004. Research methodology methods and techniques. Revised 2nd edition. New Age International (P) Limited Publishers. ISBN: 978-8122-424-881.

REFERENCE BOOKS

1. Shanthi B.M. and Shashi A 2017. Hand book of Research methodology. Published by Educreation. ISBN: 978-154-570-340-3.
2. Gurumani, N., 2006. Research Methodology for Biological Sciences, MJR Publishers, Chennai.
3. Garg, B.L., Karadia, R., Agarwal,F. and Agarwal,U.K., 2002. An introduction to Research Methodology, RBSA Publishers.
4. Sinha, S.C. and Dhiman, A.K., 2002. Research Methodology, EssEss Publications. 2ndVolume.
5. Vijayalakshmi, G. and Sivapragasam, C., 2008. MJP Publishers, Chennai.

COURSE OUTCOMES

CO. NO.	Upon completion of the course, the students will be able to	PSO'S addressed	COGNITIVE LEVEL
CO-1	Summarize the objectives of the research.	1,2	Understanding
CO-2	Apply the research experiments using the principles of various instruments.	1,2	Applying
CO-3	Classify the techniques in the research.	1,2,3	Analyzing
CO-4	Evaluate the data collection in writing a research.	3,4	Evaluating
CO-5	Compose and interpret the data collected.	2,4,5	Creating

Relationship Matrix

Semester	Course Code	Title of the Course					Hours	Credits		
III	21PCZO33	Research Methodology					75	4		
Course Outcomes (COs)	Programme Learning Outcomes (PLOs)					Programme Specific Outcomes (PSOs)				
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	✓	✓		✓		✓	✓			
CO-2	✓	✓		✓		✓	✓			
CO-3	✓	✓	✓	✓	✓	✓	✓	✓		
CO-4	✓		✓	✓	✓			✓	✓	
CO-5	✓	✓		✓	✓				✓	✓
Number of matches (✓) = ...30.... Relationship = Low/ Medium /High										