



CRITERION III – RESEARCH INNOVATIONS AND EXTENSION

3.4. RESEARCH PUBLICATIONS AND AWARDS

3.4.1.2 RESEARCH METHODOLOGY COURSE WORK

PG & RESEARCH DEPARTMENT OF TAMIL

ஆய்வியல் நிறைஞர் (M.Phil) பாடத்திட்டம்			
பருவம்	பாடக் குறியீட்டு எண்	தாள் பெயர்	வளமை
1	2IPMTLCI	தமிழ் இலக்கிய ஆராய்ச்சி நெறிமுறைகள்	4

அலகு - 1 ஆய்வு முறைகள்

தனிநிலை ஆய்வு - பயன்பாட்டு ஆய்வு - ஒருதுறைசார் ஆய்வும் தொடர்புடைய பத்துறைசார் ஆய்வும் - பகுப்புமுறை ஆய்வு - தொகுப்பு முறை ஆய்வுகள் - வரலாற்றியல் அணுகுமுறை - சமூகவியல் அணுகுமுறை - உளவியல் அணுகுமுறை-அறிவியல் - அணுகுமுறை ஒப்பியல் அணுகுமுறை.

அலகு - 2 ஆய்வுக் களங்கள்

ஆய்வுச்சிக்கல்கள்-ஆய்வுச்சிக்கலை இனம் காணுதலும் பகுத்துணர்தலும் - ஆய்வு சிக்கலைப் பற்றிய விளக்கம்-ஆய்வுச் சிக்கலின் தகவல் அறிதலும் உறுதிப்பாடும் - ஆய்வுச் சிக்கலை மையமிட்ட தலைப்பினைத் தெரிதல், ஆய்வின் எல்லை.

அலகு-3 கருதுகோள்

கருதுகோள் இலக்கணமும் வகைப்பாடும்-ஆய்வில் கருதுகோள் பெறும் இடம் - நிலைபெறும் இடம் - கருதுகோள் புலப்படுத்தல்- கருதுகோள் போலி.

அலகு - 4 ஆய்வுத் தரவுகளைத் தொகுத்தல்

முதன்மை ஆதாரங்கள், துணைமை ஆதாரங்கள் தரவுகளைத் தொகுத்தல் - நூலகப் பயன்பாடு - நோக்கீடு - நூலடைவு- நேர்காணம் - வாய்மொழி மரபுச் செய்திகள் - வினா நிரல்.

அலகு - 5 ஆய்வேட்டின் அமைப்பியல்

ஆய்வுப் பொருள் அடைவும் இயல்பாகுபாடும் - இயல் அமைப்பு இயல்களின் வைப்பு முறை நடைச் செம்மை - பிறக் கோட்கூறல் - உடன்படல் - மறுத்தல் - மேற்கோள்காட்டும் முறைமை - அடிக்குறிப்புகள் - குறியீட்டு விளக்கம் - பின்னிணைப்புகள் - மூல நூற்பட்டியல் - மேற்கோள் - துணை நூற்பட்டியல்.

பாடநூல்

1. ஆய்வியல் நெறிமுறைகள் கு.வெ.பாலசுப்பிரமணியம்.
2. ஆராய்ச்சி நெறிமுறைகள் சு.வெங்கடராமன்.

பார்வை நூல்கள்

1. ஆய்வியல் அறிமுகம் - தமிழணன்னைல்.
2. ஆய்வுக் களங்கள் - கு.வெ. பாலசுப்பிரமணியம்.
3. ஆய்வு கட்டுரை எழுதும் முறை - முத்து சண்முகம் சு.வேங்கடராமன்.
4. இலக்கிய ஆராய்ச்சி நெறிமுறைகள் - முத்து சண்முகம் சு. வேங்கடராமன்.
5. ஆய்வு நெறிமுறைகள் - விக்ரமநாதன் .ஈ.சா.



Kalaingar Karunanidhi Government Arts College for Women (Autonomous)
(Nationally Re-accredited with B⁺⁺ Grade by NAAC 3rd Cycle)
(Affiliated to Bharathidasan University, Tiruchirappalli)
Pudukkottai - 622001, Tamilnadu, India.

Phone:04322 222202 Website:www.gacwpdkt.ac.in E-mail:gacwpdkt@yahoo.co.in

3.4. RESEARCH PUBLICATIONS AND AWARDS

3.4.1.2 RESEARCH METHODOLOGY COURSE WORK

PG & RESEARCH DEPARTMENT OF ENGLISH

SEMESTER: I

COURSE I: RESEARCH METHODOLOGY AND THEORY OF LITERATURE

CODE: 21MPEL1

HOURS: 6 CREDITS: 4

UNIT – I

- Definition, Meaning and Philosophy of Research
- Types of Research
- Literary Research – Research in Social Sciences and Physical Science
- Choosing the Topic / Problem
- Hypothesis and Thesis Statement.

UNIT – II

- Working Bibliography and Working Outline
- Note making – Collection and Organization of Material
- Method and Tools of Analysis – Primary and Secondary Sources
- Library and Electronic Sources – Documentation

UNIT – III

- Language, Style and Types of Discourses
- Diction
- The Style suitable for a Literary Thesis
- Narration
- Argumentation
- Exposition
- Description
- Format of the Thesis

UNIT – IV

- Theory of Literature
- Literature and Biography
- Literature and Psychology
- Literature and Society
- Literature and Ideas
- Style and Stylistics
- The Nature and Modes of Narrative Fiction

UNIT – V

- Preparing a Sample Project in the form of a Term Paper
- Parts of a Short Project Proposal
- Title, Form and Sequence
- Statement of Aim and Objectives
- Hypothesis Formulation and Statement
- Framing the Thesis Statement
- Scope of the Thesis
- Methodology adapted

Books for Study:

1. Bateson, F.W. *The Scholar Critic* Routledge&Kegan Paul Books, 1972.
2. Thorpe, James. *The Aims and Methods of Scholarship in Modern Language and Literatures* Edited 3rdEdn David G. Nicholls 2007.
3. Gibaldi, Joseph. *MLA Handbook*. April 11 20168thedn.
4. Brooks, C. and Warren, R.P. *Modern Rhetoric* Writing Publications Harcourt, Brace & World, 3rdEdn.
4. Wellek and Warren: *Theory of Literature*, Mariner Books, 3rdEdn 1956. Penguin Books, 1949.

Books for Reference:

1. Sinha, M.P. *Research Methods in English*. Atlantic Publishers. New Delhi 2021.
2. Watson, G. *The Literary Thesis* Prentice Hall Press 1970.
3. Campbell. *Form and Style in Thesis Writing* MoughtonMufflin 3rdEdn 1969
4. *Thesis and Project Work: A Guide to Research and Writing* C.J. Parsons. Allen and Unwin, 1973.
5. Anderson et al. *Thesis and Assignment Writing* John Wiley & Sons Ltd, 1971.
6. David Lodge: *The Modes of Modern Writing. Metaphor, Metonymy, and the Typology of Modern Literature* Bloomsbury Academic 2015.



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3.4.1.2 RESEARCH METHODOLOGY COURSE WORK

PG & RESEARCH DEPARTMENT OF HISTORY

Sem -I

SUB CODE: 22MPHS1

RESEARCH METHODOLOGY AND THESIS WRITING

Objectives

To learn about the basic concept of Research.
To know about different approaches Historical Research.
To make a comparative study of Historical Research Method and other method of Historical research.
To get a practical training about preparation of thesis.
To learn about analytical and synthetic operations and role of Computer in Historical Research.

UNIT: I

Specific Objective

To get a knowledge about the meaning and importance of Research

- 1.1 Meaning of Research
- 1.2 Importance of Research
- 1.3 Types of Research
- 1.4 Methodology of Research in Social Science
- 1.5 Research Problem.

UNIT II

Specific Objective

To know about the impact of scientific approach on Historical Research

- 2.1 Impact of Scientific approach on Historical Research
- 2.2 Objectivity
- 2.3 Subjectivity
- 2.4 Interdisciplinary approach to History
- 2.5 Scientific Research Methodology

UNIT: III

Specific Objective

To understand about the De-construction as a method of research.

- 3.1 Qualitative Methods in Historical Research
- 3.2 Quantitative Methods in Historical Research
- 3.3 Combining Qualitative and Quantitative Methods in Historical Research
- 3.4 De-construction as a method of Research
- 3.5 Empirical Research Methods

UNIT IV

Specific Objective

To learn about the thesis writing and Historical methods.

- 4.1 Historical Method: Choosing a Research topic
- 4.2 Data Collection, Primary & Secondary Sources
- 4.3 Thesis writing and Historical methods
- 4.4 Heuristics – Hermeneutics
- 4.5 Hypothesis and Research Design

UNIT V

Specific Objective

To learn about the thesis writing and Historical methods.

- 4.1 Historical Method: Choosing a Research topic
- 4.2 Data Collection, Primary & Secondary Sources
- 4.3 Thesis writing and Historical methods
- 4.4 Heuristics – Hermeneutics
- 4.5 Hypothesis and Research Design

UNIT V

Specific Objective

To study about the Computer and its role in Research Drafting a Thesis.

- 5.1 Computer and its role in Research Drafting a Thesis
- 5.2 Analytical and Synthetic operations: Documentation
- 5.3 Footnotes
- 5.4 Bibliography
- 5.5 Tables and Charts

Books for Reference

Bridget Somekh and Cathy Irwin, Research Methods in the Social Science, New Delhi Vistaar publication, 2003.

Food Roderick, An Introduction to Quantitative Methods for Historians, London Methuen Nov.5/2013.

Malcolm Williams, Science and Social Science, An Introduction London and New York Routledge 2000.

Martin Hollis, The philosophy of Social Science, An Introduction, New Delhi Cambridge UP 2000.



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3.4. RESEARCH PUBLICATIONS AND AWARDS

3.4.1.2 RESEARCH METHODOLOGY COURSE WORK

PG & RESEARCH DEPARTMENT OF ECONOMICS

RESEARCH METHODOLOGY AND STATISTICAL TECHNIQUES – 21MPEC1

OBJECTIVES

- To familiarize the students with the basic concept of research methodology in social science research.
- To make the students to understand research design, sampling and research report.
- To impart a basic knowledge of descriptive statistics.
- To enable the students understand statistical methods.
- To help the students understand steps in testing of hypothesis and application of statistical tool in research.

UNIT I INTRODUCTION TO RESEARCH METHODOLOGY

- 1.1 Social Research – Nature – scope, Uses and major steps
- 1.2 Pure, Applied and Action Research
- 1.3 Scientific Method – Theory and facts
- 1.4 Formulation of Research problem
- 1.5 Hypothesis – Types- Sources and characteristics of a good Hypothesis.

UNIT II RESEARCH PROBLEM AND DESIGN

- 2.1 Need and types of Research Design- Exploratory –Descriptive – Diagnostic and Experimental Design - Sampling Design - Probability Sampling, Simple random.
- 2.2 Systematic- stratified- multistage- cluster sampling.
- 2.3 Non Probability- sampling –purposive- judgment quota -convenience sampling
- 2.4 Data collection – Primary and secondary -- Observation case study and survey.
- 2.5 Schedule - Questionnaire Construction - Requisites of a good questionnaire - Mechanics of thesis writing- Format of Research Report -Footnotes and the Reference.

UNIT III DESCRIPTIVE STATISTICS

- 3.1 Presentation of data Editing coding and Tabulation data
- 3.2 Diagrammatic and Graphic Representation of Data – Processing data
- 3.3 Averages mean, median and mode and weighted averages
- 3.4 Merits and demerits – Dispersion – Range, Standard Deviation
- 4.5 Coefficient of variation and Gini ratio – Skewness - Pearson's and Bowley's Coefficient of skewness.

UNIT IV STATISTICAL METHODS

- 4.1 Correlation – Simple- Partial- Multiple - Pearson's Coefficient of Correlation and Rank Correlation
- 4.2 Regression -Simple Linear - non – Linear Regression – Multiple Regression – Profit Model and Logic Model

4.3 Time Series Analysis Components and Uses – Methods of Estimation- Trends and seasonal Variations – Scaling Techniques – Types – Reliability and validity

4.4 Documentary Statistical Packages in Computer

4.5 Interpretation of SPSS package output relevant for multivariate analysis.

UNIT V- STATISTICAL INFERENCE

5.1 Steps in testing of Hypothesis

5.2 “z” Test (Uses and simple problems) m- “t” Test (assumptions

5.3 Properties and applications and simple problems) – “F” Test (assumptions, Properties and applications and simple problems)

5.4 Chi Square test (“(assumptions, properties and applications)

5.5 “U” Test and “H” Test.

Course Outcomes:

On completion of this course the students should be able to

CO1 Describe the basic concept of research scientific method research problem and hypothesis.

CO2 Identify appropriate research design and sampling design

CO3 Analyse the presentation of data, processing data, mean, median, mode, standard deviation, Gini – ratio, dispersion and skewness.

CO4 Compare the relationship between correlation and regression, methods of estimation and the role of SPSS in research.

CO5 discuss the steps in testing of hypothesis properties, application of “T”- Test,” F”- Test, “Z” – Test, “Chi Square” test and “U”, “H” test.

REFERENCES:

1. Elhance, D.N (2000), FUNDAMENTALS OF Statistics. Allahabad: Kitab Mahal.
2. S.P. Gupta (2001) Statistical Methods. S.Chand and Co., New Delhi.
3. Kothari, C.R. (1998) Research methodology. Wiley Eastern :Ltd., New Delhi.
4. Wilkinson and Bhandarkar (1991), Methodology and Techniques of social Research. Himalaya publishing House, Bombay.
5. Eari babbie (1975). Practice of Social Research. Wadsworth Publishers , New York.
6. Goode and Hatt(1987) Methods in social research. Mcgraw Hill, London.
7. Kurein, C.T(1973) Research Methodology In Economics. Madras Sangam Publishers.



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3.4. RESEARCH PUBLICATIONS AND AWARDS

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PG & RESEARCH DEPARTMENT OF MATHEMATICS

M.Phil.,
Mathematics 2021
Onwards

Semester : I
Course : I

Sub. Code : 21MPMA1
Hours/Week : 6
Credit : 4

RESEARCH METHODOLOGY, PYTHON & NON-LINEAR

PROGRAMMING

Course Objectives:

The main objectives of this course are to

- CO1. Understand some basic concepts of research and its methodologies.
- CO2. Identify appropriate research topics select and define appropriate research problem.
- CO3. To get familiarize with the mathematical formulation of a real world problem.
- CO4. To acquaint with the problem solving techniques theoretically as well as graphically.
- CO5. To tackle several parameters into account while dealing with the problem.

Course Outcomes:

After the completion of the course, Students will be able to

- CO1 - Identified the role and importance of research in the social sciences.
- CO2 - Discussed the issues and concepts salient to the research process.
- CO3 - Understood a basic thoughtfulness for linear programming problem.
- CO4 - Applied the techniques of LPP to solve real world problems.
- CO5 - Distinguished the use of different methods to various kinds of Non - LPP on the basis of type of constraints and number of variable.

UNIT I: Research Methodology
Research Methodology – Introduction

UNIT II: Research Methodology
Defining the Research Problem, Research Design.

UNIT III: Research Methodology
Methods of Data Collection - Interpretation and Report Writing.

UNIT IV: PYTHON
Python : What is Python? – Origin – Features – Downloading and Installing Python –Running Python.

Getting Started: Print Statement- Program Input and the raw input()Built-in Function – Comments-Operators-Variables and Assignment.

Python Basics: Statements and Syntax – Variable Assignment – Identifiers – Basic Style Guidelines – Memory Management – First Python Programs.

UNIT V: Non-Linear Programming
Introduction – The General Non Linear Programming Problem – Quadratic Programming – Separable Programming – Geometric Programming.

TEXT BOOKS

1. Research Methodology - Methods & Techniques, C. R. Kothari, Vishwa Prakashan (Division of Wiley Eastern Ltd.) 1980.
2. "Core Python Programming" – Wesley J. Chun – Prentice Hall India – Second Edition.
3. Operations Research – Theory and Applications - J.K.Sharma, Macmillan Publishers India Limited.(Reprinted 2009), India.

UNIT I : Chapter 1 (Text Book 1)

UNIT II : Chapter 2 & 3 (Text Book 1)

UNIT III : Chapter 6 & 14 (Text

Book 1) UNIT IV : Chapter 1:

sec 1.1-1.5 (Text Book 2)
Chapter 2: sec 2.2, 2.3-2.5
Chapter 3: sec 3.1-3.6

UNIT V : Chapter 24: Sec. 24.1 to 24.4 & 24.6 to 24.7 (Text Book 3)



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3.4. RESEARCH PUBLICATIONS AND AWARDS

3.4.1.2 RESEARCH METHODOLOGY COURSE WORK

PG & RESEARCH DEPARTMENT OF PHYSICS

Semester: I
Hours/Week: 6

Credit:4
Code: 21MPPH1

COURSE I: RESEARCH METHODOLOGY

General Objective: To comprehend the principles of scientific research, scientific reports, numerical analysis, C programming and analytical technique.

Course Objectives

The learners will be able to

1. Outline the fundamental concepts of literature survey and reference collection.
2. Summarize the preparation and presentation of scientific reports.
3. Classify the dispersion, range and deviation.
4. Explain the basic functions of structure of C.
5. Recall the basics of analysis of materials.

UNIT I: Principles of Scientific Research

Identification of the problem - Determining the mode of approach - Literature survey - Reference collection - Current status of the problem - Impact and usefulness of the research topic - Role of guide and scholar - Familiarity with ideas and concept of investigation.

UNIT II: Preparation and Presentation of Scientific Reports

Access using Internet web tools, e-mail and Internet browsing - Drawing inference from data - Qualitative and quantitative analysis - Results - Seminar - Preparation and presentation of scientific reports, need and methods - Abstraction of a research paper - Synopsis writing - Art of writing a Research paper and thesis - Power point and poster presentation.

UNIT III: Numerical Analysis

Types of data - Relative and cumulative frequency distribution - Mean - Median - Mode - Relationship among mean, median and mode - Dispersion - Range - Quartile deviation - Mean deviation - Standard deviation - Coefficient of variation - Skewness - Kurtosis.

UNIT IV: C

Structure of C - Character set - Constants, variables and data types - Operators and expressions - Input and output operations - Scope and lifetime of a variable in functions - Operators - Expressions - Control statements - if else, while, for, do while, switch, break and continue statements - Functions - Arrays - Character Strings.

UNIT V: Advanced Analytical Techniques

Analytical Technique - Principles of single crystal and powder X-ray diffraction, FT-IR, Raman and UV-visible spectrophotometers - Instrumentation - Sample preparation - Analysis of materials - SEM, TEM, AFM, EPMA.

Books for Study and Reference

1. Thesis and Assignment Writing, J. Anderson, B.H. Durston and M. Poole, Wiley Eastern, London, 1977.
2. Hand Book of Methodology of Research, Rajammal Devadas, R.K.M. Vidyalaya Press, 1976.
3. Research Methodology: Methods and Techniques, C.R. Kothari, New age International, New Delhi, 2006.
4. Programming in ANSI C, E. Balagurusamy, Tata McGraw-Hill Publishing Company Limited, New Delhi, 2008.
5. Business Mathematics and Statistics, P. R. Vittal, Margham Publications, Chennai, 2004.
6. Fundamentals of Mathematical Statistics, S.C. Gupta and V.K. Kapoor, Sultan Chand & Sons, New Delhi, 2008.

Web Resources

1. <https://planningtank.com/academic-writing/importance-guide>
 2. <https://www.karger.com/Article/Fulltext/346077>
 3. <https://www.ck12.org/c/statistics/introduction-to-mean-median>
 4. <https://www.personal.acfr.acfr.usyd.edu.au/tbaily/ctext/ctext.pdf>
 5. <https://serc.carleton.edu/research>
- <https://www.sciencedirect.com/topics/engineering/microanalysis>



21/3/24
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KALAIKHAR KARUNANIDHI GOVT.
ARTS COLLEGE FOR WOMEN (A),
PUDUKKOTTAI - 622 001