

ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ



University of Mysore

(Estd.1916)

Ph.D in EARTH SCIENCE





UNIVERSITY OF MYSORE

Department of Studies in Earth Science

Manasagangothri, Mysuru-570 006

PH.D. in EARTH SCIENCE

Regulations and Syllabus

Ph.D. in EARTH SCIENCE

A handwritten signature in blue ink, appearing to be 'K.G. Ashamanjari'.

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Chair Person, BOS

UNIVERSITY OF MYSORE
GUIDELINES AND REGULATIONS LEADING TO
PH.D in Earth Science

Programme Details

Name of the Department : Department of Studies in Earth Science
Subject : Earth Science
Faculty : Science
Name of the Programme : PH.D

INTRODUCTION:

This course offers "An overview of research methodology including basic concepts employed in quantitative and qualitative research methods. This course introduces research methods as they apply to the higher education (specialization) field of study. It also familiarizes participants with basic of research and the research process. To enable the participants in conducting research work and formulating research synopsis and report. Main aim of this course is to impart knowledge for enabling students to develop data analytics skills and meaningful interpretation to the data sets so as to solve the research problem.

PROGRAMME OUTCOME:

The aim of the course is to provide participants with an introduction to research methods and report writing. Upon completing this course, each student will be able to:

1. Demonstrate knowledge of research processes (reading, evaluating, and developing).
2. Perform literature reviews using print and online databases.
3. Identify, explain, compare, and prepare the key elements of a research proposal/report.
4. Compare and contrast quantitative and qualitative research.
5. Describe, compare, and contrast descriptive and inferential statistics, data analysis and provide examples of their use in specialized research.
6. Describe sampling methods, measurement scales and instruments, and appropriate uses of each.
7. Demonstrate how educational research contributes to the objectives of your doctoral program and to your specific career aspirations in specialized field of study.

PEDAGOGY

- Conducting literature survey under the direction of the supervisor is a primary module in the research methodology.

- Participatory learning on surveys and conducting experiments under the supervision of teachers are adopted.
- Practical orientation on Sample survey data organisation and interpretation through statistical techniques is yet another major method of approach in the pedagogy.
- Evolving proper conclusions and propose possible recommendations for furtherance of knowledge in the subject and field of specialisation chosen by the research scholar.

COURSE-I: RESEARCH METHODOLOGY

COURSE OUTCOME

1. Identify, explain, compare, and prepare the key elements of a research proposal/report.
2. Compare and contrast quantitative and qualitative research.
3. Describe, compare, and contrast descriptive and inferential statistics, data analysis and provide examples of their use in specialized research.

COURSE CONTENT:

1. NATURE OF RESEARCH AND METHODOLOGY

Definition of Research - Characteristics of Research -Criteria of Good Research - Knowledge and Science - Methods of Acquiring Knowledge - Research Methodology, Defined - Procedural and Procedural Perspective of Research Methodology - Factors Affecting Testability.

2. SCIENTIFIC METHOD

Concept of Science - Method - Scientific Method - Definition of Scientific Method - Assumptions of Scientific Method - Characteristics of Scientific Method – The Components of Scientific Approach - Steps in Scientific Method - Problems and Difficulties of Scientific Method - Essentials of Good Scientific Method - Nature of Scientific Method - Use of Scientific Method and Its Value - Difficulties in the Use of Scientific Method in Social Sciences - Limitations of Scientific Method - Method of Tenacity - Method of Authority - Method of Intuition – Distinction Between Scientific and Non-Scientific Method – Scientific Method and Non-Scientific Method.

3. METHODS AND TECHNIQUES OF RESEARCH

Methods of Study - Application of Different Methods to Different Fields - Techniques of Study - Distinctions Between Methods and Techniques of Research - Methods of Research - Fundamental or Basic Research – Applied or Action Research - Limitations of Action Research -Distinction Between Basic Research and Applied Research- Descriptive Research - Historical Research. Necessary Conditions for Historical Research - Formulative or Exploratory Research - Experimental Research - Ex-Post Facto Research - The case study - Survey Research -Distinction between Social Survey and Social Research -Evaluation Research - Assessment Study – Comparative Method -

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Precautions Used in Comparative Method - Inter- Disciplinary Research - Essentials of Interdisciplinary Approach - Need for Interdisciplinary Approach.

4. CASE STUDY METHOD

Meaning of Case Study - Background/Evolution of Case Study Method - Definition of Case Study - Assumption of Case-Study Method - Major Phases/Steps of Case-Study Method - Characteristics of the Case-Study Method - Sources of Case Study Method - Functions – Precautions in Choosing an Object of Case-Study - Procedures, Techniques and Tools - Case Study Method and Statistical Method - Points of Similarity - Points of Dissimilarity - Case Study and Case Work - Advantages of Case Study Method - Limitations of Case Study Method – Suggested Improvement - Conclusion - Techniques Involved in Preparation of Cases - Assumption Techniques – Caution Techniques - Procedural Techniques - Dozen Techniques - Research of Cases in Management.

5. RESEARCH PROBLEM SELECTION AND FORMULATION

Levels of Research Projects - Term Papers and Assignments - The Professional Paper - Research Monograph - Dissertations and Thesis - Problem Awareness, Selection and Formulation - types of Research Problems in Social Sciences - Components of a Research Problem - Sources of Research Problems - Selection of the Problem – Review of Relevant Literature - The Techniques of Skimming - Hypothesis - Role of the Teacher-Guide in Research Project - Criteria of a Good Research Problem - Formulating and Stating the Problem - Definition and Statement of the Problem - Delimitation of the Problem - Justification of the Problem - Evaluating the Problem.

6. DOCUMENTARY SOURCES OF DATA

Sources of Information - Primary and Secondary Data - Choice Between Primary and Secondary Data
– Documentary Sources - Classification of Documents - Kinds of Personal Documents - Public Documents - Internal and External Secondary Data - Advantages of Documentary Sources of Data - Disadvantages of Secondary Sources of Data - Evaluation of Secondary Sources of Data - Social Science Documentation Services in India - Documentation Centres/Research Libraries - Documentation Service in India - Selection Dissemination of Information - Indexing Service - Retrospective Indexing of Social Science Periodicals - Newspapers Indexes - Abstracting Service - State of Art Publications - Bibliographical Services - Data Services - location Services - Depository Services – Conclusion.

7. SAMPLING AND SAMPLING DESIGN

Advantages of Census - Disadvantages of Census Method - Meaning of Sample - Concepts used in Sample and Sample Design - The Sampling Process - Steps in the Sampling Process - Principles of Sampling- Essentials of a Good Sampling - Methods of Sampling - Random Sampling Methods - Simple or Unrestricted Random Sampling -

Mixed or Stratified Random Sampling - Systematic Sampling or Quasi-Random Sampling - Multi- Stage or Cluster and Area Sampling- Sequential Sampling - Non-Random/Non-Probability Sampling – Accidental Sampling - Convenience Sampling - Judgment or purposive Sampling - Quota Sampling - Contribution of Probability and Non-Probability Sampling - Criteria of a Good Sample Design - Sampling and Non-Sampling Errors - Sampling Errors - Causes of Biases - Methods of Reducing Sampling Errors- Non-sampling Errors-Selected Causes of Non-Sampling Errors - Control of Non-Sampling Errors - When and Where Sampling Technique is Appropriate - Defects -Sampling Technique and Limitations - Sample Size - Managerial Summary of Sampling -Selection of Appropriate Method of Sampling:

8. PILOT STUDY AND PRETESTING

Meaning of Pilot Study - Need for Pilot Study - Role of Pilot Study in Identifying the Variables Involved in Research - Advantages of Pilot Study - Pre-testing - Meaning of Pre-Testing - Object of Pre-Testing - Pre-Testing and pilot Study - Significance of Pre-Testing - Advantages of pre- Testing.

9. PROCESSING AND ANALYSIS OF DATA

Steps in Data Processing - Editing - Guidelines to Editors - Coding - Rules of Coding - Distinction Between Editing of Data and Coding of Data - Classification – types of Classification - Rules for Classification - Content Analysis - Transcription - Methods of Transcription – Tabulation - Rules for

Determining Class Intervals - Types of Tabulations - Methods of Tabulation - Electronic Data Processing - Advantages of Machine Tabulation - Disadvantages - Analysis of Data - Characteristics of Analysis of Data.

10. INTERPRETATION OF DATA

Forms of Interpretation - Essentials and Prerequisites for Interpretation - Precautions in Interpretation
– Comparison in Interpretation - Concluding Remarks on Analysis and Interpretation - Conclusions and Generalizations – Methods of Generalization - logical Method - Statistical Method - Deduction - Common Fallacies of Reasoning – Computers in Research Applications - Sources of Errors in Interpretation.

11. STATISTICAL APPLICATIONS IN RESEARCH

Statistics and Social Research - Percentages – Frequency Distribution - Measures of Central Tendency

- Mode from Ungrouped Data-Weighted Arithmetic Mean – Arithmetic Mean from a Frequency Distribution - Median from a Frequency Distribution - Mode from Frequency Distribution - Measures of Variability - Average Deviation from Frequency Distribution - Steps in the Computation of

Average Distribution - Standard Deviation Calculated from a Frequency Distribution - Steps in Computation of Standard Deviation by the Short Method - Time Series –

Measurement of Trend - Correlation - Methods of Studying Correlation - Regression Analysis - Index Numbers.

12. HYPOTHESIS TESTING

Tests of Hypothesis -parametric Tests -Hypothesis Testing of Means -- Hypothesis Testing for Difference Means- - Hypothesis Testing for- Comparing a Variance to some Hypothesized population Variances- Limitations of the Tests of Hypotheses.

13. RESEARCH COMMUNICATION

Allocable Time to prepare Report -Essentials of a Scientific Report - Categories of Audience Report - Oral Report - Written Report - Stages in preparing the Research Report - Organization – Write-up Steps in Drafting Reports- First Draft – Objectives - Steps in Writing First Draft - Second Draft - Objectives –Steps in Writing First Draft - Tests to be Applied -The Third Draft- The presentation of Sampling Errors in the Report - presentation of Inconclusive or Negative Results in the Report.

14. STRUCTURE OF RESEARCH REPORT

Preliminary Section - Text or Context - Reference Material - Title page - Acknowledgement and preface - Table of Content - List of Tables and Figure-abbreviation - The Text (context) Chapters - Introduction - Main body of the Report - Conclusions - Reference Material -Bibliography - Appendices Synopsis/Abstract - Index - Footnote - Details in Footnotes - How to put a Footnote – Quotations - Plagiarism and Acknowledgement - Tables - Figures Guidelines for good Figures Maps- Guidelines for typing - Pagination - Evaluation of Research Report – Title- Problem - Data Collection

- Data Analysis s Summary and Conclusions - Form and Style - The Viva Voce - Presentation of and Evaluation Report.

COURSE-II : REVIEW OF LITERATURE IN AREA OF RESEARCH

COURSE OUTCOMES:

- Perform literature reviews using print and online databases.
- Identifying the gaps in concerned area of research

COURSE CONTENT

Available Text Books of the Subject of Research - Authors, Publishers-

1. Content Analysis.
2. Review of Text Books - Writing outlines of contents covered
Available Reference
3. Sources - Reference items as
 - a) Reference Books/volumes/memoirs / Special Publications
 - b) Reference Journals/Bulletins/Transactions

4. Review of Reference Books - Writing Chronological sequences of research concepts.
5. Research contributions as Time-line.
6. Materials and methods used in chosen area of research.
7. Bibliographic items of chosen area studies.
8. Thrust areas of Research carried out in different (Completed and on-going) international laboratories.
9. Thrust areas of Research (funded) of DST/CSIR/ and other National organizations.
10. Concepts, identification of Gaps in knowledge, Applications and expected contributions of your research design.

