Nepal Open University

Manbhawan, Lalitpur, Nepal
Faculty of Science, Health and Technology

Curriculum

Master of Philosophy in Information and Communication Technology (MPhil in ICT)

Course Title: Advanced Research Methodology **Credit Hours**: 3

Full Marks: 100 **Pass Marks: 50**

Course Code Number: ICT701 **Semester**: I **Year**: I

Course Introduction:

Advanced Research Methodology provides students with a comprehensive overview of a broad range of research paradigms and methodologies, with their ontological and epistemological underpinnings, as well as associated methods and techniques, in order to inform the design of methodologically sound research proposals and to develop their interdisciplinary methodological literacy as future researchers.

Course objectives:

The primary objective of this course is to develop a research orientation among the students and to accustom them with fundamentals of research methods. Specifically, the course aims at introducing them to the basic concepts used in research and to scientific research methods and their approach. It includes discussions on sampling techniques, research designs and techniques of analysis. Some other objectives of the course are:

• To develop understanding of the basic framework of research process

• To develop an understanding of various research designs and techniques

• To identify various sources of information for literature review and data collection

• To develop an understanding of the ethical dimensions of conducting applied research

• Appreciate the components of scholarly writing and evaluate its quality

Learning outcomes:

By the end of the module, students will be able to:

- Describe a range of quantitative, qualitative and mixed-method research designs used in research and identify the advantages and disadvantages associated with these designs.
- Choose appropriate quantitative or qualitative method to collect data.
- Write a research proposal for academic purpose as well as for submission to a research funding body.
- Write a research paper and dissertation.

Course Contents:

Unit 1: Fundamentals of research [**8 hours**]

1.1 Basic principles of research
1.2 Theory building, facts, concepts, constructs and definitions
1.3 Valuable and its attributes
1.4 Ethics in research
1.5 Preparation of proposal
1.6 Review of literature, formation and types of hypothesis and testing of the hypothesis
1.7 Research designs, sampling designs, methods, techniques and tools of research
1.8 Creativity, innovation, originality and advancement of knowledge and application to the society
1.9 Epistemology of sciences – Construction of scientific facts
1.10 Research Methods: Scientific method vs Arbitrary Method, Logical Scientific Methods: Deductive, Inductive, Deductive-Inductive, pattern of Deductive – Inductive logical process – Different types of inductive logical methods.

Unit 2: Qualitative and Quantitative Methods [**6 hours**]

2.1 Types and sources of data
2.2 Qualitative, quantitative and mixed method of data collection
2.3 Data analysis for specific type of data
2.4 Tabulation and graphical representation, Central tendency
2.5 Dispersion, Correlation, Regression, Use of chi square
2.6 Steps involved in applying chi—square test
2.7 Non parametric or free distribution tests
2.8 Testing of hypothesis for non parametric data

Unit 3: Data Collection and Analysis [**6 hours**]

3.1 Sources of Data – Primary, Secondary and Tertiary
3.2 Types of Data – Categorical, nominal & Ordinal
3.3 Methods of Collecting Data : Observation, field investigations, Direct studies – Reports, Records or Experimental observations
3.4 Sampling methods – Data Processing and Analysis strategies
3.5 Graphical representation – Descriptive Analysis and Inferential Analysis
3.6 Correlation analysis, Least square method
3.7 Hypothesis testing, Generalization and Interpretation – Modeling.

Unit 4: Communication and evaluation of research [**5 hours**]

4.1 Report writing and the writing of research papers
4.2 Presentation of research proposals
4.3 Evaluation of research report
4.4 Presentation of research: Oral and Written (abstracts/synopsis)

Unit 5: Scientific Writing [**8 hours**]

5.1 Structure and components of Scientific Reports – types of Report
5.2 Technical Reports and Thesis, Significance
5.3 Different steps in the preparation – Layout, structure and Language of typical reports
5.4 Illustrations and tables, Bibliography, Referencing and foot notes
5.5 Citation Style – sheet
5.6 Preparing Research papers for journals, Seminars and Conferences
5.7 Design of paper using TEMPLATE, Calculations of Impact factor of a journal, citation Index, ISBN & ISSN
5.8 Preparation of Project Proposal - Title, Abstract, Introduction – Rationale, Objectives, Methodology – Time frame and work plan
5.9 Budget and Justification
5.10 References

Unit 6 – Application of Results [**6 hours**]

6.1 Environmental Impacts, Ethical Issues and Ethical Committees
6.2 Commercialization: copy right, royalty, Intellectual Property rights and patent law
6.3 Track Related aspects of intellectual property Rights
6.4 Reproduction of published material, Plagiarism
6.5 Citation and Acknowledgement
6.6 Reproducibility and accountability.

Unit 7 – Application of Computer in Research [**6 hours**]

7.1 Basic principles of Statistical Computation using SPSS
7.2 Word processing and Data processing
7.3 Graphical processing
7.4 Use of web 2.0 tools for research
7.5 Use of excel and use of graphical software
7.6 Use of multimedia tools
7.7 Use of Internet in Research – Websites, search Engines, e-journal and e-library.

Mode of Delivery:

The mode of course delivery consists of open and distance (online/offline) and face-to-face or both. 25% of the course is designed to be delivered on online mode, 60% on offline, and remaining 15% on face-to-face mode.

Evaluation Scheme:

- In-semester: 40%
- End-semester: 60%

In Semester Evaluation (40%)	End Semester Evaluation (60%)
a) Unit Assignment/Project/Task (20%) b) Critical Comment/Review (15%) c) Interaction with the Tutor (5%)	a) Short answer questions b) Long answer questions or research paper writing (With a focus on higher order thinking skills such as analysis, synthesis, evaluation, etc.)

Semester Guidelines:

(i) The semester system is not only an examination system. The main objective of this system is to enhance student's knowledge, skill and capacity continuously, extensively and in depth.

(ii) The normal and maximum duration for obtaining the master's degree is 24 months and 72 months respectively. Students failing to complete the requirements in 72 months have to re-enroll.

(iii) Students need to maintain 80% online presence (attendance) for both theory and laboratory classes. They should be regular or part time as per the course registration in online classes. They should enter before starting the classes.

Reference books:

1. Mildred L. Pattern, Michelle Newhart (2017). Understanding Research Methods: An Overview of the Essentials. Taylor & Francis.

2. Kothari, C.R. (2008). Research Methodology: Methods and Techniques. Second Edition. New Age International Publishers, New Delhi.