Ph.D. COURSE WORK SYLLABUS (2020)

PAPER I: Research Methodology and Computer Application

Syllabus Common to the stream: Medical Sciences and Nursing

SECTION A

Unit 1 – Science and Research:

Definition- History- Evolution of Scientific Inquiry- Verification versus falsification- Objectivity: Facts, theory and concepts- Philosophy of Science and Technology, Epistemology of sciences- Construction of scientific facts.

Unit 2 - Introduction to Research Methodology

- Meaning and importance of Research – Types of Research – Selection and formulation of Research Problem.
- Research Design- Need- Features- Inductive, Deductive and Development of models.
- Developing a Research Plan- Exploration, Description, Diagnosis, Experimentation, Determining Experimental and Sample Designs.
- Analysis of Literature Review- Primary and Secondary Sources, Web sources- critical Literature Review.
- Hypothesis- Different Types- Significance- Development of Working Hypothesis.
- 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 3 - Data Collection and Analysis

- Source of Data – Primary, Secondary and Tertiary - Types of Data Categorical, nominal & ordinal.

- Methods of Collecting Data: Observation, field investigation, Direct studies- Reports, Records or Experimental observation.

- Sampling methods- Data Processing and Analysis strategies- Graphical representation- Descriptive Analysis- Inferential Analysis- Correlation analysis- Least square method- Data Analysis using statistical package- Hypothesis- testing- Generalization and Interpretation- Modeling..

Unit 4 – Scientific Writing

- Structure and components of Scientific Reports- types of Report- Technical Reports and Thesis- Significance- Different steps in the preparation- Layout, structure and Language of typical reports- Illustrations and tables- Bibliography, Referencing and foot notes- Oral presentation- Planning-

Preparation and practice- Making presentation- Use of visual aids- Importance of Effective Communication.

- Conventions and strategies of Authentication- Citation Style- sheet.

- Preparing Research papers for journal, Seminars and Conferences- Design of paper using TEMPLATE, Calculations of Impact factor of a journal, citation Index, ISBN & ISSN.

- Preparation of Project Proposal- Title, Abstract, Introduction- Rational, Objectives, Methodology- Time frame and work plan- Budget and Justification- References.

Unit 5 – Application of Results and Ethics

Environmental Impacts – Ethical issues – Ethical Committees – Commercialization – copy right, Intellectual property rights and patent law- Track Related aspects of intellectual property Rights- Reproduction of published material- Plagiarism- Citation and Acknowledgement- Reproducibility and accountability.

Unit 6: Research and Publication Ethics (RPE)

Theory

- **RPE 01: Philosophy and Ethics (3Hrs.)**

1. Introduction to philosophy: definition, nature and scope, concept, branches

2. Ethics: definition, moral philosophy, nature of moral judgments and reactions

- **RPE 02: Scientific Conduct (5 Hrs.)**

1. Ethics with respect to science and research

2. Intellectual honesty and research integrity

3. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP)

4. Redundant publications: duplicate and overlapping publications

5. Selective reporting and misrepresentation of data

- **RPE 03: Publication Ethics (7 Hrs.)**

1. Publication ethics: definition, introduction and importance

2. Best practices / standards setting initiatives and guidelines: COPE, WAME etc.

3. Conflicts of interest

4. Publication misconduct: definition, concept, problems that lead to unethical

   Behaviour and vice versa, types

5. Violation of publication ethics, authorship and contributorship

6. Identification of publication misconduct, complaints and appeals

7. Predatory publishers and journals

PRACTICE

- **RPE 04: Open Access Publishing (4 Hrs.)**

1. Open access publications and initiatives

2. SHERPA/RoMEO online resource to check publisher copyright & self-archiving Policies

3. Software tool to identify predatory publications developed by SPPU

4. Journal finder / journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer

- **RPE 05: Publication Misconduct (4 Hrs.)**

A. Group Discussions (2 Hrs.)

1. Subject specific ethical issue, FFP, authorship

2. Conflicts of interest

3. Complaints and appeals: examples and fraud from India and abroad

B. Software tools (2 Hrs.)

Use of plagiarism software like Turnitin, Urkund and other open source software tools

- **RPE 06: DATABASES AND RESEARCH MATRICS (7 hrs.)**

A. Databases (4 hrs.)

1. Indexing databases

2. Citation databases: Web of Science, Scopus, etc.

B. Research Metrics (3 Hrs.)

1. Impact factor of journal as per journal Citation Report, SNIP, SJR, IPP, Cite Score

2. Metrics: h-index, g index, i10 index, altmetrics

SECTION B

Unit I:	Basic Knowledge of Computer
Unit II:	Use of Computer in Research
Unit III:	Use of technology and other equipments in Research.
Unit IV:	Data Analysis Software and Analysis
	Techniques Use of multimedia tools
	Use of MS Office
	Preparation of Power Point Presentations, Use of Internet for Research Purpose
	Introduction to UGC infonet, INFLIBNET and ERNET etc.
Unit V:	Practical Work (as required under the above units)