

# Syllabus of Course Work

## Ph.D. Programme



*Unveiling Excellence*

UNIVERSITY OF SCIENCE & TECHNOLOGY  
MEGHALAYA

# Structure of Syllabus

## Ph.D. Course Work

| <b>Name of the Paper</b>                  | <b>Paper Code</b> | <b>Credit</b> |
|---|-------------------|---------------|
| Research Methodology                      | PHD-101           | 4             |
| Computer Fundamental                      | PHD-102           | 4(3+1)        |
| Recent Development in Respective Subjects | PHD-103           | 4             |
| Thesis Component of the Concern Topic     | PHD-104           | 4             |
| Research and Publication Ethics           | PHD-105           | 2             |

**University of Science and Technology, Meghalaya**

**Details Syllabus  
Ph.D. Course Work**

**Paper Code: PhD-101**

**Paper Name: Research Methodology**

**Unit I**

Philosophical foundations of research, scientific basis of research, purpose of research, nature and process of research, selection and formulation of a research problem

**Unit II**

Research design – explanatory, experimental and descriptive studies, hypothesis building and testing - problems of measurement

**Unit III**

Data collection – observational methods, questionnaires and interviews, projection and other indirect method, library data collection

**Unit IV**

Use of available data as source material – qualitative and quantitative data - Scaling techniques  
Sampling

**Unit V**

Analysis and interpretation of data – coding, tabulation, statistical analysis – use of qualitative data and content analysis – statistical analysis of quantitative data, use of SPSS

**Unit VI**

Report writing – research and theory – values and objectivity in social science research

**Texts/references:**

1. Bridget Somekh and Cathy Lewin (ed), *Research Methods in the Social Sciences* (New Delhi; Vistaar, 2011)
2. B. N. Ghosh, *Scientific Method and Social Research* (New Delhi: Sterling, 1993)
3. Chava Frankfort-Nachmias and David Nachmias, *Research Methods in the Social Sciences* (London: St. Martin Press, 1994)
4. David E. McNabb, *Research Methods for Political Science: Quantities and Qualitative Methods* ( New Delhi: PHI Learning, 2009)
5. Gerard Gathrie, *Basic Research Methods; An Entry into Social Science Research* (New Delhi: Sage,2010)
6. Janet Buttolph Johnson and Richard A. Joslyn, *Political Science Research Methods* ( New Delhi: Princeton Hall of India, 1989)
7. Paul Oliver, *Writing Your Thesis* (New Delhi; Sage, 2008)
8. William J. Goode and Paul K. Hatt, *Methods in Social Research* (London: McGraw-Hill Book, 1981)



**University of Science and Technology, Meghalaya**  
**Details Syllabus**  
**Ph.D. Course Work**

**Paper Code: PhD-102**

**Paper Name: Computer Fundamentals**

**Unit I**

Computer Basics:

Definition of Computer, Block Diagram, Role of Computer in Education, Components of Computer Systems, Hardware, Software, System Software, Application Software, Operating Systems, Functions, Storage Structures of Computer Systems, Data, Information and Knowledge.

**Unit II**

Word Processing:

Introduction of Word Processor, Creating and saving documents, selecting, copying and pasting a part or whole document, editing a document. Features of Word processing software should be demonstrated in Lab classes practically.

**Unit III**

Data Processing:

Introduction to excel, need of spreadsheet, creating, opening and saving workbook, editing worksheet, using links, applying different views, types of functions. Features of Data processing software should be demonstrated in Lab classes practically.

**Unit IV**

Graphical Processing:

Introduction to Graphical Processor, Representation of Data with help of Graph, Pie-diagram, Bar Diagram etc using advanced software packages. Features of Graphical processing software should be demonstrated in Lab classes practically.

**Unit V**

Power Point: Introduction to Slides, media clips, graphs, pictures, web pages, adding different kind of slides, working with power point, inserting text objects, formatting text. All the features of Power point should be demonstrated practically in Lab classes.

**Unit VI**

Web Search: Search Engines and their usefulness in research, How to search and download a research paper using search engines, Uploading a file, E-book and Digital library, UGC infonet, INFLIBNET and ERNET.

Plagiarism: What is of Plagiarism? How to avoid Plagiarism?, Plagiarism checking using different software.



**Texts/references:**

1. Gupta S. C. Fundamentals of Statistics, Himalaya Publication House, Bombay, India.
2. RajaRam V. (1996), Fundamentals of Computers, Prentice Hall of India, New Delhi, India.
3. Sanders D. H. (1981), Computer Today, McGraw Hill, New York.
4. Sinha P. K. (1992), Computer Fundamentals, BPB Publications, New Delhi, India.
5. Coburn Peter et al (1982), Practical guide to Computers in education, Addison Wesley Publication Company, California.
6. Montgomery Douglas C. (2007) 5/e, Design and Analysis of Experiments (Wiley India).
7. Montgomery Douglas C. & Runger, George C. (2007) 3/e, Applied Statistics & Probability for Engineering (Wiley, India).



Registrar  
University of Science & Technology,  
Meghalaya

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## Course structure

- The course comprises of six modules listed in table below. Each module has 4-5 units.

| Modules         | Unit title                     | Teaching hours |
|-----------------|--------------------------------|----------------|
| <b>Theory</b>   |                                |                |
| RPE 01          | Philosophy and Ethics          | 4              |
| RPE 02          | Scientific Conduct             | 4              |
| RPE 03          | Publication Ethics             | 7              |
| <b>Practice</b> |                                |                |
| RPE 04          | Open Access Publishing         | 4              |
| RPE 05          | Publication Misconduct         | 4              |
| RPE 06          | Databases and Research Metrics | 7              |
|                 | <b>Total</b>                   | <b>30</b>      |

## Syllabus in detail

### THEORY

- RPE 01: PHILOSOPHY AND ETHICS (3 hrs.)**

- Introduction to philosophy: definition, nature and scope, concept, branches
- Ethics: definition, moral philosophy, nature of moral judgements and reactions

- RPE 02: SCIENTIFIC CONDUCT (5hrs.)**

- Ethics with respect to science and research
- Intellectual honesty and research integrity
- Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP)
- Redundant publications: duplicate and overlapping publications, salami slicing
- Selective reporting and misrepresentation of data

- RPE 03: PUBLICATION ETHICS (7 hrs.)**

- Publication ethics: definition, introduction and importance
- Best practices / standards setting initiatives and guidelines: COPE, WAME, etc.
- Conflicts of interest
- Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types
- Violation of publication ethics, authorship and contributorship
- Identification of publication misconduct, complaints and appeals
- Predatory publishers and journals

### PRACTICE

- RPE 04: OPEN ACCESS PUBLISHING(4 hrs.)**

- 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 Journal Suggester, etc.

- **RPE 05: PUBLICATION MISCONDUCT (4hrs.)**

- A. Group Discussions (2 hrs.)**

1. Subject specific ethical issues, 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 METRICS (7hrs.)**

- 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

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