## Pre-PhD course work guidelines/Scheme

| Paper &Paper code | Subject | Credits | Marks | | | Duration of Examination | Passing (%) |
|---|---|---|---|---|---|---|---|
| | | | External | Internal (Assignment) | Total | | |
| Paper-I PPC01 | Research Methodology | **04** | **70** | **30** | **100** | **3 Hrs.** | **55** |
| Paper-II PPC02 | Computer Application | **02** | **70** | **30** | **100** | **3 Hrs.** | **55** |
| Paper-III PPC03 | Domain Specific-(subject) | **04** | **70** | **30** | **100** | **3 Hrs.** | **55** |
| Paper-IV PPC04 | Research and Publication Ethics | **02** | **70** | **30** | **100** | **3 Hrs.** | **55** |
| Paper-V PPC05 | Paper Publication/Seminar on Research topic Specific | **04** | | **100** | **100** | *Seminar / conferences Participation/presentation – 2 credits research paper publications–2 credits | |

**Note:**

1. As per University Grants Commission (Minimum Standards and Procedure for Award of PhD Degrees) Regulations-2022 and its subsequent amendments, the course work is treated as prerequisite for PhD Programme
2. All candidates admitted to the PhD programme shall be required to complete the course work prescribed by the Concerned Department/Research department during the initial one or two semesters.
3. A PhD scholar has to obtain a minimum of 55% of marks or its equivalent grade in the UGC 10-point scale (or an equivalent grade/CGPA in a point scale) in the course work in order to be eligible to continue in the programme and submit the dissertation/thesis.
4. Grades in the course work, including research methodology courses shall be finalized after assessment on the basis of written examination, assignments, quizzes and research proposal.
5. Credits earned from approved MOOCs, particularly through the SWAYAM platform, can be used for pre-PhD coursework examinations.
6. Research student must pass in paper no. I to IV of PhD course work to qualify for submission of synopsis for confirmation of registration and research topic by concern RAC and

evaluation related to Paper No.V (internal evaluation to be carried out by Research department/concerned department).

7. In case the candidate does not qualify the Pre-Ph.D. Course work, may be given one more opportunity to qualify the course in subsequent semester.
8. The Pre-PhD course work classes shall be completed in one or two semester. The university will manage continue/residential classes for course work. Schedule of residential classes and workshop communicated to scholars separately. The assignment should be submitted time to time. Evaluation examination will held in end of course time.
9. All PhD scholars, irrespective of discipline, shall be required to train in teaching/education /pedagogy/writing related to their chosen PhD subject during their doctoral period. PhD scholars may also be assigned 4-6 hours per week of teaching/research assistantship for conducting tutorial or laboratory work and evaluations.

**SYLLABUS (Pre-PhD course work)**

## PAPER-I- RESEARCH METHODOLOGY

### COURSE OBJECTIVES

To develop foundational knowledge of research philosophy, approaches, and design.

To equip scholars with skills in data collection, analysis, interpretation, and academic writing.

To prepare candidates for formulating research proposals and conducting ethical research.

### COURSE OUTCOMES

After completing this course, scholars will be able to:

1. Understand fundamental concepts, types, and processes of research.
2. Formulate research problems, objectives, and hypotheses.
3. Design qualitative, quantitative, and mixed-method research studies.
4. Use various data collection tools and statistical techniques.
5. Write research reports, theses, and scholarly publications.

### UNIT 1: INTRODUCTION TO RESEARCH (08 Hrs.)

- Meaning, characteristics, and importance of research
- Types of research: Fundamental, Applied, Descriptive, Analytical, and Experimental
- Research process overview
- Research in interdisciplinary fields

### UNIT 2: RESEARCH PROBLEM, OBJECTIVES & HYPOTHESIS (08 Hrs.)

- Identifying and stating a research problem
- Review of literature : methods, sources, tools (Scopus, Web of Science, Google Scholar)
- Variables: Types and identification
- Formulation of objectives
- Hypothesis: Definition, characteristics, types, and testing approach

### UNIT 3: RESEARCH DESIGN & SAMPLING TECHNIQUES (10 Hrs.)

- Research design: Exploratory, Descriptive, Experimental
- Qualitative, Quantitative & Mixed Methods research
- Characteristics and types of sample design, concept of sampling
- Probability sampling (Simple random, Stratified, Cluster, Systematic)
- Non-probability sampling (Convenience, Purposive, Snowball, Quota)
- Determining sample size

### UNIT 4: DATA COLLECTION METHODS (12 Hrs.)

- Primary & Secondary data
- Tools for data collection:
    - Questionnaires, Interviews, Observation
    - Scales: Likert, Semantic Differential, Thurstone
- Pilot testing and validation of instruments

- Use of digital data collection tools (Survey Monkey, Google Forms)

**UNIT 5: DATA ANALYSIS & INTERPRETATION (12 Hrs.)**

**A. Quantitative Analysis**

- Descriptive statistics: Mean, Median, Mode, SD, Variance
- Inferential statistics: t-test, ANOVA, Chi-square test and Correlation & regression
- Statistical software: SPSS, R, Python basics, Excel

**B. Qualitative Analysis**

- Coding, categorization, pattern identification
- Thematic analysis & Content analysis
- NVivo, ATLAS.ti basics

**UNIT 6: RESEARCH REPORT WRITING & PUBLICATION (10 Hrs.)**

- Structure of thesis/dissertation
- Writing style (APA/MLA/Chicago/IEEE formats)
- Preparing research papers for journals
- Understanding peer-review process

**REFERENCES**


1. Kothari, C.R. & Garg, G. (2019). Research Methodology: Methods and Techniques. New Age International.
2. Creswell, J.W. & Creswell, J.D. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. Sage.
3. Saunders, Lewis & Thornhill. (2016). Research Methods for Business Students. Pearson.
4. Punch, K. (2014). Introduction to Social Research: Quantitative and Qualitative Approaches.
5. Best, J.W. & Kahn, J.V. Research in Education. Pearson.
6. Gupta, S.C. (2016). Fundamentals of Statistics. Himalaya Publishing.
6. Montgomery, D. (2017). Design and Analysis of Experiments. Wiley.
7. Field, A. (2013). Discovering Statistics Using SPSS. Sage.
8. Panneerselvam, R., Research Methodology, Prentice Hall Of India, New Delhi, 2004.
9. Gupta, Santosh (2005) Research Methodology and Statistical Techniques, Deep and Deep Publications.
10. American Psychological Association (APA). Publication Manual. Latest edition.

## PAPER-II- COMPUTER APPLICATION

### COURSE OBJECTIVES

To provide foundational knowledge of computer systems, operating systems, and digital tools.

To equip research scholars with essential skills in office applications (word processing, spreadsheets, presentations).

To introduce scholars to basic data handling, visualization, and internet-based research tools.

To enable scholars to use ICT tools effectively in their research work.

### COURSE OUTCOMES

After completing this course, scholars will be able to:

1. Understand the basic concepts of computers and operating systems.
2. Use word processing tools effectively for academic and research documentation.
3. Apply spreadsheet tools for data entry, analysis, and visualization.
4. Prepare academic presentations using standard presentation tools.
5. Use internet and ICT tools efficiently for literature search and research communication.

### UNIT 1: FUNDAMENTALS OF COMPUTERS & OPERATING SYSTEMS (05 Hrs.)

- Basics of computer hardware and software
- Types of operating systems: Windows, Linux, MacOS
- File systems, folder management, system utilities
- Basic troubleshooting and system security

### UNIT 2: WORD PROCESSING FOR RESEARCH (06 Hrs.)

- MS Word / Google Docs interface, templates, styles
- Page setup, header/footer, tables, figures
- References, citations, table of contents
- Track changes, comments, collaborative editing
- Preparing research reports and project documents

### UNIT 3: SPREADSHEETS & DATA HANDLING (06 Hrs.)

- Basics of MS Excel / Google Sheets
- Data entry, cleaning, sorting, filtering
- Formulas, functions
- Creating charts and graphs
- Basic descriptive statistics using spreadsheets
- Export/import of data

### UNIT 4: PRESENTATION TOOLS (05 Hrs.)

- PowerPoint / Google Slides features
- Layouts, slide design, themes
- Charts, tables, multimedia insertion
- Preparing academic presentations and posters

**Unit 5: INTERNET AND RESEARCH SUPPORT TOOLS (08 Hrs.)**

- Effective online search strategies
- Google Scholar, Research Gate, Academia.edu
- Email management, cloud storage (Drive, One Drive), collaboration tools
- Online surveys using Google Forms/Microsoft Forms
- Reference management tools
- PDF tools, document converters
- Introduction to data visualization tools

**REFERENCES**


1. Fundamentals of Computers by Rajaraman, Prentice Hall India Pvt. Limited
2. Microsoft Office Word 2007: Complete Concepts and Techniques by Gary B. Shelly, Thomas J. Cashman, Misty E. Vermaat, Cengage Learning Inc.
3. Microsoft Office / Google Workspace official documentation.
4. How to Do Everything with Microsoft Office Excel 2007 by Guy Hart-Davis, McGraw- Hill
5. Learning Microsoft PowerPoint 2007 by Catherine Skintik, Pearson Education
6. Introduction to computer and its applications : Dr.k. Dhanasekaran , Manikandan Palanisamy

## PAPER-III - DOMAIN SPECIFIC-SUBJECT

**Note: Detail Syllabus available in respective Department/School**

**COURSE OBJECTIVES**

**The Domain-Specific course aims to:**

To build advanced knowledge in the chosen research discipline.

To develop the ability to identify research gaps and create strong theoretical foundations.

To understand contemporary developments, theories, and methodologies in the domain.

To apply analytical, experimental, or theoretical tools relevant to the field.

To prepare scholars for high-quality research publications and thesis work.

**COURSE OUTCOMES**

1. Demonstrate advanced understanding of core concepts, theories, and principles of the discipline
2. Analyze domain-specific problems and identify research gaps
3. Apply advanced tools, techniques, and methodologies relevant to the field
4. Conduct scholarly review, interpret research findings, and present domain-specific knowledge
5. Develop research proposals or mini-projects based on current trends and future directions

**UNIT 1: ADVANCED LITERATURE REVIEW IN RELEVANT FIELD (08 Hrs.)**

- Review of literature, source of literature
- Identifying research gaps in the discipline
- Writing of review of literature.
- Critical review of high-impact studies
- Landmark papers and researchers in the domain
- Future scope, new challenges, researchable problems

**UNIT 2: FOUNDATIONS OF THE DISCIPLINE (10 Hrs.)**

- Historical development and evolution of the field
- Fundamental theories, principles, and frameworks
- Current trends, issues, and challenges
- Key research domains and sub-disciplines

**UNIT 3: ADVANCED CONCEPTS IN THE DOMAIN (12 Hrs.)**

- Deep dive into major specialized topics
- Emerging technologies / methodologies / theories
- Interdisciplinary applications
- Case studies and domain-specific models

**UNIT 4: APPLICATION & PROBLEM SOLVING (12 Hrs.)**

- Application of domain knowledge to real-world/societal/industry problems
- Designing experiments, simulations, field studies, or analytical models
- Interpretation of results and validation techniques

- Ethical issues in domain-specific research

**UNIT 5: DEVELOPMENT OF RESEARCH PROPOSAL (08 Hrs.)**

- Research proposal and its elements
- Formulation of research problem-criteria of sources
- Development of objectives and characteristics of objectives
- Development of hypotheses and its applications in relevant field

**UNIT 6: RESEARCH PAPER & THESIS WRITING (10 Hrs.)**

- Writing a research paper & choosing a topic,
- Preparing a working bibliography outlining and need to write a research paper,
- Exploring the principles and techniques of topic/project development and testing.
- Thesis writing-structure and components of thesis.
- Types and principles of report writing
- The style and use of quotations
- Effective presentation of research findings.
- Concepts of bibliography and references.

**REFERENCES**


1. Standard textbooks in the subject
2. Latest review papers from Scopus / Web of Science
3. Domain-specific journals, conference proceedings
4. Digital libraries (Science Direct, IEEE, Springer, Sage, Taylor & Francis, PubMed, etc.)

## PAPER-IV- RESEARCH AND PUBLICATION ETHICS

### COURSE OBJECTIVES

To encourage ethical behaviour in research, writing, and publication.

To create awareness about academic integrity, plagiarism, and responsible research conduct.

To familiarize scholars with publication ethics, peer review, and predatory journals.

To provide practical experience in plagiarism detection tools and ethical decision-making.

To guide scholars in responsible authorship, data sharing, and copyright issues.

### COURSE OUTCOMES

1. Understand the basic principles of research ethics, values, and academic integrity.
2. Identify types of research misconduct and apply principles of responsible research conduct
3. Demonstrate knowledge of publication ethics, peer review, and authorship guidelines.
4. Use plagiarism detection tools and identify predatory journals and unethical publication practices.
5. Apply knowledge of copyright, open access, and research metrics in publication decisions

### THEORY

### UNIT 1: PHILOSOPHY AND ETHICS (04 Hrs.)

- Introduction to Philosophy: definition, nature and scope, concept, branches
- Ethics: Definition, moral philosophy, nature of moral judgments and reactions.
- Academic integrity and honesty in research

### UNIT 2: SCIENTIFIC CONDUCT (04 Hrs.)

- 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

### UNIT 3: PUBLICATION ETHICS (07 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**

**UNIT 4: OPEN ACCESS PUBLISHING (04 Hrs.)**

- Open access publications and initiatives
- SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies
- Software tool to identify predatory publications developed by SPPU: UGC-CARE list of journals
- Journal finder/journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggested, etc.

**UNIT 5: PUBLICATION MISCONDUCT (04 Hrs.)**

**A Group Discussions (02 Hrs.)**

- Subject specific ethical issues, FFP, authorship
- Conflicts of interest
- Complaints and appeals: examples and fraud from India and abroad

**B. Software tools (02 Hrs.)**

- Use of reference management software like Mendeley, Zotero etc. and anti-plagiarism software like Turnitin, Urkund, Drilbitt and other open source software tools

**UNIT 6: DATABASES AND RESEARCH METRICS (07 Hrs.)**

A. **Databases (04 Hrs.)**

- Indexing databases,
- Citation databases: Web of Science, Scopus

**B. Research Metrics (03 Hrs.)**

- Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score
- Metrics: h-index, g index, i10 index, altmetrics

**REFERENCES**


1. P. Chaddah, (2018) Ethics in competitive Research: Do not get scooped: do not get plagiarized, ISBN:978-938748086
2. National Academy of Sciences, National Academy of Engineering and Institute of Medicine (2009) on Being a Scientist: A Guide to Responsible Conduct in Research: Third Edition, National Academies Press.
3. Resnik, D.B. (2011). What is ethics in research & why is it important. National Institute of Environmental Health Sciences.
4. Bealt, J. (2012) Predatory publishers are corrupting open access. Nature.
5. Indian National Science Academy (INSA), Ethics in Science Education, Research and Governance (2019), ISBN: 978-81-939482-1-7.
6. The Ethics of Teaching and Scientific Research by Miro Todorovich; Paul Kurtz; Sidney Hook.
7. Research Ethics: A Psychological Approach by Barbara H. Stanley; Joan E. Sieber; Gary B. Melton.