GURU KASHI UNIVERSITY

Doctor of Philosophy

Session: 2024-25

Faculty of Engineering & Technology
Faculty of Sciences
Faculty of Computing
Faculty of Pharmaceutical Sciences

Program Structure						
Course Code	**Course Title**	**Type of Course**	**L**	**T**	**P**	**Total Credits**
PPH101	Research Methodology	Core	4	0	0	4
PPH102	Research and Publication Ethics	Core	2	0	0	2
PPH103	Proficiency in Teaching	Core	3	0	2	4
PPH104	Computer Applications in Research	Skill Based	1	0	2	2
Total Numbers of Credits						12

Course Title: Research Methodology

Course Code: PPH101

L	T	P	Credits
4	0	0	4

Total Hours: 60

Learning Outcomes
On the completion of the course the students will be able to

1. Formulate research problems by conducting comprehensive literature reviews utilizing web sources
2. Apply appropriate research design choices based on research questions and objectives.
3. Explore the integration of qualitative and quantitative data and the concept of triangulation and complementarily of data sources.
4. Utilize statistical software packages commonly used in research for importing, managing, cleaning, and analyzing data.
5. Apply different statistical techniques to summarize and analyze data effectively.

Course Content

Unit-I **Hours 15**

Introduction to Research

Meaning, Objectives, Characteristics, Significance and Types of Research.

Understanding a Research Problem, Literature Review, Methods and Reporting, Selecting the Research Problem, Steps in Formulation of a Research Problem,

Unit-II   **Hours 15**

Research Process and Hypothesis

Constructing Hypotheses; Conceptualizing a Research Design-Meaning and Types of Research Design.

Parametric and Non-Parametric Test, Errors and Level of Significance.

Completely randomized design, Random block design, Latin square design, Statistical analysis.
Components of time series, Analysis of time series, Measurement of trend, Measurement of seasonal variations.

Unit-III   **Hours 15**

Sampling Design and Data Analysis

Sampling Techniques-Probability and Non-Probability, Qualities of a good Sample, Sample Size and its Determination.

Introduction to Qualitative, Quantitative and Mixed Methods, Quantitative Methods- Univariate, Bivariate and Multivariate, Qualitative Methods-Grounded Theory and Triangulations, Mixed Methods- Convergent Parallel, Explanatory Sequential, Exploratory Sequential and Transformative.

Implementation of statistical techniques using statistical packages viz. SPSS R including evaluation of statistical parameters and data interpretation, Regression Analysis, Covariance, analysis of variance.

Unit-IV   **Hours 15**

Report Writing

Types of Reports- technical and Popular Reports, Significance of Report Writing, Different Steps in Writing Report, Art of Writing Research Proposals, Research Papers, Projects Reports and Thesis; Basics of Citation and Bibliography/Reference Preparation Styles; Report Presentation: Oral and Poster Presentations of Research Reports.

Suggested Reading

1. Gupta, S. (2010). *Research Methodology and Statistical Techniques*. Deep & Deep Publications (P) Limited, New Delhi.

2. Kothari, C.R., Garg, G. (2019). *Research Methodology: Methods and Techniques.* 4th Edition, New Age International (p) Limited. New Delhi.

3. Sahay, Vinaya and Pradumna Singh (2009). *Encyclopedia of Research*

Methodology in Life Sciences. Anmol Publications. New Delhi.

4. Kauda J. (2012). *Research Methodology: A Project Guide for University Students*. Samfunds literature Publications.

5. Dharmapalan B. (2012). *Scientific Research Methodology*. Narosa Publishing

Course Title: Research and Publication Ethics	L	T	P	Credits
Course Code: PPH102	1	0	2	2

Total Hours 30

Learning Outcomes
On the completion of the course the students will be able to

1. To have awareness about the publication ethics and publication misconducts.
2. To understand indexing and citation databases, open access publications, research metrics (citations, h-index, impact factor etc)
3. Develop hands-on skills to identify research misconduct and predatory publications.

Course Content

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

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

- **RPE 02: SCIENTIFICCONDUCT (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, salami slicing
  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 behavior 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 Journal Suggester, etc.

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

Suggested Readings

1. Bird, A. (2006). Philosophy of Science. Routledge.

2. MacIntyre, A. (1967) A Short History of Ethics. London.

3. P. Chaddah, (2018) Ethics in Competitive Research: Do not get scooped; do not get plagiarized, ISBN:978-9387480865

4. 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.

5. Rensik, D. B. (2011). What is ethics in research & why is it important. National Institute of Environmental Health Sciences, 1-10. Retrieved from https://www.niehs.nih.gov/resources/biothics/whatis/index.cfm

6. Beall, J. (2012). Predatory publishers are corrupting open access. Nature, 489(7415), 179-179. https://doi.org/10.1038/489179a

	L	T	P	Credits
Course Title: Proficiency in Teaching				
	3	0	2	4
Course Code: PPH103				

Total Hours: 60

Learning Outcomes
On the completion of the course the students will be able to

1. Design and develop learner-centered instructional plans and learning outcomes.
2. Apply innovative teaching strategies and technologies to engage learners.
3. Explore different assessment methods to evaluate student learning.
4. Reflect on teaching experiences and continuously improve teaching practices.
5. Develop effective communication and classroom management skills.

Course Content

UNIT-I   **15 Hours**

1. Overview of the course and its objectives - Theories of learning and their implications for teaching - Understanding the role of the teacher and student in the learning process
2. Writing clear and measurable learning outcomes - Backward design approach and aligning outcomes, assessments, and instructional strategies - Developing a course syllabus and instructional plan
3. Meaning Nature, definition, scope and importance and teaching. Types of teaching. Society and teaching, Research in teaching, Modern trends in teaching, creativity and teaching,

UNIT-II   **15 Hours**

1. Understanding the diverse needs and backgrounds of learners - Creating an inclusive and supportive learning environment - Facilitating active learning and student engagement strategies
2. Lectures, discussions, and demonstrations - Group work, collaborative learning, and cooperative learning - Problem-based learning, case studies, and simulations
3. Skills based approach to teaching. Micro-teaching, Macro teaching. methods of teaching, lecture method project method and discussion method.

UNIT-III   **15 Hours**

1. Integrating technology tools into instruction - Online and blended learning approaches - Using educational software and platforms effectively
2. Formative and summative assessment methods - Designing effective assessments to measure learning outcomes -Providing constructive feedback to students

1. Verbal and non-verbal communication techniques - Active listening and questioning skills - Developing rapport with students and fostering positive relationships
2. The importance of reflective practice in teaching - Self-assessment and evaluation of teaching effectiveness - Engaging in ongoing professional development - Teaching in multicultural and international classrooms - Culturally responsive teaching practices
3. Meaning and concept of Technology, forms of Technology, Integration of technology in teaching and learning. Web based technology; E-learning and virtual learning. Evaluation of Technology-Meaning and purpose, types of technology evaluation; formative, summative, feasibility and maintenance

TRANSACTION MODE

Discussions, Case Studies, Microteaching, Classroom Observations, Peer Teaching: Video Analysis, Role-Playing, Teaching Demonstrations, Classroom Simulations, Reflective Journals/Blogs, Teaching Portfolios and Technology Integration

SUGGESTED READINGS

- Das, R.C. (1993): Educational Technology - A Basic Text, Sterling Publishers Pvt. Ltd.
- Evaut, M. The International Encyclopaedia of Educational Technology.
- Graeme, K. (1969): Blackboard to Computers: A Guide to Educational Aids, London, Ward Lock.
- Haas, K.B. and Packer, H.Q. (1990): Preparation and Use of Audio Visual Aids, 3rd Edition, Prentice Hall, Inc.
- Haseen Taj (2006):modern Educational Technology,Agra : H.P Bhargava Book House.
- Kumar, K.L. (2008): Educational Technology, New Age International Pvt. Ltd. Publishers, New Delhi (Second Revised Edition).
- Mukhopadhyay, M. (1990): Educational Technology - Year Book 1988, All India Association for Educational Technology, New Delhi.
- Bruce R Joyce and Marsha Weil, Models of Teaching, Prentice Hall of India Pvt Ltd, 1985.
- Gage N L , Hand book of Research on Teaching, Rand Mc Naly and Co., Chicago, 1968.
- Sharma R A, Technology of Teaching, International Publishing House, Meerut, 1988.
- Siddiqui M S., and Khan M S., Models of Teaching - Theory and Research, Manas Publication, New Delhi, 1991

Course Title: Computer Applications in Research	L	T	P	Credits
Course Code: PPH104	1	0	2	2

Total Hours 30

Learning Outcomes
On the completion of the course the students will be able to

1. The students will become familiar with the usage of software for managing the reference.
2. To make literature reviews easily.
3. To make reference management by using open software.

Course Content

Unit -I   Hours 06

Mendeley Software: Mendley software concept, features and uses-Installation of Mendeley software in your system Creating account. Installing as Plugin in Browser. Various third party Plugin for Mendeley.

Creating your library: Add PDFS to Mendeley-Import/export EndNote, BibTeX and RIS libraries- Document details lookup (CrossRef, PubMed, and Arxiv) -Google Scholar Search -One-click Web Importer -Watch folders to automatically add PDFs to Mendeley Desktop-Synchronize PDFs with your Mendeley Web account**.**

Unit-II   Hours 08

Managing your documents and references: Merge duplicate author names, tags, or publications- Documents can be marked read/unread- Search as you type - Annotate PDFS-Multiple level undo in document details -Tag and edit multiple documents at once-File Organizer.

Citing references: Word and Open Office plug-in-Cite in Google documents (and other editors) -Cite using BibTeX.

Sharing Documents and References: How to Create a Group Adding members and documents Using Group.

Unit III   Hours 08

Chat GPT: Working of ChatGPT, Role of ChatGPT in research, Advantages of ChatGPT, Query ChatGPT, Paraphrasing, Summarization, Table to Text and Text to Table, Translation to other language, Programming Code Generation and Explanation, Data Object Conversion (JSON to XML to CSV and Vice-versa). Creating Heading and Subheading. Writing and Blogging, Analtzing Data, Working with Email (creating, replying and improving).

LinkedIn: Introduction of Linkedin, Creating the Profile, Role of Linkedin in Research, Searching for Jobs, Applying for Jobs.

Research Gate: Introduction of Research Gate, Creating the Profile, Role of Researchgate in Research, Adding your research Article, Searching and sending request for research.

Unit IV   **Hours 08**

Google Classroom: Introduction of Google Education Tools, Features of Google Class room.

Teacher Role: Creating Class or Group, Uploading Lecture/Documents, Creating and Grading Assignment, Creating and Grading Quizes, Communication with Students and Parents, Creating Survey, Collecting Feedback, Post Announcements, Group Discussion

Supervisor/Leader Role: Create and Manage Class and Grade, Manage co-teacher and Roaster of Teacher, Group Discussion, Post Announcements.

Admin Role: Data Protection, Create Classes and Roaster, Adding and removing Students.

Scopus: Introduction of Scopus, Role of Scopus in Research, Understanding different Metrics of Scopus (SJR, Cite Score, H-index, Citation etc.)

Suggested Readings

1) Office 2007 in Simple Steps, Kogent Solutions, (Wiley Publishers).
2) MS-Office 2007 Training Guide, S. Jain (BPB Publications).
3) Computer Fundamentals by P.K. Sinha (BPB Publications).
4) https://www.mendeley.com/reference-management/reference-manager
5) https://chat.openai.com
6) https://edu.google.com/workspace-for-education/classroom/