University of Technology
Vatika, Jaipur (Raj)

Pre-Ph.D. course work
SYLLABUS

Paper-I	Research Methodology	Credits – 04	Marks -100	Examination Duration: 3 hrs

UNIT – I INTRODUCTION (14 hrs.)

Meaning of research, objectives of research, motivations in research, types of research, research approaches, significance of research, research methods v/s methodology, research and scientific methods, research process, criteria of good research, interdisciplinary approach and its implications in various research area. What is research problem? selecting the problem, necessity of and techniques in defining the problem

UNIT-II DATA COLLECTION (14 hrs.)

Collection of primary data, observation method, interview method, collection of data through questionnaire and schedules, other methods. collection of secondary data, selection of appropriate method for data collection (quantitative methods & qualitative methods), case study method, experimental methods, guidelines for developing questionnaire, successful interviewing. Survey v/s experiment, laboratory experimental studies, content analysis, tools of data collections: their types, attributes and uses.

UNIT-III SAMPLE DESIGN (10 hrs.)

Characteristics and types of sample design, concept of sampling and other concepts related to sampling, sampling merits and demerits, techniques of selecting a random sample, experiments, procedure, control observation: merits, demerits, kinds , procedure , sampling errors: Type - i error and Type – ii error. Probability and non-probability samples, their characteristics and implications

UNIT-IV HYPOTHESIS (10 hrs.)

Meaning, basic concepts, flow diagram, power of a hypothesis test, important parametric tests, hypothesis testing of means, hypothesis testing of correlation coefficients, limitations of tests of hypothesis.

UNIT –V PROCESSING AND ANALYSIS OF DATA: (12 hrs.)

Measures of central tendency, dispersion, correlation and regression, one sample test , two sample tests , chi-square test, t-test , f-test, z-test, standard deviation: applications, steps, characteristics, limitations, analysis of variance and co-variance, discriminate analysis, cluster analysis, factor analysis, analysis of qualitative data based on various tools. Analysis of quantitative data and it presentation with tables, graphs etc, estimates of means and proportions. Decision tree- decision making with hypothesis testing through parametric and non parametric tests

REFERENCES

1. Wilkinson & Bhandarkar : Methodology and Techniques of Social Research.
2. Pauline Vyoung: Scientific Social Surveys and Research.
3. Panneerselvam, R., Research Methodology, Prentice Hall Of India, New Delhi, 2004.
4. Kothari: Research Methodology.
5. Festinger. L & D. Katz: Research Methods in Behavioral Science.
6. Sellitz, Et Al: Research Methods in Social Relations
7. Kothari, C. R. (2005) Quantitative Technique, New Delhi, Vikas Publication House.
8. Gautam, N. C. (2004) Development of Research tools, New Delhi, Shree Publishers.
9. Gupta, Santosh (2005) Research Methodology and Statistical Techniques, Deep and Deep Publications.
10. Montgomery, Douglas C. & Runger, George C. (2007), 3/e, Applied Statistics & Probability for Engineers (Wiley India)

University of Technology
Vatika, Jaipur (Raj)

Paper-II	Computer Applications	Credits – 02	Marks -100	Examination Duration: 3 hrs

UNIT – I COMPUTER FUNDAMENTALS (06 hrs.)

Computer basics, data representation, input/output units, computer memory, computer generation and classification, computer languages, OS, types of OS, services and components of OS, computer networks, LAN, MAN, WAN, Internet and WWW, E-mail

UNIT- II MS-OFFICE AND ITS APPLICATION (05 hrs.)

File handling in window, various versions of MS-Office, MS-Word: Test formatting, Macros. MS-Excel: Features, various formulas and functions.

MS-Power Point: Creating presentations and adding effects, Customizing presentation, showing presentation, printing handouts.

UNIT – III WORD PROCESSING PACKAGE (07 hrs.)

Creating and editing a word document, creating a research paper, creating a cover letter and a resume, creating a document with a title page, table, chart and watermark, creating a webpage using word, mail merge, creating a professional newsletter

UNIT – IV SPREADSHEET PACKAGE (07 hrs.)

Features and functions of spreadsheet, creating spreadsheet and enter data, format worksheets, adding graphics, printing, calculate, manipulate and analyze data, custom calculations, consolidating worksheets, pivot tables, charts.

UNIT- V APPLICATION OF INTERNET (05 hrs.)

Application of Internet in research, use of internet, sights (DOAJ),use of E-Journals, use of E-library, INFLIBNET, use of EBSCO HOST ,online database of academic libraries

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. How to Do Everything with Microsoft Office Excel 2007 by Guy Hart-Davis, McGraw- Hill
4. Learning Microsoft PowerPoint 2007 by Catherine Skintik, Pearson Education
5. Introduction to computer and its applications : Dr.k. Dhanasekaran , Manikandan Palanisamy

University of Technology
Vatika, Jaipur (Raj)

Paper-III	**Domaon Specific <subject name>**	**Credits –04**	**Marks -100**	**Examination Duration: 3 hrs**

Detail syllabus is available in the concerned Department/ School

University of Technology
Vatika, Jaipur (Raj)

Paper-IV	Research and Publication Ethics	Credits – 02	Marks -100	Examination Duration: 3 hrs

THEORY

UNIT- I PHILOSOPHY AND ETHICS (03 hrs.)

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

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

UNIT- II SCIENTIFIC CONDUCT (05hrs.)

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- III PUBLICATION ETHICS (07 hrs.)

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 contributor ship ,Identification of publication misconduct, complaints and appeals ,Predatory publishers and journals

PRACTICE

UNIT- IV 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 ,Journal finder / journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggestion, etc.

University of Technology
Vatika, Jaipur (Raj)

UNIT- V PUBLICATION MISCONDUCT (04hrs.)

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

UNIT- VI DATABASES AND RESEARCH METRICS (07hrs.)

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.
3. (2009) on Being a Scientist: A Guide to Responsible Conduct in Research: Third Edition
4. National Academies Prees.
5. Resnik, D.B. (2011). What is ethics in research & Why is it important. National Institute of Environmenatal Health Sciencs, 1-10 Retrived from
6. Beall, J. (2012) Predatory publishers are corrupting open access. Nature, 489(7415), 179
7. Indian National Science Academy (INSA), Ethics in Science Education, Research and Governance (2019), ISBN:978-81-939482-1-7.
8. The Ethics of Teaching and Scientific Research By Miro Todorovich; Paul Kurtz; Sidney Hook.
9. Research Ethics: A Psychological Approach By Barbara H. Stanley; Joan E. Sieber; Gary B. Melton