

GEN532:RESEARCH METHODOLOGY

L:4 T:0 P:0 Credits:4

Course Outcomes: Through this course students should be able to

CO1 :: describe various research types and approaches, and interpret key concepts related to scholarly publishing.

CO2 :: explain the process of identifying research problems and formulating hypotheses using literature surveys and research tools.

CO3 :: apply sampling methods and basic statistics to analyze and interpret data.

CO4 :: demonstrate the use of Excel tools to organize, visualize, and present different types of data using suitable charts and diagrams.

CO5 :: analyze ethics, IPR, and publishing norms to identify unethical research practices.

Unit I

Foundation of research : types of research, research approaches, significance of research, research process, criteria of good research, types of research – basic, applied, qualitative, quantitative, longitudinal, cross-sectional, correlation, historical, inductive, deductive, types of journals, journal indexing (impact factor of journals, h index, SJR value, journal citation indices etc.), high valued/reputed publishing houses/publishers, type of publication: review process of publication

Unit II

Problem identification and formulation : research question, literature survey and research gap identification, problem identification, constructing problem statement as per industrial and societal needs, use of databases, search engines and research gateways, framing of timeline/Gantt chart, hypothesis – Null and Alternate

Unit III

Sampling techniques and descriptive statistics : introduction to sampling, types of sampling : random and non random sampling, introduction to types of data-qualitative, quantitative, ordinal, measures of central tendency: arithmetic Mean, average, median and its importance, characteristics of an ideal average, correlation - Karl Pearson coefficient of correlation, introduction to inferential statistics

Unit IV

Basic Introduction to Excel, tabulation and graphical presentation : basic introduction to sheets/workbook, cell, row, columns, basic operations, use of all excel options and add-ins, tabulation and graphical Presentation: discrete data, continuous data and frequency distributions, graphs and their presentation, diagrammatic and graphical representation of data, bar diagram, pie-chart, line chart, histogram, frequency polygon and Ogive curves

Unit V

AI in research and publication ethics, IPR and scholarly publishing : introduction to intellectual property rights, concept and theories, kinds of intellectual property rights, Indian patent act 1970, ethics, ethical issues, ethical Committees (human and animal), ethical issues related to publishing, plagiarism and self-plagiarism, penalties and consequences, university grants commission's (UGC) policy for curbing plagiarism, reproducibility and accountability

Unit VI

Research writing and presentation : research writing including research paper, review writing, thesis writing, computer and its role in research, Microsoft word (grammar checking, formatting of documents, incorporating references), reference styles, Microsoft power point (creation of posters, slides for seminar/talk), graphical abstract

Text Books:

1. RESEARCH METHODOLOGY by C.R. KOTHARI, NEW AGE INTERNATIONAL

References:

1. FUNDAMENTALS OF STATISTICS by SC GUPTA, HIMALAYA PUBLISHING HOUSE PVT. LTD

