

resources; Significance of controls in research, Types of research designs – exploratory, descriptive, experimental, survey and case study.

Unit 3: Statistical tools and Report writing

No. of weeks: 6

Data collection, analysis and graphical presentation; Sample – types and characteristics; Basic Statistical Tools

- Measures of central tendency, Arithmetic mean, Median, Mode, Standard deviation, Co-efficient of variation (Discrete series and continuous series), Correlation, Regression, Multiple Regression, hypothesis testing, P-value, data analysis and interpretation; Report writing, format of publications and presentations-oral and poster.

Unit 4: Scientific conduct and ethics in Research

No. of weeks: 3

Biosafety and Ethics - compliance and concerns; Plagiarism-Software tools and Creative Commons; Introduction to Intellectual Property Rights; Citation and acknowledgement, Impact factor, h-index, Indian and international funding agencies.

3.1 PRACTICALS

CREDITS: 2

TOTAL HOURS: 60

1. Use of search engine tools for retrieving research papers
2. Preparation of bibliography in different formats
3. Use of Plagiarism tools
4. Design of a research survey on a specific problem [L] [SEP]
5. Writing a concept note / research proposal
6. Writing of a mini-review paper
7. Systematic review, meta data analysis and presentation
8. Poster/oral presentations

3.2 Essential readings

1. Cresswell, J. (2009) *Research Design : Qualitative and quantitative Approaches* Thousand Oaks CA, (3rd ed.), Sage Publications [L] [SEP]
2. Kothari, C.R. (2004) *Research Methodology: Methods and Techniques* (2nd ed.), New Age International Publishers. [L] [SEP]
3. Kumar, R. (2011) *Research Methodology: A Step-by-Step Guide for Beginners* (5th ed.), SAGE publisher [L] [SEP]
4. Walliman, N. (2017) *Research Methods: The Basics*, (2nd ed.), London ; New York : Routledge [L] [SEP]
5. WHO (2001) *Health Research Methodology – A Guide for Training in Research Methods*. [L] [SEP]