

NANO 115 : Research Methodology

Marks: 30 , Credit 1

Understand the overall process of designing a research study from its inception to its report.

UNIT-I: RESEARCH FUNDAMENTALS AND TERMINOLOGY

LEARNING OBJECTIVES

1. To know how to identify a research problem
2. Understand importance of educational research and
3. Understand basics of research design

a) Meaning and Objective of research:

- Features of a good research study
- Scientific method

b) Study designs and variations:

- Basic, applied, historical, exploratory, experimental, ex-post-facto
- Case study, diagnostic research
- Crossover design, case control design, cohort study design, multi factorial design

UNIT II: DEFINING A RESEARCH PROBLEM AND DATA COLLECTION

Understand concepts of quantitative and qualitative data collection

1. Hypothesis, theory and scientific law: Difference between hypothesis, theory and scientific law

2. Methods and techniques of data collection:

- Types of data
- Methods of primary data collection (observation/ experimentation/ questionnaire/ Interviewing/ case/ pilot study)
- Methods of secondary data collection (internal/ external), schedule method
- Use of computers in data collection-Literature survey using web, handling search engines

UNIT III: DATA ANALYSIS AND REPORT WRITING

Understand how to analyze data, Experimental data collection and data processing.

Report writing and presentation: - Poster and oral presentations (use of software), Project proposal.

References:

1. Research Methodology- Methods and Techniques, Kothari, C.R., 2004 (2011), New Delhi, Wishwa prakashan.

2. Research Methodology, (2nd.ed.), Bhattacharya, D.K., 2006, New Delhi, Excel Books.
3. Research methods in biosciences, Holmes D., 2006, Oxford university press
4. Research Methodology: A Handbook, Misra R.P., 1989, New Delhi, Concept Publishing Company
5. Introduction to biostatistics and research methodology, Sunder Rao P. S. S., 4th edition, 2006, Prentice-Hall Pvt. Ltd.
6. <http://www.cebm.net/wp-content/uploads/2014/06/CEBM-study-design-april-2013.pdf>