

PROPOSED REVISION

BT 623 RESEARCH METHODOLOGY (2-1-0-6)

[To be offered as Compulsory Credit Course for **Ph.D.** Programme of the Dept. of BSBE. The credit will be over and above the minimum credit requirements as per the academic ordinances of academic programme]

Preamble:

In recent years scientists and engineers are focusing on advanced research. But only little attention is paid to an important dimension relating to research, namely, that of research methodology. Hence it is imperative to thoroughly understand the topic of research methodology to enhance the quality of the research. Research methodology provides vital information regarding thorough literature review, critical thinking and logical reasoning, problem formulation, designing of experiments, data analysis and interpretation, thesis writing, scientific writing and presentation skills. The need, therefore, is for those concerned with research to pay due attention to designing and adhering to the appropriate methodology throughout for improving the quality of research. This subject will provide appropriate platform for postgraduate students and research scholars for high quality research in a scientific manner.

Course contents:

Introduction: Definitions and objectives of research, types of research, research approaches, significance of research, main components of research process; Defining a research problem: reviewing the literature, framing the research problem, hypotheses; Data collection, analysis and interpretation: designing of experiments, data types, methods of data collection, repeatability, reproducibility and reliability, sampling methods, statistical analysis, displaying of data; Scientific writing: types of scientific report, structure and components of conference and journal articles and theses, arts of writing, ethics and scientific conduct, ethics in life science studies, plagiarism, copyright, intellectual property rights.

Texts/References:

1. C. R. Kothari, *Research methodology: Methods and Techniques*, 3rd Edn., New age International 2014.
2. R. Kumar, *Research methodology a step-by-step guide for beginners*, Sage Publications, London, 2011.
3. C.G. Thomas, *Research methodology and scientific writing*, Ane books, Delhi, 2015.
4. P. Laake, H. B. Benestad and B. R. Olsen, *Research methodology in the medical and biological sciences*, Academic Press, 2007.
5. H. J. Ader and G. J. Mellenbergh, *Research Methodology in the Social, Behavioural and Life Sciences Designs, Models and Methods*, 3rd Edn., Sage Publications, London, 2000.

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