CY800 RESEARCH METHODOLOGY 2-0-2-4

Unit I :

Meaning of Research, Types of Research, Research Process, Problem definition, Objectives of Research, Research Questions, Research design, Approaches to Research, Quantitative vs. Qualitative Approach, Understanding Theory, Building and Validating Theoretical Models, Exploratory vs. Confirmatory Research, Experimental vs. Theoretical Research, Importance of reasoning in research.

Unit II:

Problem Formulation, Understanding Modelling and Simulation, Conducting Literature Review, Referencing (including hands-on training on End-Note/ Mandalay); Case studies (**SEMINAR ON:** Information Sources, Information Retrieval, Role of libraries in Information Retrieval, Tools for identifying literatures, Indexing and abstracting services, Citation indexes)

Unit III:

Experimental Research: Cause effect relationship, Development of Hypothesis, Measurement Systems Analysis, Error Propogation, Validity of experiments, Statistical Design of Experiments, Field Experiments, Data/ Variable Types and classification, Data Collection, Numerical and Graphical Data Analysis: Sampling, Observation, Surveys, Inferential Statistics and Interpretation of Results; **Hands-on training on R-software for statistical analysis.**

Unit IV:

Preparation of Thesis and Research Papers, Tables and illustrations, Guidelines for writing the abstract, introduction, methodology, results and discussion, conclusion sections of a manuscript. References, Citation and listing system of documents
(**SEMINARS ON:** Intellectual property rights (IPR) - patents-copyrights-Trademarks-Industrial design-geographical indication. Ethics of Research- Scientific Misconduct- Forms of Scientific Misconduct. Plagiarism, Unscientific practices in thesis work, Ethics in science)

REFERENCES:

1. Bordens, K. S. and Abbott, B. B., "Research Design and Methods – A Process Approach", 8th Edition, McGraw-Hill, 2011.
2. C. R. Kothari, "Research Methodology – Methods and Techniques", 2nd Edition, New Age International Publishers
3. Davis, M., Davis K., and Dunagan M., "Scientific Papers and Presentations", 3rd Edition, Elsevier Inc.
4. Michael P.Marder, " Research Methods for Science", Cambridge University Press, 2011.

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