KAKATIYA UNIVERSITY, WARANGAL
FACULTY OF ENGINEERING AND TECHNOLOGY

CERTIFICATE COURSE: RESEARCH METHODOLOGY
PAPER-I

Objectives:

1. To know the motivation on research philosophy and processes in general.
2. To be able to formulate the problem statement and prepare research plan for the problem under investigation through literature.
3. To be able to apply various techniques for data analysis and patenting

Outcomes:

1. Students able to understand research methodology and problems
2. Able to define the techniques involved in defining problem
3. Able to Developing a Research plan and research set up
4. Able to analyze the collection of data and statistical analysis
5. Able to have knowledge on writing the report and patenting

UNIT - I (8 HRS)

Objectives and Types of research: Objectives and Motivation of research- types of research. Research approaches - Significance of Research-Research Methods versus Methodology Research and Scientific method- Importance of research methodology - Research process criteria of good research- Problems encountered by Researchers in India-benefits to society in general.

UNIT - II (10 HRS)

Research formulation: Defining and formulating the research problem, selecting the problem, importance of literature review in define a problem, literature review, primary and secondary sources, reviews, monograms, patents, research data bases web as a source, identifying gap areas from literature review and research data bases, devilment of working hypothesis

References:

1. C.R. Kothari, "Research methodology, Methods & technique", New age international publishers, 2004.
2. R. Ganesan, "Research Methodology for Engineers", MJP Publishers: Chennai, 2011.
3. P. Ramdass and A. Wilson Aruni, "Research and Writing across the disciplines", MJP Publishers, Chennai 2009
4. Matthew Y Ma, "Fundamentals of Patenting and Licensing for Scientists and Engineers" 2nd Edition 2015

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CERTIFICATE COURSE: RESEARCH METHODOLOGY
PAPER-II

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UNIT – I (10 HRS)

Research Design and methods: Meaning of research design - need of research design- features of a good design- important concepts relating to research design- different research designs Basic Principles of experimental designs- Developing a Research plan-Exploration, descriptions diagnosis and experiment

UNIT – II (10 HRS)

Execution of the research and data collection: Aspect of method validation, observation and collection of data, methods of data collection, sampling methods, data processing and analysis, strategies and tool, data analysis with statistical packages (sigma STAT, SPSS for student test t-test, ANOVA, etc.) hypothesis testing, generalization and interpretation.

UNIT - III (10 HRS)

Reporting and thesis writing: Structure and components of scientific reports, types of report, technical report and thesis. Thesis writing-different steps and software tools (word processing) in the design and preparation of thesis, layout, structure (chapter plan) and language of typical reports, illustrations and tables, bibliography, referencing and footnotes. Use of visual aids. Patenting: The Basics of the Patent System, Patent Law, How to Read a Patent, Protecting Invention and Planning Patent Filing, Preparing Patent Application.

References:

1. C.R. Kothari, "Research methodology, Methods & technique", New age international publishers, 2004.
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