SADAKATHULLAH APPA COLLEGE (AUTONOMOUS)
DEPARTMENT OF COMPUTER SCIENCE
M.Phil. (Computer Science)

I SEMESTER		
DSC1	**RESEARCH AND TEACHING METHODOLOGY**	**18MCCS11**
Hrs/Week:4	**Hrs/ Sem:60** **Hrs/Unit:12**	**Credits: 4**

OBJECTIVES:

- To develop understanding of the basic framework of research process.
- To develop an understanding of various research designs and techniques.
- To identify various sources of information for literature review and data collection.
- To develop an understanding of the ethical dimensions of conducting applied research.
- Appreciate the components of scholarly writing and evaluate its quality.

UNIT I INTRODUCTION TO RESEARCH

Meaning of Research – Objectives of Research – Motivation in Research – Types of Research – Research Approaches – Significance of Research – Research Methods versus Methodology – Research and Scientific Method – Importance of knowing how research is done – Research Process – Criteria of Good Research – Defining the Research Problem – Selecting the Problem – Necessity – Techniques involved in defining a problem – Research Design – Meaning – #Need# – Features of Good Design.

UnitII Data Collection and analysis:

Execution of the research - Observation and Collection of data - Methods of data collection – Sampling Methods- Data Processing and Analysis strategies - Data Analysis with Statistical Packages - Hypothesis-testing - Generalization and Interpretation. RESEARCH TOOLS Introduction – SPSS – MATLAB – LaTeX –#Weka# # .... # self-study portion

Unit III Reporting and thesis writing

Structure and components of scientific reports - Types of report – Technical reports and thesis – Significance – Different steps in the preparation – Layout, structure and Language of typical reports – Illustrations and tables - Bibliography, referencing and footnotes - Oral presentation – Planning – Preparation – Practice – Making presentation – Use of visual aids - Importance of effective communication –. Interpretation of Data and Paper Writing – Layout of a Research Paper, Journals in Computer Science, Impact factor of Journals.

Unit IV Application of results and ethics –

Environmental impacts - Ethical issues - ethical committees - Commercialisation – Copy right – royalty - Intellectual property rights and patent law – Trade Related aspects of Intellectual Property Rights – Reproduction of published material – Plagiarism - Citation and acknowledgement - Reproducibility and accountability.

UNIT V Methodology of Teaching

Teaching –Objective of Teaching-Phases of Teaching-Teaching Methods: Lecture Methods-Discussion Methods-Discovery Learning-Inquiry, Problem Solving Methods-Project Method-Seminar-Integrating ICT in Teaching-Individualised Instruction, Ways for Effective Presentation with Power Point-Documentation-Evaluation: Formative-Summative-Continuous and Comprehensive Evaluation-Later Adolescents Psychology: Meaning Physical, Cognitive, Emotional, Social and Moral Development-Teaching Later Adolescents.

COURSE OUTCOMES:

- Understand some basic concepts of research and its methodology
- Identify appropriate research topics
- Select and define appropriate research problem parameter
- Overview & concepts of research
- The need for research and types of research
- Steps in conducting research, prepare a project proposal
- Organize and conduct research in a more appropriate manner
- Write a research report, thesis and research proposal

REFERENCES

1. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers.
2. Kothari, C.R., 1990. Research Methodology: Methods and Techniques. New Age International. 418p.
3. Sinha, S.C. and Dhiman, A.K., 2002. Research Methodology, EssEss Publications. 2 volumes.
4. Trochim, W.M.K., 2005. Research Methods: the concise knowledge base, Atomic Dog Publishing. 270p.
5. Wadehra, B.L. 2000. Law relating to patents, trade marks, copyright designs and geographical indications. Universal Law Publishing.

Additional Reading

1. Anthony, M., Graziano, A.M. and Raulin, M.L., 2009. Research Methods: A Process of Inquiry, Allyn and Bacon.
2. Carlos, C.M., 2000. Intellectual property rights, the WTO and developing countries: the TRIPS agreement and policy options. Zed Books, New York.
3. Coley, S.M. and Scheinberg, C. A., 1990, "Proposal Writing", Sage Publications.
4. Day, R.A., 1992.How to Write and Publish a Scientific Paper, Cambridge University Press.
5. Fink, A., 2009. Conducting Research Literature Reviews: From the Internet to Paper. Sage Publications
6. Leedy, P.D. and Ormrod, J.E., 2004 Practical Research: Planning and Design, Prentice Hall.
Satarkar, S.V., 2000. Intellectual property rights and Copy right. EssEss Publications.