**Maulana Abul Kalam Azad University of Technology, West Bengal**
*(Formerly West Bengal University of Technology)*
**Syllabus for B. Tech in Computer Science & Engineering**
(Applicable from the academic session 2018-2019)

**Research Methodology**
**Code: PROJ- CS601**
**Contact: 3L**

| Name of the Course: | **Research Methodology** | |
|---|---|---|
| Course Code: **PROJ- CS601** | Semester: VI | |
| Duration:6 months | Maximum Marks:100 | |
| **Teaching Scheme** | **Examination Scheme** | |
| Theory:3 hrs./week | Mid Semester exam: 15 | |
| Tutorial: NIL | Assignment and Quiz: 10 marks | |
| | Attendance: 5 marks | |
| Practical:  NIL | End Semester Exam:70 Marks | |
| Credit Points: | 3 | |

| Unit | Content | Hrs/Unit | Marks/Unit |
|---|---|---|---|
| 1 | **RESEARCH FORMULATION AND DESIGN** Motivation and objectives – Research methods vs. Methodology. Types of research – Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical, concept of applied and basic research process, criteria of good research. Defining and formulating the research problem, selecting the problem, necessity of defining the problem, importance of literature review in defining a problem, literature review-primary and secondary sources, reviews, monograph, patents, research databases, web as a source, searching the web, critical literature review, identifying gap areas from literature and research database, development of working hypothesis. | 9 | |
| 2 | **DATA COLLECTION AND ANALYSIS** Accepts of method validation, observation and collection of data, methods of data collection, sampling methods, data processing and analysis strategies and tools,data analysis with statically package (Sigma | 9 | |

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| | STAT,SPSS for student t-test, ANOVA, etc.), hypothesis testing. | | |
| 3 | **RESEARCH ETHICS, IPR AND SCHOLARY PUBLISHING**<br>Ethics-ethical issues, ethical committees (human & animal); IPR- intellectual property rights and patent law, commercialization, copy right, royalty, trade related aspects of intellectual property rights (TRIPS); scholarly publishing- IMRAD concept and design of research paper, citation and acknowledgement, plagiarism, reproducibility and accountability. | 9 | |
| 4. | **INTERPRETATION AND REPORT WRITING**<br>Meaning of Interpretation, Technique of Interpretation, Precaution in Interpretation, Significance of Report Writing, Different Steps in Writing Project Report, Layout of the Project/Research Report, Types of Reports, Oral Presentation, Mechanics of Writing a Project/Research Report, Precautions for Writing Research Reports, Conclusions. | 9 | |

**Text book and Reference books:**

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, Ess Ess 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.
7. Satarkar, S.V., 2000. Intellectual property rights and Copy right. Ess Ess Publications.