

**Revised Course Curriculum and Syllabi for Ph.D. Courses
(Starting from 2021 session)**



Department of Computer Science & Technology

Bodoland University

Course No: CST - 1	Credit: 3
Course Title: <i>Research Methodology</i>	Total marks:100
Course Duration: One Semester	

Introduction to Computer Science Research: What is Research? Types of Research, Why Research, Significance & Status of Research in Computer Science.

Steps in Research:

Major Journals & Publications in Computer Science, Major Research Areas of Computer Science, Identification, selection & Formulation of research Problem, Developing a research Proposal, Planning your research, The wider Community, Resources & Tools, How engineering and technological research differs from scientific research.

Simulation and tools: What is Simulation? Time and randomness in simulation, Application of simulations, How a simulation model work, tools for simulations, packages for model developments.

Research Data: What is data, Mathematical, statistical and computer science views on data analysis. Statistical and mathematical theories and techniques related to Computing.

Literature Survey: Finding out about your research area, Literature search strategy, Writing critical reviews, Identifying venues for publishing your research.

Writing Papers and the Review Process: Preparing and presenting your paper. The conference review process, Making use of the referees' reports, The journal review process, Group exercise in reviewing research papers.

Thesis Writing: Planning the thesis, Writing the thesis, Thesis structure, Writing up schedule, The Oral examination (Viva Voce).

REFERENCES:

- 1. The Computer Science and Engineering (Editor-in-Chief) By Allen B.Tucker, JR.**
CRC Press, A CRC Handbook Published in Co-operation with ACM, The Association for Computing.
- 2. Other standard literatures available in the internet**

Course No: CST - 2	Credit: 3
Course Title: Introduction to Computer Application for Research	Total marks:100
Course Duration: One Semester	

PART- A: Basic of Computer Application

Total Marks: 20

Course objectives:

- To learn and acquire the skills using ICT tools.
- To learn the basics of Information Technology.
- To learn and acquire the word processing skills.
- To learn and acquire the spreadsheet processing skills.
- To learn and acquire the presentation skills using ICT tools.
- To learn and acquire the internet searching using ICT tools.

Unit I :

(Number of class=16)

Operating system, System Software, Application Software
 Use of Microsoft office word in word processing, graphical presentation and preparation of documents.
 Power Point in graphical presentation and preparation of documents, Creating and printing a presentation, producing a slide show
 Excel in data analysis, Editing and formatting worksheets, performing basic calculations, working with charts.
 Browsing internet for related literature and Inter Groups for sharing of data and result.

Reference Books:

1. https://www.tutorialspoint.com/word/word_tutorial.pdf
2. https://onlinecourses.swayam2.ac.in/cec20_cs05/preview
3. Computer Fundamentals by P.K. Singha, Priti Singha
4. Peter Norton “Introduction to Computers” , 6th International Edition (McGraw Hill)

PART- B: (Department Specific)

Total Marks: 80

This part aims at giving in-depth knowledge in important areas of computer science related to the capacity building of researchers prior to their actual research works. The objective is to refresh, and develop skills in the areas where advanced and in depth understandings of the theories and concepts are vital for successful research in the field of computer science.

The semester long paper will include topics in the followings:

- Advanced programming practices
- Current developments in computer science
- Current developments in computational infrastructures, including current trends in ICT hardware and software technologies, protocols, architectures, and world-class practices.
- Simulation techniques

REFERENCES:

1. Standard books as prescribed by the DRC from time to time on recommendation of the research guides

2. IEEE, ACM and other standard Journals

Course No: CS- 3	Credit: 3
Course Title: <i>Selected Topics in concerned Domain of Studies</i>	Total marks:100
Course Duration: One Semester	

This paper aims at building a thorough understanding of the domain of research in which the Ph.D. scholar will work for, and write the thesis. The basic objective of this course is to bridge the gap between his prior academic works and activities, and the strong-foundation required for carrying the research work in the particular domain. The course work will ensure building complete foundation regarding the in-depth knowledge and skills in the particular field of study.

This paper concentrates on the very pin pointed field of studies related to the scholar's actual domain of research, and covers the topics related to the theories and practices in the domain, including the current developments.

The paper will include:

- Theories of the concerned domain
- Auxiliary knowledge and information requirement for research in the concerned domain
- Technologies and applications in the domain
- Computational techniques related to the concerned research in the domain
- Trends of research in the domain
- Current happenings in the domain
- Futuristic approaches in the domain

REFERENCES:

1. **Standard books as prescribed by the DRC from time to time on recommendation of the research guides**
2. **IEEE, ACM and other standard Journals**

Course No: CS - 4	Credit: 3
Course Title: <i>Seminar Paper</i>	Total marks:100
Course Duration: One Semester	

The research scholar has to prepare a seminar paper on the proposed topic, and present in two phases, mid term and final term within the semester.

The content of the seminar paper should mainly include the literature survey, and current happenings and developments in the field of study. The seminar paper will include all the road maps of the scholars Ph.D. work, including the work schedule, and visualization of the findings.

Course No: CS - 5	Credit: 2
Course Title: Seminar Paper	Total marks:50
Course Duration: One Semester	

Course structure

- The course comprises of six modules listed in table below. Each module has 4-

Modules	Unit title	Teaching hours
Theory		
RPE 01	Philosophy and Ethics	4
RPE 02	Scientific Conduct	4
RPE 03	Publication Ethics	7
Practice		
RPE 04	Open Access Publishing	4
RPE 05	Publication Misconduct	4
RPE 06	Databases and Research Metrics	7
	Total	30

Syllabus in detail

THEORY

- RPE 01: PHILOSOPHY AND ETHICS (3 hrs.)**
 - Introduction to philosophy: definition, nature and scope, concept, branches
 - Ethics: definition, moral philosophy, nature of moral judgements and react
- RPE 02: SCIENTIFIC CONDUCT (5hrs.)**
 - Ethics with respect to science and research
 - Intellectual honesty and research integrity
 - Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP)
 - Redundant publications: duplicate and overlapping publications, salami slice
 - Selective reporting and misrepresentation of data
- RPE 03: PUBLICATION ETHICS (7 hrs.)**
 - Publication ethics: definition, introduction and importance
 - Best practices / standards setting initiatives and guidelines: COPE, WAME

1. Open access publications and initiatives
2. SHERPA/RoMEO online resource to check publisher copyright & self-policies
3. Software tool to identify predatory publications developed by SPPU
4. Journal finder / journal suggestion tools viz. JANE, Elsevier Journal Finder, Journal Suggester, etc.

• **RPE 05: PUBLICATION MISCONDUCT (4hrs.)**

A. Group Discussions (2 hrs.)

1. Subject specific ethical issues, FFP, authorship
2. Conflicts of interest
3. Complaints and appeals: examples and fraud from India and abroad

B. Software tools (2 hrs.)

Use of plagiarism software like Turnitin, Urkund and other open source software

• **RPE 06: DATABASES AND RESEARCH METRICS (7hrs.)**

A. Databases (4 hrs.)

1. Indexing databases
2. Citation databases: Web of Science, Scopus, etc.

B. Research Metrics (3 hrs.)

1. Impact Factor of journal as per Journal Citation Report, SNIP, SJR Score
2. Metrics: h-index, g index, i10 index, altmetrics

References

- Bird, A. (2006). *Philosophy of Science*. Routledge.
- MacIntyre, Alasdair (1967) *A Short History of Ethics*. London.
- P. Chaddah, (2018) *Ethics in Competitive Research: Do not get scooped; do not get plagiarized*, ISBN:97893387480865
- National Academy of Sciences, National Academy of Engineering and Institute of Medicine. (2009). *On a Scientist: A Guide to Responsible Conduct in Research: Third Edition*. National Academies Press.
- Resnik, D. B. (2011). What is ethics in research & why is it important. *National Institute of Environmental Health Sciences*. Retrieved from <https://www.niehs.nih.gov/health/ethics/>