DEPARTMENT OF COMPUTER SCIENCE
CENTRAL UNIVERSITY OF SOUTH BIHAR

Proposed course structure and syllabus for Ph.D.

There will be 12 credit courses (one semester) for a PhD student.

Course Code	Courses	Credits
CSC901	Research Methodology	4
CSC902	Tools and Techniques of Research	4
CSC903	Preparation and Presentation of Research Proposal	4
	Total Credits	**12**

CSC901 RESEARCH METHODOLOGY (4 Credits)

Part A (2 Credits)

Unit I: Research: A Conceptual Framework

- Research: meaning and concept
- Knowledge, facts, principles, theories and research as a source of knowledge
- Scientific method of inquiry and basic steps of research
- Types of research: Basis, Applied and Action Research
- Ethics in research
- Methods and methodology
- Intellectual and property right

Unit II: Computer Applications

- Word processing, Data processing, Graphical processing, Use of web tools for research, use of multimedia tools.

Part B (2 Credits)

Unit III: Sampling and Testing of Research Hypothesis

Hypothesis and testing a hypothesis, sources of data, fundamentals of data collection methods, sampling. Interpretation of results and generalization, descriptive statistics, random variable, distribution of random variable, probability distribution, Binomial, Poisson, exponential and normal distribution, correlation and regression analysis.

Unit IV: Report Writing

Structure and components of research report, types of report, layout of research report, mechanism of writing a research report, writing a paper and self-evaluating, performing research reviews.

Books:

- C.R. Kothari, Research Methodology: Methods and Techniques, International (P) Limited Publishers, New Delhi.
- Raman, V Raja, Fundamental of computer, New Delhi: Prentice Hall India
- R. Panneerselvam, Research Methodology, PHL Learning Private Ltd. New Delhi
- Anderso J., Berry H.D., Poole M., Thesis and assignment writing, Wiley Eastern Limited, New Delhi

CSC902 Tools and Techniques of Research (4 Credits)

Unit I: Modelling and Simulation
System and Model, Simulation, Need and Types of Simulation, Steps of Modelling, Applications of Simulation, Simulation Language.

Unit II: Research tools
To learn different research tools (Latex, MATLAB etc.) relevant to respective research area.

Unit III:
Lecture/Seminar on different recent topics in computer science.

Unit IV: Techniques involved in solving the problem
Methods of solving research problems related/relevant to the research area

References for Units I and II:

- Jerry Banks, John S. Carson & Barry L. Nelson, Discrete Event system simulation PHI
- System simulation, by G. Gordon, 2nd edition, 2011, Prentice Hall
- Stefan Kottwiz, Latex for Beginners, open sources
- Amos Gilat, MATLAB an introduction with applications.

CSC903 Preparation and Presentation of Research Proposal (4 Credits)

Course Objective: This course is designed to prepare the students for beginning the research for PhD.

1. Literature review and background study by the research scholar.
2. Presentation of research proposal by the research scholar.