BIRLA INSTITUTE OF TECHNOLOGY

NEP-2020 CURRICULUM BOOK

(Effective from Academic Session: Monsoon 2024)

B.TECH IN COMPUTER SCIENCE & ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

INSTITUTE VISION

To become a Globally Recognised Academic Institution in consonance with the social, economic and ecological environment, striving continuously for excellence in education, research, and technological service to the National needs.

INSTITUTE MISSION

- To educate students at Under Graduate, Post Graduate, Doctoral, and Post-Doctoral levels to perform challenging engineering and managerial jobs in industry.
- To provide excellent research and development facilities to take up Ph.D. programmes and research projects.
- To develop effective teaching learning skills and state of art research potential of the faculty.
- To build national capabilities in technology, education, and research in emergingareas.
- To provide excellent technological services to satisfy the requirements of the industry and overall academic needs of society.

DEPARTMENT VISION

The department strives to be recognized globally for outstanding education and research, leading to excellent professionals and innovators in the field of Computer Science and Engineering, who can positively contribute to the society.

DEPARTMENT MISSION

- To impart quality education and equip the students with strong foundation that could make them capable of handling challenges of the new century.
- To maintain state of the art research facilities and facilitate interaction with world's leading universities, industries and research organization for constant improvement in the quality of education and research.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The program aims to aid students

1. To possess technical skills adoptable to complex Computer Science & Engineering problems in order to lead in their domain.
2. To enhance one's academic credentials and grow to be a leading luminary.
3. To develop into a job creator and flourish further the national agenda.
4. To inculcate ethical responsibility towards the society and impact optimistically, the social fabric of the nation.

PROGRAMME OUTCOMES (Pos)

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and

leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSO

1. PSO 1: Ability to identify, analyse and provide efficient solutions that cater to problems of varying complexity in the field of computer science.

2. PSO 2: Ability to justify / evaluate solutions with help of sound mathematical foundations, algorithmic principles, theoretical computer science knowhow and research-based knowledge in view of perpetual advancements in computer science.

3. PSO 3: Inculcate best software practices and principles in consideration with existent societal, cultural, environmental and financial aspects.

Mapping of Pos and PSOs with PEOs

	PEO1	PEO2	PEO3	PEO4	PEO5	PEO6
PO1						
PO2						
PO3						
PO4						
PO5						
PO6						
PO6						
PO7						
PO8						
PO9						
PO10						
PO12						
PSO1						
PSO2						
PSO3						

Grading: No correlation – 0, Low correlation - 1, Moderate correlation – 2, High Correlation - 3