STRATEGIC PLAN

(2018-2023)

Department of Computer Engineering

J.C. BOSE UNIVERSITY OF SCIENCE AND TECHNOLOGY, YMCA, FARIDABAD

(Formerly YMCA University of Science and Technology)

NAAC 'A' Grade accredited State University

Sector-06, Delhi Mathura Road, Faridabad -121006 (Haryana)

About the Department

The department of Computer Engineering has always been a nursery of computer engineers catering to the needs of the industry of the nation in general and NCR region in particular. The department was established in 1991, offering B.tech (CE) .In 2002, the department started a PG program in computer engineering with a vision to produce conceptually correct teachers. It started its doctoral program in 2010. No wonder that most faculties of surrounding engineering colleges are alumni of JCBUST. The world since recent times has been amazingly fast and fiercely competitive in all spheres of human activity. The said situation called for massive expansion of career focused education, particularly in emerging areas of information technology. The hallmark of the department is research. More than 50% faculty members are PhD and the remaining are putting their best efforts in exploring new areas. There is a strong group of aspirants who interestingly work in the field of internet technologies. Another group is effectively engaged in software engineering and MANETS. The department, especially the faculty members, takes pains to shape the character of our students with consistent effort towards sincerity, punctuality, honesty and hard work. This ultimately play a pivotal role in their prosperous future and in becoming valuable citizens of the country. The department has modern and state of the art laboratories. The department strives hard to produce national level computer technocrats and IT professionals.

Vision and Mission of the Department

Vision

The department aims to make a place at both national and international level by producing high quality ethically rich computer engineers conversant with the state-of-the-art technology with the ability to adapt the upcoming technologies to cater to the ever changing industrial demands and societal needs. It endeavours to establish itself as a centre of excellence by contributing to research areas having IT impact on the people's life and nation's growth.

Mission

- *To provide the future leaders in the area of computer engineering and information technology through the development of human intellectual potential to its fullest extent.*
- *To enable the students to acquire globally competence through problem solving skills and exposure to latest developments in IT related technologies.*
- *To educate the students about their professional and ethical responsibilities.*
- *To ensure continuous interaction with the industry and academia through collaborative research projects.*

Strategic Goals

The department aims

- To extend seats in the B.Tech(CE) program
- To start M.Tech(CSE)
- To improve the infrastructure and have at least 50% smart classrooms in the department
- To interact more with Industries & Engineering Institutes.
- To develop more labs and centres of excellence.
- To motivate the faculty for upgrading themselves and get consultancy projects
- To motivate students for Research/ Quality Publication

Program Educational Objectives (PEOs)

1) To create knowledge about core areas related to the field of computer engineering

2) To enable students to apply mathematics, science and computer engineering principles to model, design and implement software projects to meet customers' business objectives

3) To develop the ability to evaluate the computing systems from view point of quality, security, privacy, cost effectiveness, utility and ethics.

4) To inculcate lifelong learning by introducing principles of group dynamics, public policies, environmental and societal context.

The programme has well defined Programme Outcomes and Programme Specific Outcomes as given below:

Program Outcomes (POs)

Engineering Graduates will be able to:

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

2. **Problem analysis**: Identify, formulate, review research literature, and analyze computer engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for computer engineering problems related to CE 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 modelling 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 computer 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 changes in computer engineering.

Program Specific Outcomes (PSO)

PSO 1: Ability to design and develop computing systems using concepts of Mathematics, Computer Engineering and other related disciplines to meet customers' business objectives.

PSO 2: Ability to test and analyze the quality of various subsystems and to integrate them in order to evolve a larger computing system. To ensure the compliance of curriculum for attaining the Program Outcomes and Program Specific Outcomes, various direct and indirect assessment methods are followed throughout the semester.

SWOC Analysis

Strength

- Faculty members are members of various statutory Board/ Bodies
- Excellent faculty retention.
- Department has more than 50 % faculty members having Ph.D. degree.
- Strong Alumni university association
- Faculty having membership of various professional bodies (CSI,IETE etc.)
- Departmental library

- Well Equipped Laboratories
- Updated curriculum as per AICTE
- Higher placement ratio
- Top rankers of the state admitted in B.Tech (CE)

Weakness

- Less inter-departmental activities
- Less industry academia collaboration
- Research lacks in addressing relevant needs of society
- Few students pursue higher education

Opportunities

- Develop smart campus
- Attract students from other countries
- Increase value added courses for students
- Increase consultancy projects
- organize conferences at national and international level
- Develop national and international or global partnerships

Challenges

- Frequent changes in Education Policy
- Industry ready curriculum and implementation
- Students with different social and economic backgrounds

Action Plan

- Adoption of AICTE Model Curriculum (2018)
- Extension of number of seats in B.Tech(CE) (2018)
- Modernization of existing laboratories.(2019)
- NBA Accreditation : B.Tech (IT) (2019)
- Setting up of Centralised Computer Centre (2019)
- NBA Accreditation : B.Tech (CE) (2020)
- Start of B.tech (CE) with specialisation in Data Science (2020)
- Start of M. Tech(CSE) from the session (2019-2020)
- NBA Accreditation : M.Tech (CE) (2020)
- Start of inter-disciplinary degree programmes(2020)
- Organizing workshops related to entrepreneurship for motivating students.
- Organizing workshops related to personality development for grooming students.
- Focusing on conducting more hands-on technical sessions for better learning experience.
- Set up of new laboratory for IoT projects (2020).
- Seats for foreign students in B. Tech(CE) (2021)
- Start of M. Tech (CE/CSE with specialization in contemporary technologies) from the session (2022)
- Converting almost 90% classrooms of the department to smart classrooms (2023).
- Introduction of more industry oriented courses in the curriculum(2023)