**VISION OF SYNERGY INSTITUTE OF ENGINEERING & TECHNOLOGY, DHENKANAL**

To become an internationally acceptable Institute of Technical Education, with excellence in academics, research and inculcation of human values.

**MISSION OF SYNERGY INSTITUTE OF ENGINEERING & TECHNOLOGY, DHENKANAL**

**M1**.To impart quality engineering education and technological skill with highly qualified and experienced faculty.

**M2**.To empower students with professional competencies through skill development training on cutting edge technologies for meeting global challenges.

**M3**.To inculcate the habit of continual learning.

**M4**.To nourish the qualities of leadership, entrepreneurship, innovation and ethics.

**M5**. To create an outstanding ambience of academics, intellectual pursuits, innovative research and physical activities.

# VISION OF DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

To build healthy academic ambiences align with frontline research and quality teaching to cater for the cutting age technologies of the 21st century.

# MISSION OF DEPARTMENT OFCOMPUTER SCIENCE & ENGINEERING

**M1**. To provide quality education in both theory and practice and train students to effectively apply this knowledge to amplify their potential for lifelong high-quality careers.

**M2**.To conduct research and subsequent innovations to solve real- world problems.

**M3**.To promote leadership, teamwork and ethical values among the students to help in their character building.

# PROGRAM EDUCATIONAL OBJECTIVE OF COMPUTER SCIENCE & ENGINEERING

1. Students will excel in technical profession that meets the needs of national and multinational companies.
2. Students will develop the ability to synthesize data and technical concepts for application to Software Product design.
3. Students will demonstrate the leadership quality as part of teams on multidisciplinary projects.
4. Students will succeed in life-long learning by exhibiting professional ethics.

# PROGRAM OUTCOMES OF COMPUTER SCIENCE & ENGINEERING

**PO1** **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.

**PO2** **Problem Analysis:** Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3** **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 public health and safety, and cultural, societal, and environmental considerations.

**PO4** **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.

**PO5** **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.

**PO6 The Engineer & 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.

**PO7** **Environment & Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8** **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the Engineering practice.

**PO9** **Individual and Teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10** **Communication:** Communicate effectively on complex engineering activities with the engineering community and with the 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.

**PO11** **Project Management & 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.

**PO12** **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.

# PROGRAM SPECIFIC OUTCOMES OF COMPUTER SCIENCE & ENGINEERING

**PSO1** Demonstrate basic knowledge of computer applications and apply standard practices in software project development.

**PSO2** Understand, analyse and develop computer programs for efficient design of computer-based systems of varying complexity.

**PSO3** Develop system solutions involving both hardware and software modules.

**COURSE OUTCOME OF DESIGN AND ANALYSIS OF ALGORITHMS LAB**

**CO1** Students will be able to implement and analyse different types of sorting algorithms like ( Selection,Quick and Merge) in Data Structure.

**CO2** Students will be able to design algorithms using Greedy Method and Dynamic Method to solve Knapsack problem.

**CO3** Students will be able to implement algorithms like Dijkstra's algorithm , Kruskal's algorithm and Minimum Cost Spanning Tree for a Graph data Structure.

**CO4** Students will be able to design algorithms using dynamic programming like Floyd's algorithm and Travelling Sales Person problem.

**CO5** Students will be able to apply and implement to find a subset of a given set and implement a program to find all Hamiltonian Cycles of Graph G of n vertices using backtracking principle.