Outcome Based Education

Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution:

The college has clearly stated all program outcomes, program specific outcomes and course outcomes for all programs. The faculty, industry and alumni are actively involved in defining program outcomes and program specific outcomes of all programs in the college.

➢ The course outcomes of all the programs are made known to the students and staff by displaying on the website of the college.

➢ The affiliating university has defined the course outcomes at the end of each course and printed in the academic regulation books.

➢ Individual copies of the regulation books are distributed to all the students which contain details of the course outcomes.

➢ Regulation books are also available in the library for student access. Orientation program for all the new students is conducted every year at the beginning of the academic year to educate about all course outcomes.

➢ At the beginning of the academic year all the faculty members will prepare the course files and laboratory manuals. The course file contains Department vision, mission, course syllabus, course outcomes, individual time table, program objectives, program outcomes, various mapping matrices, unit plan, lesson plan, course plan, unit wise material, direct and indirect assessments and student grading sheets.

➢ The college collects the feedback from the students on course structure, infrastructure, faculty, information resources, evaluation, and on the overall OBE system, to establish quality and continuously improve the program.

The university has embraced OBE and the same is being implemented. Program Outcomes (PO's) and Course Outcomes (CO's) are well defined for each program. This is the shared information or resource among all the stake holders of the university system.]

The institution also embraced OBE and the same is being implemented and articulated its Program outcomes which are given below:

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

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

3. 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. ICT 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. Societal Needs: 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. Values and Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. 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: 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.

Attainment of program outcomes, program specific outcomes and course outcomes are evaluated by the institution:

Attainment of Course Outcomes: The course outcomes were prepared by the action verbs of Blooms taxonomy. The assessment of course outcomes are as follows: Direct assessment: 1.Internal Mid Examinations and Assignments. Two Mid Examinations are conducted for students as prescribed by the university norms.

There shall be 2 midterm examinations (each for 25 marks), along with 2 assignments in a similar pattern as above (1st mid shall be from 2.5 units, 2nd shall be from remaining 2.5 units), and the average marks of the two examinations secured (each evaluated for a total of 25 marks) in each subject shall be considered as final marks for the internals. Each question in the mid exam is mapped to the course outcomes. It is expected that a student should score at least 80% of Maximum marks of the course for the attainment.

2. End Semester Examination For theory subjects the distribution shall be 25 marks for Internal Evaluation and 70 marks for the End Examination. It is expected that a student should score at least 40% of Maximum marks of the course for the attainment of course outcomes. The marks scored by the students in Internal Examinations, Assignments and End Semester exams are used to assess the attainment level of the whole course and the course outcome attainment level. 3. Labs For Labs, there shall be a continuous evaluation during the year for 25 internal marks and 50 end examination marks. Out of 25 marks for the Internal, day to day work in the Laboratory shall be evaluated for 15 marks and internal examination shall be evaluated for 10 marks conducted by the concerned laboratory Faculty. The end examination shall be conducted with external examiner and laboratory teacher.

The method of assessment process of Course Outcomes of Computer Science and Engineering program are as follows:

The various Assessment tools are:

Direct Assessment:

➢ Performance in Mid Examinations

➢ Performance in End Semester Examinations

➢ Laboratory Tests

➢ Project Evaluation

Indirect Assessment:

Feedback from the students in the form of Program Exit Survey

Exit Survey on Program Specific Outcomes.

Direct Assessment Tools:

Mid Examinations:

This type of assessment is carried out through the mid examinations which are held twice a semester. Each and every mid examination is focused on attaining the course outcomes.

Mid examinations include Descriptive, Online (Quiz) and Assignment.

End Semester Examinations:

End Semester examinations is a metric for evaluating whether all the Course outcomes are attained or not. End Examinations focus on attainment of course outcomes through descriptive mode.

Laboratory Tests:

Day to day evaluation of student's performance in the laboratories with respect to conduct of various experiments is also taken as criterion for attainment of course outcomes.

Project Evaluation:

Evaluation of the student based on the project work is also taken as an important criterion for attainment of course outcomes.

Indirect Assessment Tools:

Program Exit Survey:

This survey is conducted at the end of B.Tech program to analyze all the program outcomes.

Exit Survey on Program Specific Outcomes:

This survey is also conducted at the end of B.Tech program to analyze all the program specific outcomes.

Attainment of Program Outcomes:

Specific Outcomes Assessment Process: Direct assessment: Mapping of COs to POs and PSOs. Since Cos are mapped to POs and PSOs, the values of COs are reflected in the respective POs and PSOs.

Description: Assessment process for COs is described above.

Frequency: Every semester.

Indirect assessment: Graduate exit survey

Description: All students leaving the college on completion of program are given feedback forms to give their assessment of POs and PSOs

Frequency: Every year from the graduating batch to give their assessment of POs and PSOs POs and PSOs attainment: Final POs and PSOs attainment is calculated as 0.9 x direct assessments + 0.1 x indirect assessment.

Direct Attainment of COs: Course Outcome attainment level from internal assessment (A): mid exam class average (Mid1 for CO1, CO2, Mid2 for CO3, CO4) Course Outcome attainment level from university exams(B): class average of end semester exams(for CO1, CO2, CO3, CO4)

CO Attainment: 0.25 (A) + 0.75(B) Indirect assessment: Course end Survey: At the end of each semester a questionnaire is distributed to all the enrolled students and take feedback on effectiveness of the course. The questionnaire is prepared to know the efficiency and utility of the course outcomes. CO attainment: Final co attainment is calculated as 0.9 x direct assessment + 0.1 x indirect assessment.