Gayatri Vidya Parishad College of Engineering for Women
KOMMADI, MADHURAWADA, VISAKHAPATNAM-530048
(APPROVED BY AICTE, NEW DELHI, AFFILIATED TO ANDHRA UNIVERSITY, VISAKHAPATNAM)
(ACCREDITED BY NATIONAL BOARD OF ACCREDITATION [NBA] FOR B.TECH CSE, ECE AND IT – VALID FROM 2019-22 AND 2022-25)
(ACCREDITED BY NATIONAL BOARD OF ACCREDITATION [NBA] FOR B.TECH EEE VALID FROM 2023-24 TO 2025-2026)
(ACCREDITED BY NATIONAL ASSESMENT AND ACCREDITATION COUNCIL [NAAC] WITH A GRADE – VALID FROM 2022-27)
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EXAMINATION REFORMS POLICY

AICTE has been an array of measures to implement Outcome Based Education and for it has made recommendations for examination reforms.

The college assessment process based on the AICTE guidelines that have been adopted are

(i) Improve Student Learning Experience

(ii) Improve teaching strategies towards Outcome Based Education

(iii) Record, Analyze performance and success. Also Identify areas for improvement

(iv) Strategize based on feedback and close the loop.

To set up standards for learning expectations across the college, the college has formulated and established the Learning Goals, Learning outcomes and technical competencies.

These are aimed at developing Attitude (desire to learn), Knowledge and Skills in line with the graduate attributes given by Accrediting Agencies for each program.

Instruments of assessment are created by the faculty members that measure whether the students are able to meet the expectations set at the course, program and college level. The data obtained at each level is tabulated and analyzed to determine whether the students are meeting the set benchmarks/target levels.

INSTITUTE LEVEL LEARNING GOALS, OUTCOMES & COMPETENCIES

CORE VALUES OF THE INSTITUTION

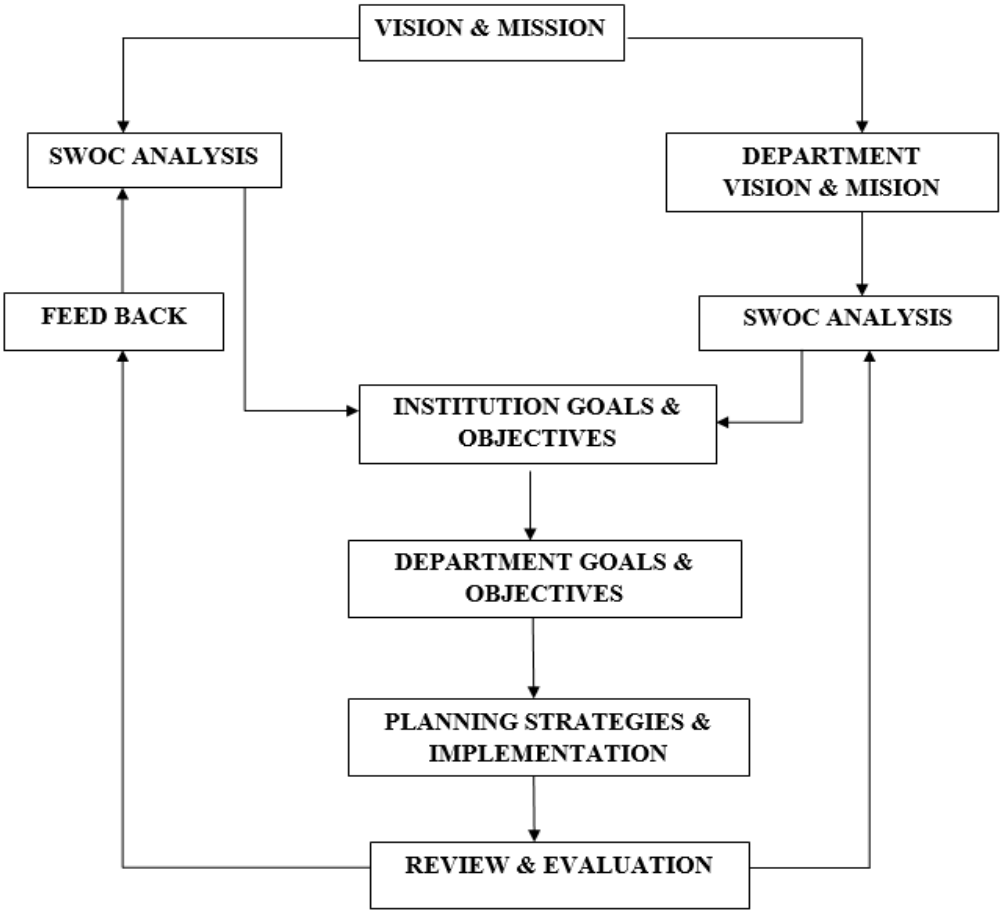
Gayatri Vidya Parishad College of Engineering for Women (GVPCEW) was established by the Gayatri Vidya Parishad, an educational society founded in 1988. The society's Governing Body includes eminent personalities such as former Vice-Chancellors, distinguished academicians, legal experts, industrialists, philanthropists, and other notable leaders from Visakhapatnam.

GVPCEW strives to become a premier center of learning, offering value-based technical education to promote the comprehensive development of its students.

The college is guided by its core values of commitment, intellectual excellence, ethics, dignity, diversity, and accountability. It is dedicated to fostering a culture of integrity, fairness, inclusivity, respect, and responsibility while maintaining the highest standards of excellence in education and conduct.

Strategic plan:

The college's Strategic Plan is designed to achieve its Vision through a clearly defined Mission. The SWOC Analysis provides a comprehensive understanding of the institution's goals and objectives, along with actionable strategies for their realization.
Strategic planning and its implementation are carried out through effective coordination between the Academic Committee and the Internal Quality Assurance Cell (IQAC). Together, these bodies work to enhance the quality of the teaching-learning process on a continuous basis. To support this, standard review and evaluation mechanisms are in place.
Feedback from all stakeholders plays a crucial role in shaping and periodically revisiting the strategic plan. Both long-term and short-term goals are outlined in alignment with the strategic plan, and efforts are made in collaboration with the management to achieve the objectives within the set timeframe.



LONG TERM GOALS

1. To develop Centres of Excellence
2. Each Department should be a Research Centre
3. To have a spacious auditorium capable of accommodating 500 students
4. To have industry sponsored labs
5. MoUs with reputed industries/institutions

6. To have a power plant (renewable source)
7. To expand Hostel facilities
8. More than 90% of the faculty should be Ph.D holders
9. Collaboration with industry for industry-oriented projects for students/faculty

SHORT TERM GOALS

1. Strengthen the campus facilities and support system
2. Increase in research output through good publications
3. Introduction of interdisciplinary projects in collaboration with industry
4. Enhance creativity and innovation in students and faculty
5. Organize technical events/workshops/guest lectures in emerging areas of technology
6. Enhance industry-institute collaboration
7. Improve the teaching-learning process by adopting ICT tools and extended classrooms
8. Enhance capabilities for E-Governance/E-Learning

To attain the Goals, the following strategies were planned:

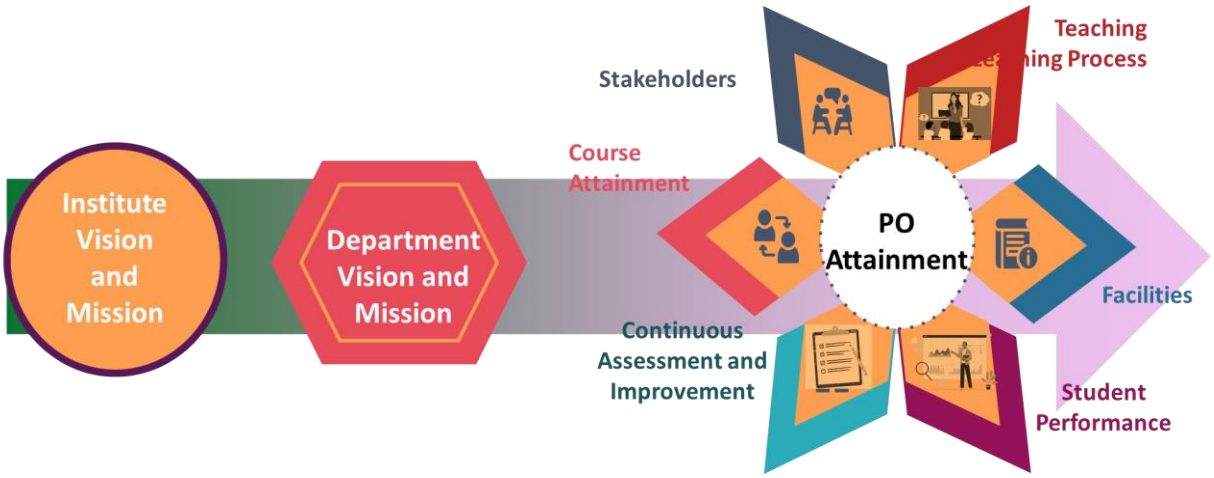
PLAN OF ACTION	OUTCOME & COMPETENCIES
Improve in quality of Teaching Learning Process by encourage teaching and non-teaching staff to pursue higher qualifications, certifications, and skill enhancement programs. Organize in-house training and workshops for professional development	The academic performance of students has seen a growth across all branches.
Enhancing the research and innovation in the college	An increase in publications was observed
Plan and identify the gaps for finding a place in the NIRF rankings.	A change is seen in the marks obtained in the NIRF
Conduct of Skill development courses, ability enhancement courses	Increase in the placements
Motivate students to participate in events like SIH, hackathons, and other competitive platforms.	IIC (Institute Innovation Cell) and various Clubs in the departments provided mentorship and training for performance enhancement. Students secured notable positions in SIH, hackathons, and other national-level competitions, showcasing their problem-solving and technical skills
Ensure projects undertaken during internships align with the curriculum for practical learning. Develop a monitoring mechanism to track student performance during internships	Enhanced internship quality through periodic reviews and evaluations by faculty mentors. Some of the students converted internships into full-time job offers due to exceptional performance.

Focus on Outcome based education (OBE):

The IQAC cell of the college has developed guidelines for implementing OBE in accordance with the norms of the affiliating university. The curriculum is categorized into knowledge, skill, and attitude-based courses, with each course mapped to program outcomes and assessed continuously based on its learning outcomes.

To bridge curricular gaps, value-added courses, skill development programs, and ability enhancement courses are offered. The departments collect feedback from internal stakeholders (faculty and students) as well as external stakeholders (alumni, parents, and employers). Based on feedback from alumni, outgoing students, and industry representatives, curricular gaps are identified and discussed in departmental meetings for resolution. Students' cognitive, affective, and psychomotor skills are evaluated and aligned with Program Outcomes, Program Educational Objectives, and Program Specific Outcomes as part of the OBE framework.

Flow of Outcome Based Education

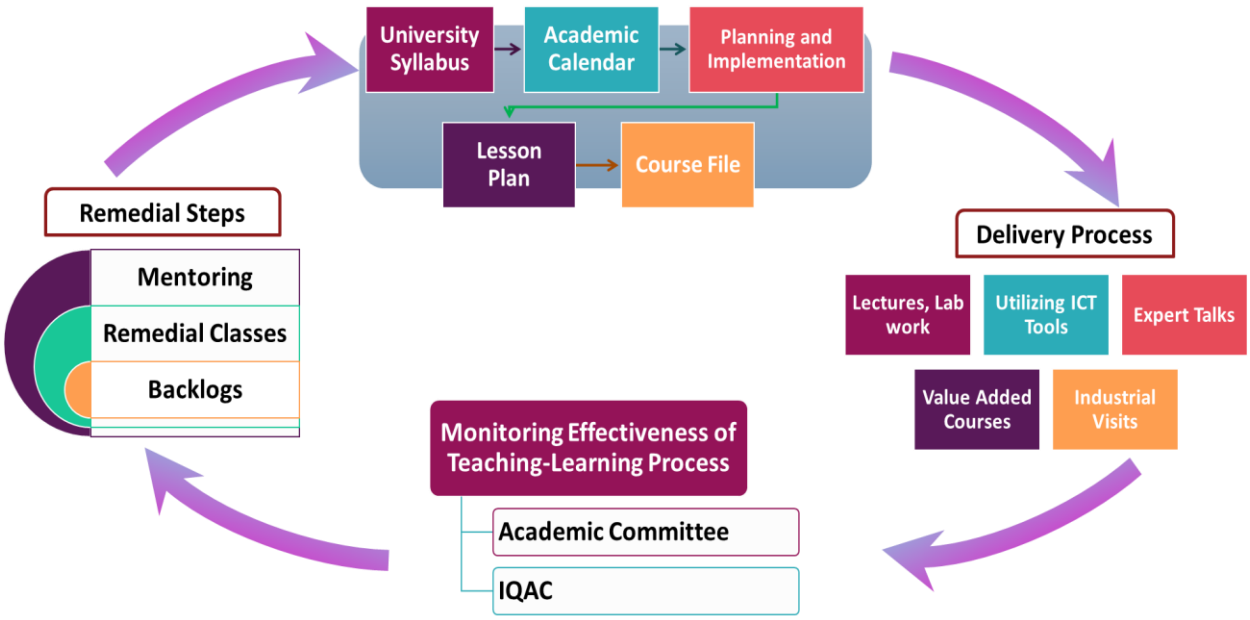


IMPLEMENTATION STRTEGY

ASSESSMENT STRATEGY FOR OBE

OBLT (Outcome Based Teaching Learning)

Teaching and Learning are necessary actions to accomplish the educational goals. The Institute as well as the Departments have well-established best practices to improve the quality of Teaching – Learning process.



Framework for Implementing Effective Teaching-Learning Process

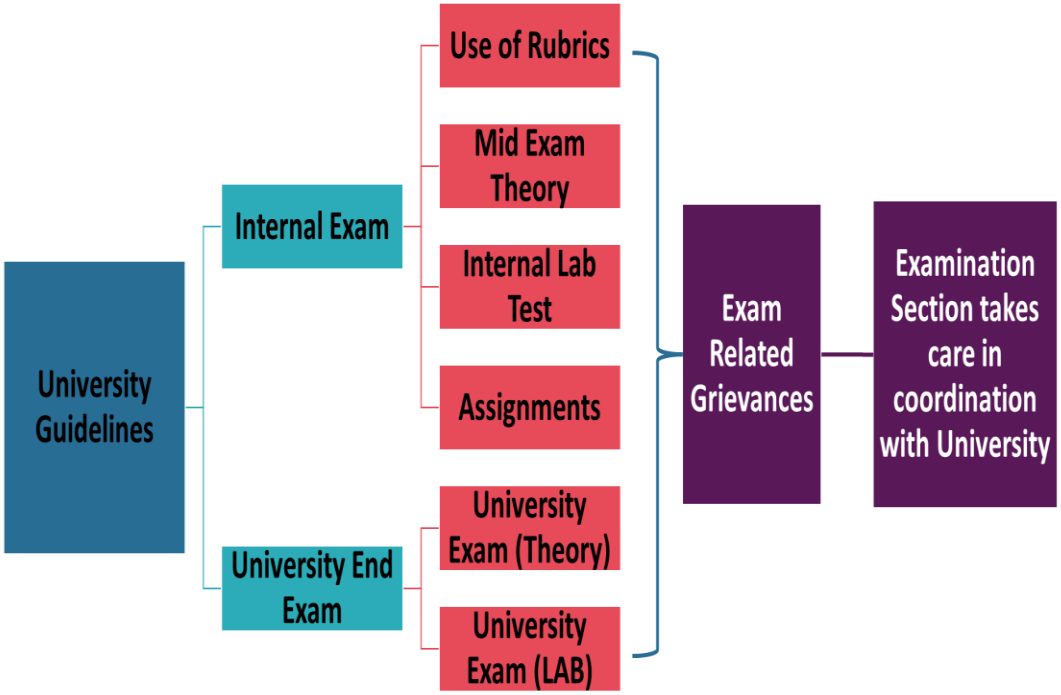
The framework for an effective teaching-learning process involves a structured approach to designing, implementing, and assessing educational programs. It begins with course analysis to identify desired learning outcomes, appropriate instructional methods, and different levels of learner understanding. This is followed by the development of tools, including instructional materials, delivery mechanisms, and assessment methods, to support effective teaching. The implementation strategy focuses on addressing learners' capabilities, challenges, and any barriers to ensure successful course delivery. Finally, formative assessments such as quizzes and assignments, along with summative assessments like semester-end exams, are used to evaluate learning outcomes and refine the process for continuous improvement. This approach ensures a holistic and outcome-based educational experience.

Use of Various instructional methods and pedagogical initiatives

SI No.	Method	Pedagogical Initiative
1.	Class Room Teaching-Traditional	Making the student understand the concept/principles/theory during the lecture in classroom keeping in mind the various cognitive levels of learning. Students are encouraged to actively interact during the lecture hour.
2.	Class Room Teaching – ICT based	20-25% of the classroom teaching is through power point presentation, videos, making use of Audio-Visual Equipment.
3.	Open Source Material/NPTEL Videos	Important concepts, Real life examples are given through open source material, NPTEL videos in class.
4.	Self-Learning	Self-Learning that includes learning at one's own pace is achieved by providing material in the college E-Courseware available at www.gvpcew.net/moodle
5.	Project-based Learning	Students are encouraged to carry out term Projects/Skill courses/Industrial Internships. To guide the students, a list of final year Projects and their reports are available on LAN at http://172.16.5.78:8080/dspace
6.	Laboratory Experiments	Laboratory Experiments as per curriculum are conducted to enable them to understand the practical concepts. In addition, they are encouraged to conduct online experiments at Vlab.co.in.

Teaching and Learning Process – Evaluation Process

The examination process designed in alignment with university guidelines, covering both internal and end-semester assessments. The **internal exam** process includes midterm theory exams, internal lab tests, and assignments, with evaluations guided by rubrics to ensure fairness and consistency. The **university end exams** comprise theory and lab components, serving as a summative assessment of students' knowledge and skills. To address exam-related concerns, a dedicated examination section works in coordination with the university to resolve grievances efficiently. This structured framework ensures a transparent, balanced, and student-centric evaluation process.



Teaching and Learning Process – Feedback

The college follows a structured approach to gather student feedback on the teaching-learning process. Feedback is obtained through three class committee meetings each semester, with each committee consisting of five student representatives. Students are required to fill out a feedback form twice a semester, once before the first Mid-term internal test and again before the second Mid-term internal test. The feedback collected is then shared with the respective faculty members, and the Head of Department (HOD) provides necessary guidance. If the feedback for a particular faculty member is low in the questionnaire, remedial actions such as counseling, delivering lectures at the department forum, and offering tips for improvement are implemented. If the issue persists, the matter is escalated to the Principal for further counseling. The Principal then advises the faculty on enhancing their teaching skills,

and, if necessary, the faculty is encouraged to attend training or orientation programs led by professional experts to improve their teaching abilities.

Program Outcomes (POs)

Program Outcomes (POs) are defined based on the guidelines set by the NBA (National Board of Accreditation), and the courses in the curriculum are mapped to these POs. To facilitate this mapping process, key elements are identified for each PO. These key elements are broad characteristics that represent the core aspects of the POs. They play a crucial role in determining the degree of correlation between the courses and POs. The POs and their associated key elements are outlined in the table below.

PO#	PO	Key Elements
PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.	1. Apply knowledge of mathematics and science 2. Apply knowledge of engineering fundamentals 3. Apply knowledge of engineering specialization to the solution of complex engineering problems.
PO2	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.	1. Apply research literature review 2. Identify and formulate complex problems in the area of ECE 3. Analyze and reaching substantiated conclusions using principles of mathematics 4. Reaching substantiated conclusions using 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 the public health and safety, and the cultural, societal, and environmental considerations.	1. Design and develop the system components & processes considering public health and safety. 2. Design and develop the system components & processes to meet the needs of society. 3. Design and develop the system components & processes by considering environmental issues.
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.	1. Conduct and explore the theoretical investigations in laboratories. 2. Analyze, interpret and validate the investigations of problems. 3. Apply the domain knowledge to validate experiments and projects.
PO5	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.	1. Select modern IT tools for understanding the complex engineering concepts. 2. Apply the modern IT tools for simulating the complex problems. 3. Apply the techniques, resources and modern engineering tools for the scope of understanding.
PO6	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.	1. Apply contextual knowledge towards health and safety of the society. 2. Demonstrate engineering skills towards legal and cultural issues.

PO7	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.	1. Overview and reduce the adverse effects by providing suitable engineering solutions for environment and societal problems. 2. Demonstrate the engineering knowledge for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	1. Apply engineering norms with professional ethics. 2. Accountable and responsible in exhibiting engineering skills.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	1. Implicate team work and leadership qualities.
PO10	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.	1. Effective reports writing skills. 2. Effective presentation skills to give and receive clear instructions.
PO11	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.	1. Apply managerial skills in understanding demonstrating the engineering activities in multi disciplinary environment. 2. Effective functional planning and implementation in handling the project
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.	1. Develop the real for self learning modern technologies 2. Engage themselves in lifelong learning for technology changes

All the courses in the University Curriculum can be grouped into a) Mathematics & Basic Sciences, b) Humanities and Management Science, c) Basic Engineering Courses, d) Core Courses, e) Elective Courses, f) Skill Courses and g) Project and Internships. The Identified association between categorized group of courses and POs is presented in the table below

Association between the categorized group of courses and POs

Groups	**POs Contributed**
a) Mathematics & Basic Sciences	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12
b) Humanities and Management Science	PO1, PO2, PO3, PO6, PO7, PO8, PO9, PO10, PO11, PO12
c) Basic Engineering Courses	PO1, PO2, PO3, PO4, PO5, PO12

d) Core Courses	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12
e) Elective Courses	PO1, PO2, PO3, PO4, PO5, PO6, PO11, PO12
f) Skill Courses	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12
g) Project and Internships	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12

The gaps are guiding factors to enhance the student capability to attain the POs

Identified Curricular Gaps in the Curriculum

SI No.	POs	Identified Gaps
1	PO3	More exposure is needed to solve the Real-world engineering problems
2	PO4, PO5	Inadequate exposure in applying modern tools
3	PO6, PO7	Need to involve more in societal and environment issues
4	PO9, PO10, PO11	1. Need opportunities to function as a team member/leader in a Multi-disciplinary setting 2. More exposure needed to improve communication and Technical Writing 3. Proper involvement in Project Management
5	PO12	Ability to engage in life-long learning

To bridge the curriculum Gaps, different co-curricular activities are organized by the Departments. These include:

1. Guest Lectures/Expert Talks
2. Add-on courses
3. Term Projects, Soft skills training
4. NPTEL Video Lectures/ Awareness on MOOCs Courses
5. Industrial Visits, Internships, Technical Magazines
6. Technical Fests/Workshops/Webinars/Conferences/ Seminars
7. Hardware Expos
8. Professional Chapter Activities
9. Additional Laboratory Experiments
10. Training for GATE/Competitive Exams

Course Outcomes (COs)

The subject faculty member in consultation with their subject coordinators identifies/prepares the Course Outcomes for a particular course. The Course Outcomes are mapped to the Program Outcomes. The level of mapping is determined through a consultative process involving the subject coordinators and the Department Advisory Committee. To formulate the COs the following guidelines are being followed

- Five COs for theory to be formulated and each should in line with every unit of the course
- Five COs for lab to be formulated and each should map the set of experiments listed in the lab course.
- Need to find an appropriate cognitive level for each CO and assign a suitable verb as per Blooms Taxonomy to frame the CO

Quality of Internal Semester Question Papers, Assignments and Evaluation

Distribution and weightage of internal marks is followed as per the University Regulations:

Process for internal semester question paper setting and evaluation and effective process implementation

The internal semester question papers are prepared by faculty in consultation with subject coordinators to ensure alignment with Course Outcomes (COs). The papers are reviewed by a team of program coordinators and senior faculty for errors and to confirm COs are met. Questions are set using Bloom's Taxonomy and adhere to University standards. As per University regulations, students are required to submit assignments covering all units. The evaluation process is managed by the Examination Section in line with University guidelines. Faculty, with the subject coordinator, prepare the evaluation scheme, which is submitted to the Examination Section. After evaluation, scripts are returned to students for mark verification, and final marks are entered into the University portal. For Assignments evaluation is done with predefined rubrics and For practical subjects, evaluation combines day-to-day performance, records, rubrics, and internal test results.

Quality of Students Projects

The project work is executed under the guidance of a faculty member. The project work consists of different phases that include identification of the project, setting up of problem statement/Abstract, collection of relevant literature, design/Analysis of problem statement together with Hardware/Software requirements, consolidation of results and preparation of report and presentation of results at different stages of the work for periodical review.

Types and relevance of the projects and their contribution towards attainment of POs & PSOs

The graduate attributes of Knowledge, Skill and Attitude are tested in a project. The major skills that have to be demonstrated in a project along with their contribution towards relevant POs and PSOs are given in Table below.

Project contribution to POs

SI. No	Skills Demonstrated	Project Outcomes	POs
1	Domain specific knowledge & Programming skills	Demonstrate the technical knowledge to identify problems in the field of discipline and its allied areas. Analyze and formulate technical projects with a comprehensive and systematic approach.	POs:1,2,3,4,5
2	Analytical skills	Identify the modern tools to implement technical projects.	POs: 5,11,12
3	Articulation and comprehending skills	Design engineering solutions for solving complex engineering problems.	POs: 3,5,12
4	Professionalism & Teamwork	Develop effective communication skills, professional behavior and team work.	POs:8,9,10,11, 12

For monitoring and evaluation of projects, a Project Review Committee is constituted. The PRC consists of the Head of the Department, Senior Faculty of Department, Project Coordinator and respective Guide. Internal reviews are conducted and evaluated as per the rubrics. The External Review is carried out in the Department based on the dates announced by the University.

The quality of a project is evaluated on the following aspects:

- Objective and Problem statement
- Implementation and Results
- Usage of modern Tools
- Technical Writing Skills
- Usefulness to society
- Scope for publication

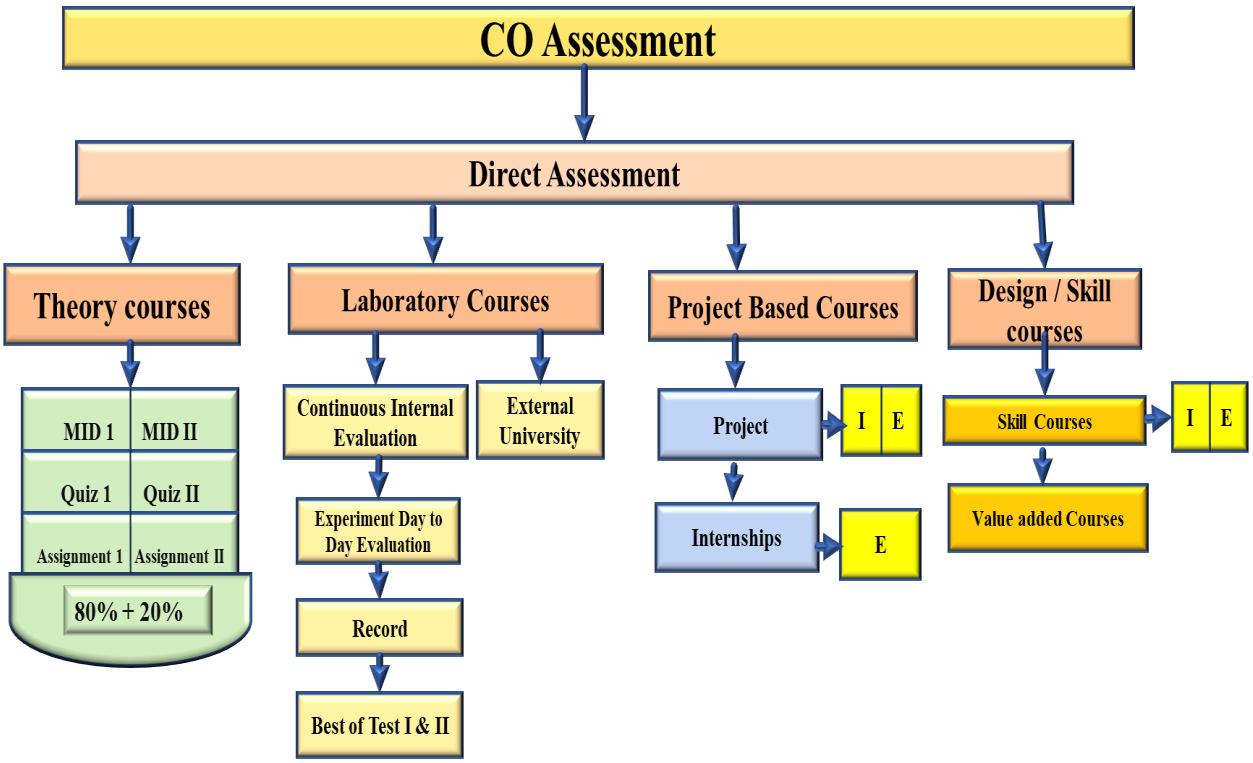
The rubrics adopted, to arrive at the best and the average projects for the year.

Continuous Assessment

The assessment process used for the evaluation of Course Outcome (CO) is listed below:

Direct Assessment process

- Internal Tests
- Assignment
- Online Quiz
- Internal Laboratory Tests
- Semester-End examination (Theory/ Practical)
- Project work
- Skill Courses/ Internships



Distribution and Weightage of Marks (JNTUK- R20)

<table>
<tr><th>Sl. No.</th><th>Distribution</th><th>Frequency</th><th>Description</th></tr>
<tr><td>1</td><td>Internal Tests</td><td>Twice in a semester</td><td>
<table>
<tr><td colspan="4">Internal test 1</td></tr>
<tr><td>Q. No.</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>Marks</td><td>05</td><td>05</td><td>05</td></tr>
<tr><td colspan="4">Internal test 2</td></tr>
<tr><td>Q. No.</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>Marks</td><td>05</td><td>05</td><td>05</td></tr>
</table>
• DAC will ensure the quality of question and scheme of evaluation
• The internal descriptive marks are evaluated for 15 marks</td></tr>
<tr><td>2</td><td>Assignment</td><td>Twice in a semester</td><td>Assignment 1 questions covering Unit 1-3 is given to students before the internal test1 to evaluate for 5 marks as per the rubric.
Assignment 2 questions covering Unit 3-5 is given to students before the internal test2 to evaluate for 5 marks as per the rubric.</td></tr>
<tr><td>3</td><td>Online quiz</td><td>Twice in a semester</td><td>Quiz 1 of 20 questions covering unit 1-3 is conducted for the students during the internal test1 by JNTUK to evaluate for 10 marks.
Quiz 2 of 20 questions covering unit 3-5 is conducted for the students during the internal test2 by JNTUK to evaluate for 10 marks.</td></tr>
<tr><td colspan="4">• The total marks secured by the student in each mid-term examination are evaluated for 25 marks
• The marks secured by the students from the above internal tests 1 & 2 (Descriptive + Objective + Assignment) are finally considered as 80% of the best and 20% of the other
• Final internal Marks = (Best of (Mid-1/Mid-2) marks x 0.8 + Least of (Mid-1/Mid-2) marks x 0.2)</td></tr>
<tr><td>4</td><td>Engineering drawing</td><td>Once in a curriculum</td><td>• Internal marks are evaluated for 30 marks
• 15 marks for continuous Assessment (day–to–day work)
• Two internal exams are conducted for 15 marks
• Final internal Marks = (Best of (Mid-1/Mid-2) marks x 0.8 + Least of (Mid-1/Mid-2) marks x 0.2)
• External exam is conducted by JNTUK for 70 marks</td></tr>
<tr><td>5</td><td>Internal</td><td>Twice in a</td><td>• Experiment wise evaluation/ Weekly evaluation of Day-to-</td></tr>
</table>

<table>
<tr><td></td><td>Laboratory Tests</td><td>semester</td><td>Day and Record work for each experiment is evaluated for the marks 5 and 5 respectively
• Two internal tests are conducted for 5 marks each covering all the list of experiments as per JNTUK syllabus
• The rubrics developed for evaluation of Day-to-Day, Record work and internal marks are used.</td></tr>
<tr><td>6</td><td>Semester-End Examinations (Theory / Practical)</td><td>Once in a semester</td><td>• The external theory exam is conducted by JNTUK for 70 marks covering all 5 units
• The external lab exam is scheduled by JNTUK for 35 marks covering all experiments.</td></tr>
<tr><td>7</td><td>Project work</td><td>Once in a curriculum</td><td>• The Project work carries a total of 200 marks and of which 60 marks are internal and the rest 140 marks are awarded by the External
• Internal project work evaluation
<table>
<tr><td colspan="5">Internal Guide Evaluation</td></tr>
<tr><td>Rubrics</td><td>Day-to-Day Work</td><td>Involvement in Project</td><td>Team Work and Time Management</td><td>Regularity</td></tr>
<tr><td>Marks</td><td>10</td><td>10</td><td>05</td><td>05</td></tr>
<tr><td colspan="4">Internal Review</td><td></td></tr>
<tr><td colspan="3">Review 1</td><td colspan="2">Review 2</td></tr>
<tr><td colspan="3">30</td><td colspan="2">30</td></tr>
<tr><td colspan="5">Total Internal Review marks= 1/3rd * Review 1+ 2/3rd * Review 2</td></tr>
</table>
• The rubrics developed for evaluation of Guide and Review 1 &2 is used
• Final External Review is conducted by External Faculty nominated by JNTUK together with Internal Project Review Committee

The rubrics are also developed for choosing the best projects by considering the total marks</td></tr>
</table>

Distribution and Weightage of Marks (AU)

S. No	Type of Course	Continuous Internal Evaluation	End Semester Examination
			Max Marks
1.	Theory Courses	30 Marks Evaluation process: 20 marks (Two internal tests each for 20 marks.) 10 marks (2 assessments 1 before mid1 and 1 before mid-2) The final internal score best of the two	70 Marks
2.	Professional Elective/ Open Elective	30 Marks (same as that for Theory course in S. No. 1)	70 Marks
3.	Practical Courses Including CAD/e- CAD and Engg. Workshop	50 Marks 20 marks (15 marks for day-wise performance including observation and viva, 5 marks for record.) 30 marks (from the best of the two internal examinations, each being conducted at the end of a cycle/mid semester).	50 Marks
4.	Design Thinking & Innovation Courses	50 Marks Design thinking phase-wise performance assessment	50 Marks
5.	Skill Oriented Courses	50 Marks 20 marks (day-wise performance including observation and viva) 30 marks (from internal examinations at the end of the semester).	50 Marks
6.	Summer Internships / Community Service Project	-	100 Marks

7.	Project Work	50 Marks 25 marks (Two reviews each for 25 Marks based on the progress, through an Internal committee comprising of HoD, Project Supervisor and a senior faculty of the department. The final score is 1/3rd of the I Review and 2/3rd of the II Review) 25 marks (Given by the guide according to the given rubric)	150 Marks

Assessment Tools utilized in the assessment process

Assessment tools for the attainment of course outcomes

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<tr><td>Marks</td><td>08</td><td>08</td><td>04</td></tr>
<tr><td colspan="4">Internal test 2</td></tr>
<tr><td>Q. No.</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>Marks</td><td>08</td><td>08</td><td>04</td></tr>
</table>
DAC will ensure the quality of question and scheme of evaluation
</td></tr>
<tr><td>2</td><td>Assignment</td><td>Twice in a semester</td><td>Assignment 1&2 questions covering Unit 1-3 is given to students before the internal test1 to evaluate for 10 marks as per the rubric.
Assignment 2&4 questions covering Unit 3-5 is given to students before the internal test2 to evaluate for 10 marks as per the rubric.</td></tr>
<tr><td colspan="4">The total marks secured by the student in each mid-term examination are evaluated for 30 marks
The marks secured by the students from the above internal tests 1 & 2 (Descriptive + Assignment) are finally considered</td></tr>
<tr><td>3</td><td>Internal Laboratory Tests</td><td>Twice in a semester</td><td>Experiment wise evaluation/ Weekly evaluation of Day-to-Day and Record work for each experiment is evaluated for the marks 15 and 5 respectively
Two internal tests are conducted for 30 marks each covering all the list of experiments as per syllabus
The rubrics developed for evaluation of Day-to-Day, Record work and internal marks are used.</td></tr>
<tr><td>4</td><td>Semester-End Examinations (Theory / Practical)</td><td>Once in a semester</td><td>The external theory exam is conducted by University for 70 marks covering all 5 units
The external lab exam is scheduled by University for 50 marks covering all experiments.</td></tr>
<tr><td>5</td><td>Project work</td><td>Once in a curriculum</td><td>The Project work carries a total of 200 marks and of which 50 marks are internal and the rest 150 marks are awarded by the External
Internal project work evaluation
<table>
<tr><td colspan="5">Internal Guide Evaluation</td></tr>
<tr><td>Rubrics</td><td>Day-to-</td><td>Involvement in Project</td><td>Team Work and Time</td><td>Regularity</td></tr>
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<tr><td></td><td></td><td></td><td>
<table>
<tr><td></td><td>Day Work</td><td></td><td>Management</td><td></td></tr>
<tr><td>Marks</td><td>10</td><td>10</td><td>05</td><td>05</td></tr>
<tr><td colspan="4">Internal Review</td><td></td></tr>
<tr><td colspan="3">Review 1</td><td colspan="2">Review 2</td></tr>
<tr><td colspan="3">25</td><td colspan="2">25</td></tr>
<tr><td colspan="5">Total Internal Review marks= 1/3rd * Review 1+ 2/3rd * Review 2</td></tr>
</table>

The rubrics developed for evaluation of Guide and Review 1 &2 is used
Final External Review is conducted by External Faculty nominated by University together with Internal Project Review Committee
The rubrics are also developed for choosing the best projects by considering the total marks

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<tr><td>6</td><td>Skill Oriented Courses</td><td>Once in a curriculum</td><td>

One internal evaluation conducted for 50 marks out of which 20 marks for Day wise performance and 30 marks for internal examination.
External examination is conducted based on the report and viva voce conducted by concerned teacher and a senior expert in the subject from the same department

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<tr><td>7</td><td>Internship/Industrial Training/Skill Development programmes/Research Project guidelines</td><td>Once in a curriculum</td><td>

External Review is conducted by External Faculty nominated by University together with Internal Project Review Committee for 100 marks

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</table>

The performance of the students in each course- Internal and External Examinations is the input to assess the course outcomes.

Establish the correlation between the courses and the Program Outcomes (POs) and Program Specific Outcomes (PSOs)

The following steps suggest that establishing the correlation between the courses available in the curriculum with the defined POs & PSOs:

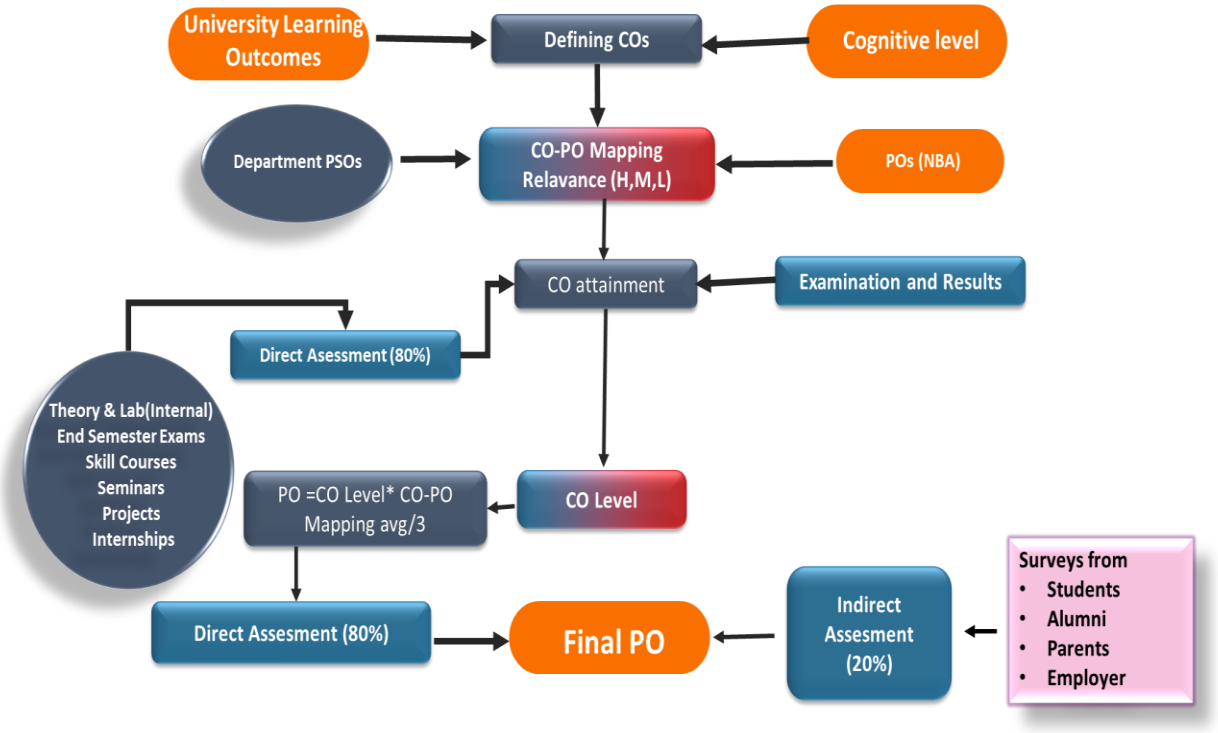
Step 1: Department Academic Committee (DAC) is advised to initiate the process of establishing correlation between the courses with POs & PSOs.
Step 2: DAC identifies the set of key elements from the defined POs & PSOs in consultation with Department faculty members.
Step 3: List of courses in curriculum is then mapped with the key elements identified from the defined POs & PSOs.
Step 4: Finally, the matrix for all courses and POs & PSOs are tabulated.

Attainment of Course Outcomes and Program Outcomes

The process for evaluating the attainment of Course Outcomes (COs) and Program Outcomes (POs) at the college is systematic and structured as follows:

1. **Defining and Mapping COs**: Course Outcomes (COs) are defined for each course and mapped with Program Outcomes (POs) and Program Specific Outcomes (PSOs). A mapping scale of 1, 2, or 3 is used, where 3 represents the highest level of alignment. An average mapping value is calculated for each PO.
2. **ARCO Sheet for Attainment Calculation**: After internal and external examinations, the attainment of COs is evaluated using an "Attainment Report of Course Outcome" (ARCO) sheet. Targets are set as a percentage of students achieving more than the university average marks—45% for theory courses and 50% for labs, seminars, and projects.
3. **Attainment Levels**:
    - **Level 1**: Achieved if 65% or more students meet the target.
    - **Level 2**: Achieved if 75% or more students meet the target.
    - **Level 3**: Achieved if 85% or more students meet the target.
4. **Compilation by Coordinators**: Department NBA coordinators collect ARCO sheets from all courses across the batch, including theory and lab components, to calculate PO attainment.
5. **Calculating PO Attainment**: The PO attainment is derived by combining:
    - **CO Attainment**: Attainment levels from ARCO sheets.
    - **CO-PO Mapping Average**: The average mapping value for the PO in the considered course.
    - The final PO attainment for the batch is calculated as the average attainment across all courses.
6. **Indirect Assessment**: Feedback from stakeholders, including students, alumni, employers, and faculty, is integrated into the PO attainment calculations for a holistic evaluation.

This structured methodology ensures alignment of course outcomes with program outcomes and provides a robust mechanism for quality assurance and continuous improvement.



Assessment tools and process used in direct and indirect methods are presented in Table below

List of assessment tools and processes

Sl. No.	Assessment Tool	Weightage %	Frequency	Stakeholder	Responsible	Description
Direct Assessment Methods						
1	Theory Subject CO attainment	80	End of each semester	Student	Course Coordinator/ Faculty member	CO attainment is calculated for every subject as per the defined ARCO
2	Laboratory Subject CO attainment		End of each semester	Student	Course Coordinator/ Faculty member	CO attainment is calculated for every laboratory as per the defined ARCO
3	Skill Course		II-I,II-II, III-I,III-II,IV-I	Student	Course Coordinator/ Faculty member	CO attainment is calculated for every skill course as per the defined ARCO
4	Project work		IV-II	Student	PRC	CO attainment is calculated for the main project as per the defined ARCO

5	Internships		III-I & IV-I	Student	Faculty Coordinator/ Class Teacher	CO attainment is calculated for the Internships as per the defined ARCO
Indirect Assessment Methods						
1	Student Exit Survey	10	Annually for the out - going batch	Student	Program Coordinator	At the end of every academic year the present out-going batch is asked for a feedback about all the four years of stay in the campus related to academic and other administrative issues
2	Employer Survey	5	Every two years	Employer	Program Coordinator	Whenever any industry person/ Employers during visits to our college we request them to fill the survey form related to the progress of knowledge, skill and attitude of our students.
3	Alumni Survey	5	Every two years	Alumni (3 years after the graduation)	Program Coordinator	Whenever any Alumni visits to our campus or in Alumni meets we ask to our distinguished alumni to fill the survey form related to their progress of knowledge, skill and attitude
4	Parent Survey	5	Annually	Parent	Program Coordinator	We are collecting filled forms from parents, whenever any parent visits to our campus or when required we are asking to our students to collect from the parent