

DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE (AUTONOMOUS)



(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)
Re-Accredited with 'A' Grade by NAAC , Accredited By TCS,
Re-Accredited by NBA (BME,ECE & EEE)
Perambalur - 621212



OBE Manual

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PERAMBALUR - 621 212. Tamil Nadu.
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OBE-OUTCOME BASED EDUCATION MANUAL

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DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE
PERAMBALUR

VISION

- ❖ An active and committed centre of advanced learning focused on research and training in the fields of Engineering, Technology and Management to serve the nation better.

MISSION

- ❖ To develop eminent scholar with a lifelong follow up of global standards by offering UG,PG and Doctoral Programmes.
- ❖ To pursue Professional and Career growth by collaborating mutually beneficial partnership with industries and higher institutes of research.
- ❖ To promote sustained research and training with emphasis on human values and leadership qualities.
- ❖ To contribute solutions for the need based issues of our society by proper ways and means as dutiful citizen.

QUALITY POLICY

- ❖ Committed to achieve recognition as "Institution of Excellence" by consistently providing quality education in the fields of Engineering, Technology and Management with professionalism and global outlook ensuring continual improvement

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PROLOGUE

Outcome Based Education (OBE) offers a transformative educational approach centered on predefined outcomes, enhancing the quality of learning for students. By setting clear objectives, OBE empowers both faculty and learners to tailor teaching and learning methods to their unique capacities, fostering flexibility and innovation. The ultimate aim is to elevate the caliber of graduates by supplementing traditional teaching methods with tangible, achievable goals.

DSEC- Dhanalakshmi Srinivasan Engineering College is dedicated to delivering high-quality technical education, having embraced the Outcome Based Education (OBE) system recommended by the National Board of Accreditation (NBA). This comprehensive approach involves restructuring the curriculum, academic procedures, teaching methodologies, and assessment systems to prioritize high-level learning outcomes aligned with an outcome-based framework. OBE operates as a student-centric model, evaluating performance based on predefined outcomes encompassing knowledge, skills, and attitudes. By analyzing outcomes, DSEC identifies curriculum deficiencies and implements ongoing enhancements, ensuring continuous improvement within the educational framework. The merits of outcome-driven learning include enhanced relevance, curriculum flexibility, active student engagement, improved communication, and a commitment to continuous improvement.

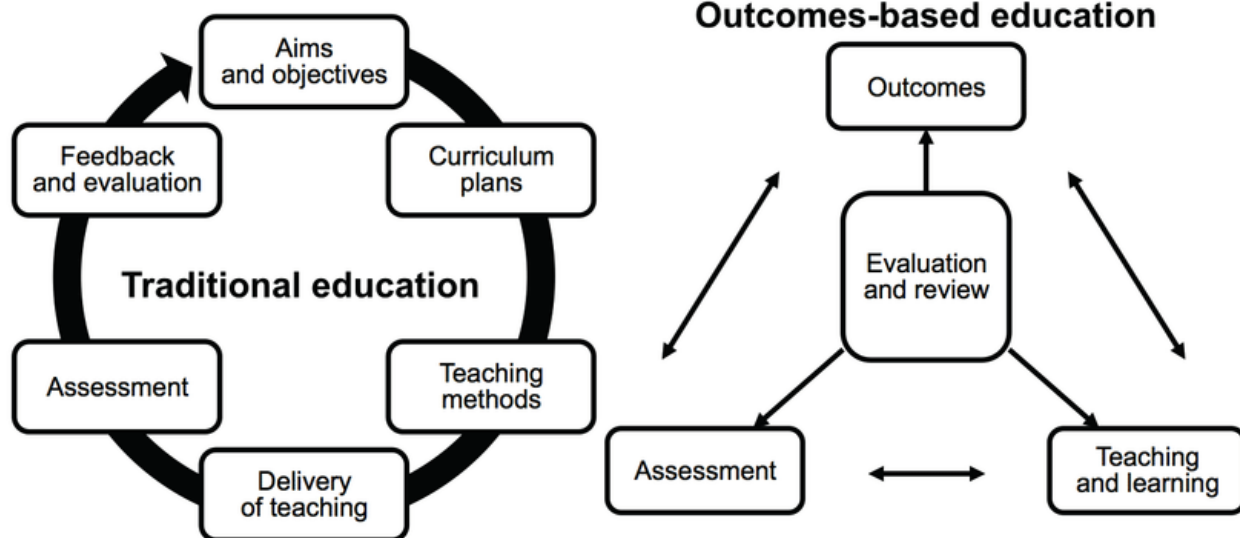
TRADITIONAL VS OBE

TRADITIONAL EDUCATION

In this educational paradigm, the primary emphasis lies on maintaining an environment where learning outcomes often take a backseat. Students find themselves navigating a system that places undue importance on grades and rankings, fueling a relentless pursuit of exam scores or CGPA figures rather than genuine comprehension. Consequently, graduates emerge from this system only partially prepared for the demands of the workforce, lacking essential soft skills essential for success. The curriculum's oversight of crucial abilities such as effective communication, interpersonal dynamics, analytical prowess, and professional demeanor leaves a noticeable gap between academic achievement and practical readiness for professional life.

OUTCOME BASED EDUCATION (OBE)

Begin with a precise understanding of the essential skills and competencies students should possess. Organize the curriculum, instructional methods, and assessment procedures accordingly to ensure effective learning outcomes. This holistic approach guarantees that students acquire the necessary knowledge and skills, fostering their readiness for future challenges and opportunities.



OUTCOME BASED EDUCATION

In envisioning the educational journey, emphasis is placed on equipping students not only with immediate capabilities but also with the enduring skills necessary for their post-graduation endeavors. Shifting from conventional teacher-centric models to learner-centric paradigms prioritizes the individual growth and development of students. This evolution encourages a dynamic and iterative approach to the teaching-learning process, fostering continuous improvement and adaptation. Graduates emerge prepared to navigate a global landscape, armed with not only knowledge but also the ability to apply it innovatively and effectively. Key to this transformation is the implementation of advanced content delivery methods and assessment procedures that challenge students to think critically and creatively. Moreover, enriching faculty involvement in the teaching-learning process ensures that students receive personalized guidance and mentorship, further enhancing their educational experience and overall readiness for the complexities of today's world.

WHY OBE

- ❖ Enhancing global employability and international acknowledgment.
- ❖ Cultivating graduates with enhanced employability, innovation, professional and soft skills, along with a sense of social responsibility and ethics.
- ❖ Elevating the visibility and esteem of technical institutions among stakeholders.
- ❖ Empowering graduates to thrive in their professions and achieve notable career milestones.
- ❖ Equipping graduates for leadership roles and demanding technological advancements

OBE PRINCIPLES

The educational approach revolves around several key principles. Firstly, maintaining a clarity of focus ensures that students can effectively achieve the intended learning outcomes. This involves delineating both short and long-term learning objectives and providing necessary support for learners to attain these outcomes, with assessments aligning closely with these

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goals. Secondly, the provision of expanded opportunities caters to diverse learner needs, offering multiple pathways for success. Moreover, fostering high expectations for all students underscores the belief that most individuals can achieve high standards given appropriate opportunities. Lastly, adhering to a backward design methodology entails starting curriculum planning with the desired exit outcomes and subsequently building the learning framework around these objectives, ensuring a cohesive and effective educational trajectory.

BENEFITS OF OBE -TEACHER

- ❖ Teaching evolves into a realm of heightened creativity and innovation.
- ❖ Lecturers are liberated from the expectation of being sole repositories of knowledge.
- ❖ Nurturing thoughtful and empathetic students becomes the norm.
- ❖ Faculty roles transform into those of instructors, trainers, facilitators, or mentors, tailored to specific learning outcomes.

OBE -TEACHING & LEARNING

In Outcome-Based Education (OBE), teaching and assessment methodologies are diversified, aiming to align with predetermined learning outcomes rather than adhering to a singular approach. This flexibility allows classes, opportunities, and assessments to collectively support students in reaching specified objectives. Furthermore, the faculty's role undergoes a transformation, adapting to serve as instructors, trainers, facilitators, or mentors, depending on the targeted outcomes.

KEYS OF OBE SYSTEM

- ❖ Crafting precise learning outcomes to centralize the system's efforts and objectives.
- ❖ Creating an environment within the system that fosters and supports the achievement of these crucial outcomes for all students.
- ❖ Elevating learning beyond mere acquisition of knowledge to active application and engagement with the acquired information, emphasizing the significance of practical utilization.

KEY COMPONENTS OF OBE

COURSE, DEGREE, PROGRAMME

Course: A structured period of instruction covering multiple topics, usually spanning a semester, facilitated by one or more faculty members and involving a set group of enrolled students.

Programme: An integrated combination of courses, co-curricular, and extra-curricular activities designed to achieve specific goals, ultimately culminating in the granting of a degree.

Degree: An academic credential granted to a student upon successful fulfillment of the requirements outlined within a designated program, indicating attainment of prescribed competencies.

Key Components of OBE

- ❖ Vision and Mission of the Institute
- ❖ Vision and Mission of the Department
- ❖ Programme Educational Objectives (PEOs)
- ❖ Programme Outcomes (POs)/ Programme Specific Outcome(PSOs)
- ❖ Course Outcomes (COs)

VISION AND MISSION OF THE INSTITUTION

Vision:

- ❖ Vision embodies the aspirational future, articulated in the present tense, depicting the destination and envisioned state.

Mission:

- ❖ Mission statement delineates the essence and purpose of an institution, defining its existence and collective endeavor.

Department - VISION AND MISSION

- ❖ Alignment of departmental vision and mission with those of the institution is essential.
- ❖ Emphasis on thematic concentration rooted in SWOC analysis.
- ❖ A comprehensive mission statement may encompass program history, philosophy, student demographics, academic framework, faculty engagement, community integration, and research contributions.

Programme Educational Objectives (PEOs)

- ❖ PEOs are broad statements that describe the career and professional accomplishments that the programme is preparing graduates to accomplish after 3 to 5 years of graduation.
- ❖ PEOs should be measurable, appropriate, realistic, and achievable.
- ❖ PEOs addresses needs of the stakeholders

Guidelines for the PEOs

- ❖ PEOs should be consistent with the mission of the Institution
- ❖ The number of PEOs should be manageable
- ❖ PEOs should be achievable by the programme
- ❖ PEOs should be specific to the programme and not too broad

PEOs

- ❖ Develop assessment methods for each PEO to measure the attainment with expected attainment level for each PEO
- ❖ Generally a good idea to identify between three and five PEOs.
- ❖ Publish and Disseminate the PEOs among the stakeholders.
- ❖ Check for the consistency of the PEOs with the mission statements of the Department.

PROGRAMME OUTCOMES (POS)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an 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.

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.

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 modeling to complex engineering activities with an understanding of the limitations.

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.

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.

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

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

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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.

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.

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.

PROGRAMME SPECIFIC OUTCOME(PSO)

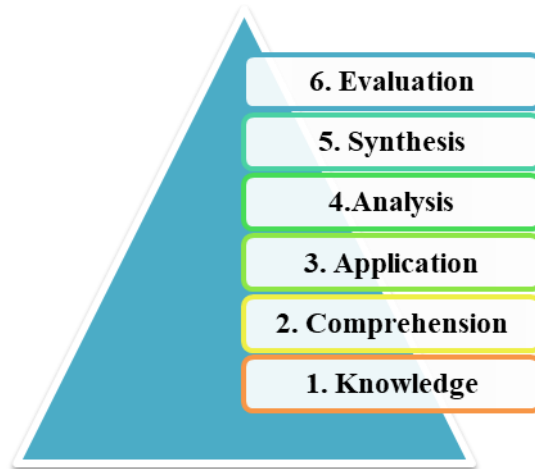
- ❖ Each program is required to meet its own distinct set of criteria termed as Programme Specific Outcomes. These outcomes are tailored to address the specific demands of engineering practice within the relevant sub-discipline, ensuring alignment with industry standards and professional expectations.

COURSE OUTCOMES

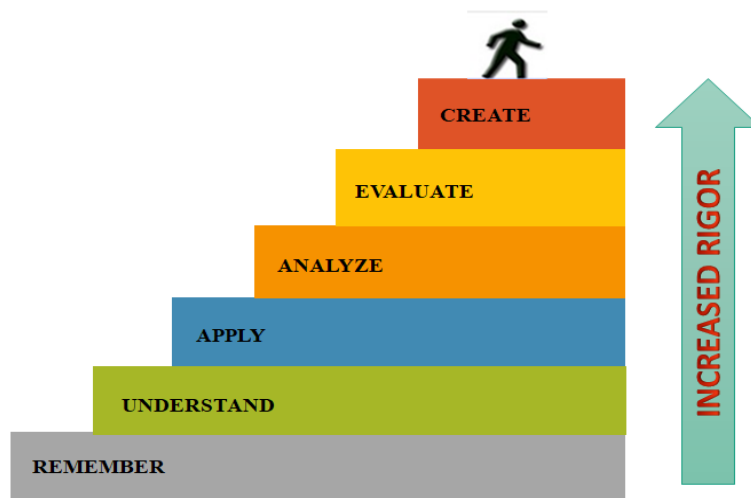
- ❖ Course outcomes should clearly articulate the key skills, knowledge, attitudes, or abilities students will develop.
- ❖ They should be framed in terms of observable and measurable behaviors.
- ❖ These outcomes, established collaboratively by program faculty, serve as foundational elements guiding program-wide objectives.
- ❖ Each outcome should commence with an action verb, such as write, install, solve, or apply, to delineate specific actions or achievements expected from students.

BLOOMS TAXONOMY

- ❖ Bloom's Taxonomy serves as a tool for assessing levels of knowledge.
- ❖ Bloom (1956) suggested that knowledge comprises six progressive levels organized in a hierarchy.



- ❖ To reach the highest level of the cognitive taxonomy, which is evaluation, students must possess the requisite knowledge across all the preceding levels below evaluation.



Remembering: The learner can retrieve, reiterate, and remember previously learned information.

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Understanding: The student comprehends the meaning of information by interpreting and translating what has been learned.

Applying: The student utilizes information in a context distinct from the one in which it was initially acquired.

Analyzing: The student dissects learned information into its components to gain a thorough understanding.

Evaluating: The student makes decisions through profound reflection, criticism, and assessment.

Creating: The student generates new ideas and information by leveraging previously acquired knowledge.

Blooms Knowledge Levels

- Remembering a concept precedes understanding it.(K1)
- Understanding a concept is a prerequisite for applying it.(K2)
- Application of a concept comes before its analysis.(K3)
- Analysis of a concept is necessary before evaluation.(K4)
- Evaluate the concept before Creation(K5)
- Creation requires having remembered, understood, applied, analyzed, and evaluated the concept.(K6)

ARTICULATION OF COURSE OUTCOMES (COs)

- ❖ Course outcomes are statements outlining what a student should know, understand, and/or be able to demonstrate upon finishing a course.
- ❖ Course outcomes should not merely represent a "wish list" of student capabilities upon completing the learning activity.
- ❖ Course outcomes must be described in a straightforward and clear manner.
- ❖ Course outcomes should be assessable in a valid manner.

Why COs

- ❖ Define the type and depth of learning students are expected to achieve.
- ❖ Establish an objective benchmark for formative, summative, and prior learning assessments.
- ❖ Clearly communicate expectations to learners regarding what they are expected to know and demonstrate.
- ❖ Clearly communicate the skills possessed by graduates to prospective employers.
- ❖ Define coherent units of learning that can be subdivided or modularized for various delivery modes, including classroom and online learning.
- ❖ Serve as a guide to organize both the instructor and the learner, providing a roadmap for the course's content and objectives.

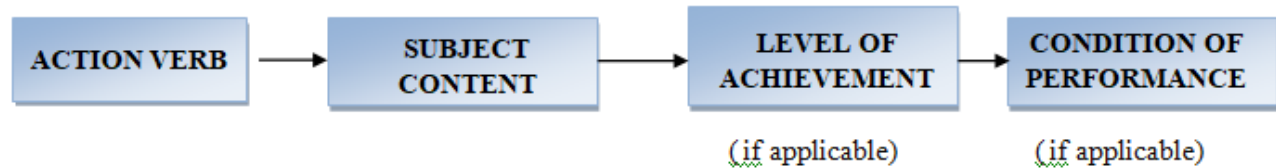
Parts of COs

- ❖ Action verb-Learning domain and level
- ❖ Subject specific statement
- ❖ Level of achievement or Condition of performance (if applicable)

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A Course Outcome (CO) is a clear, specific, and observable statement that indicates what a student should know and be able to do as a result of learning. It is measurable and provides a clear indication of the expected outcome of the learning process.

❖ Effective Learning Outcomes (LOs) encompass the following elements:



Action Verb Details

Knowledge Levels	I. Remembering	II. Understanding	III. Applying	IV. Analyzing	V. Evaluating	VI. Creating
Bloom's Definition	Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.	Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas.	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.	Present and defend opinions by making judgments about information, validity of ideas, or quality of workbased on a set of criteria.	Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.
Verbs	Choose Define Find How Label List Match Name Omit Recall Relate Select Show	Classify Compare Contrast Demonstrate Explain Extend Illustrate Infer Interpret Outline Relate Rephrase Show	Apply Build Choose Construct Develop Experiment with Identify Interview Make use of Model Organize Plan	Analyze Assume Categorize Classify Compare Conclusion Contrast Discover Dissect Distinguish Divide Examine Function	Agree Appraise Assess Award Choose Compare Conclude Criteria Criticize Decide Deduct Defend Determine	Adapt Build Change Choose Combine Compile Compose Construct Create Delete Design Develop Discuss

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	Spell Tell What When Where Which Who Why	Summarize Translate	Select Solve Utilize	Inference Inspect List Motive Relationships Simplify Survey Take part in Test for Theme	Disprove Estimate Evaluate Explain Importance Influence Interpret Judge Justify Mark Measure Opinion Perceive Prioritize Prove Rate Recommend Rule on Select Support Value	Elaborate Estimate Formulate Happen Imagine Improve Invent Make up Maximize Minimize Modify Original Originate Plan Predict Propose Solution Solve Suppose Test Theory
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CO Statements:

Course Outcome	Contents
C101.1	Action Verb+ Statements (Indicate K Levels)
.....	
C101.6	Action Verb+ Statements (Indicate K Levels)

CO-PO COURSE ARTICULATION MATRIX MAPPING

The Course Articulation Matrix serves as a valuable tool for evaluating the alignment between Course Outcomes (COs) and Program Outcomes (POs). By analyzing this matrix, educators can gauge the level of learning achieved in relation to the course's objectives. The matrix provides a clear indication of whether students are effectively meeting the learning objectives outlined in the course syllabus.

The below table aids in comprehending the intention behind each PO and the corresponding Bloom's Taxonomy level. By aligning the levels of POs with Bloom's Taxonomy levels, educators can assess the cognitive complexity required for students to attain the desired learning outcomes.

PO	Level
PO1	K3
PO2	K4
PO3	K5
PO4	K5
PO5	K3/K4/K5-Practical
PO6-PO12	No thumb rule for Non technical Programme Outcomes

Rule for CO-PO Mapping :

- ❖ If the cognitive (Bloom's) level of the CO is same as that of the PO Level then the mapping is of high correlation i.e. Matrix value is 3.
- ❖ If the CO level is one less than the PO level than the correlation is Moderate and Matrix value is 2.
- ❖ If the CO level is less than the PO level by more than 2 or above than the correlation is weak and Matrix value is 1.

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❖ For PO6-PO12, depending upon the nature of course outcome, map the values.

Note : Mapping values are to be entered only if the faculty is competent enough to ask a test item or any activity justifying the relation of a particular CO-PO. Otherwise the correlation is zero.

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101.1												
C101.2												
C101.6												
AVG*												

*-Average of mapped values & Similar table for PSO's

Overall, the Course Articulation Matrix, along with the accompanying table, serves as a comprehensive tool for evaluating course syllabi, ensuring that course objectives are appropriately aligned with program goals and fostering effective student learning and achievement.

CO-PO MAPPING FOR ALL COURSES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101												
C102												
C40N												

*.Similar table for PSO's

ATTAINMENT OF COURSE OUTCOMES

The attainment of course outcome is obtained through assessment tools such as internal assessments and Course Exit Survey. The employment of internal assessment is adopted thrice a semester however Exit Survey is assessed at the end of the course. The Course Instructor will prepare the Question papers as per Blooms Taxonomy for the respective course and schema for Evaluation and will submit the same to Exam cell. Syllabus coverage form is also collected before the start of assessment to ensure for the divergence in the completion of portion. Based on the scheme of Evaluation, Course Instructor will evaluate the paper. Three Assessment and Evaluation process is reviewed by Department Quality Improvement Committee (DQIC). If any deviation found, necessary action is taken. By using various assessment tools, the assessment process is carried out on **Theory, Laboratory and Project Work**

QUALITY AND RELEVANCE OF PROCESSES AND TOOLS

Theory Assessment Process

Assessment Tools	Assessment period	Assessed by	Reviewed by	Mapping with COs
Assessment Test - 1	Once per semester	Course Instructor	DQIC	Relevant COs
Assessment Test - 2				Relevant COs
Model test				CO1, CO2, CO3, CO4, CO5 & CO6
University Exams	Once per semester	Anna University		CO1, CO2, CO3, CO4, CO5 & CO6
Course Exit Survey	At the end of Course	Course Instructor		Relevant COs

Table : Assessment Process for Theory Courses

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Laboratory assessment process:

- ❖ To attain the laboratory course COs the completion of Record and observation is mandatory before the next class.
- ❖ The evaluation of each experiment is based on Viva voce, observation and record and the same is recorded periodically.
- ❖ Model Test is conducted to assess and attain COs which is reviewed by DQIC.

Assessment Tools	Assessment period	Assessed by	Reviewed by	Mapping with COs
Observation/Record Note	Every lab hours	Course Instructor	DQIC	CO1, CO2, CO3, CO4, CO5 & CO6
Model Test/ Mini project	Once per semester			
Course Exit Survey	At the end of Course			
University Practical examinations	Once per semester	Anna University		

Table: Assessment Process for Practical Course

Project assessment process

- ❖ Each internal guide will continuously monitor their students on a weekly basis to observe the progress of the work.
- ❖ To accomplish the art of project based learning, accompany towards industrial support and to enhance their knowledge on project, project hour for final year students is introduced and 0th review is conducted during seventh semester.
- ❖ The project guide along with Project Monitoring Committee conduct 3 project reviews on the eighth semester as per the rubrics, which is set by the Department and the Evaluation, is submitted to the Head of Department. As a whole, the progression is reviewed by the DQIC

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- ❖ The department will encourage students to participate in project events during any association activities and also guide the students to publish the paper in conference/journal forums.

Assessment Tools	Assessment period	Assessed by	Reviewed by	Mapping with COs
0 th Review	7 th Semester	Project Monitoring committee	DQIC	Relevant COs
1 st Review	8 th Semester			Relevant COs
2 nd Review				
3 rd Review				
University Exams	Once per semester	External Examiners		
Course Exit Survey	At the end of Course	Project Coordinator		

Table: Assessment Process for Project Work

The above described process is shown in Figure

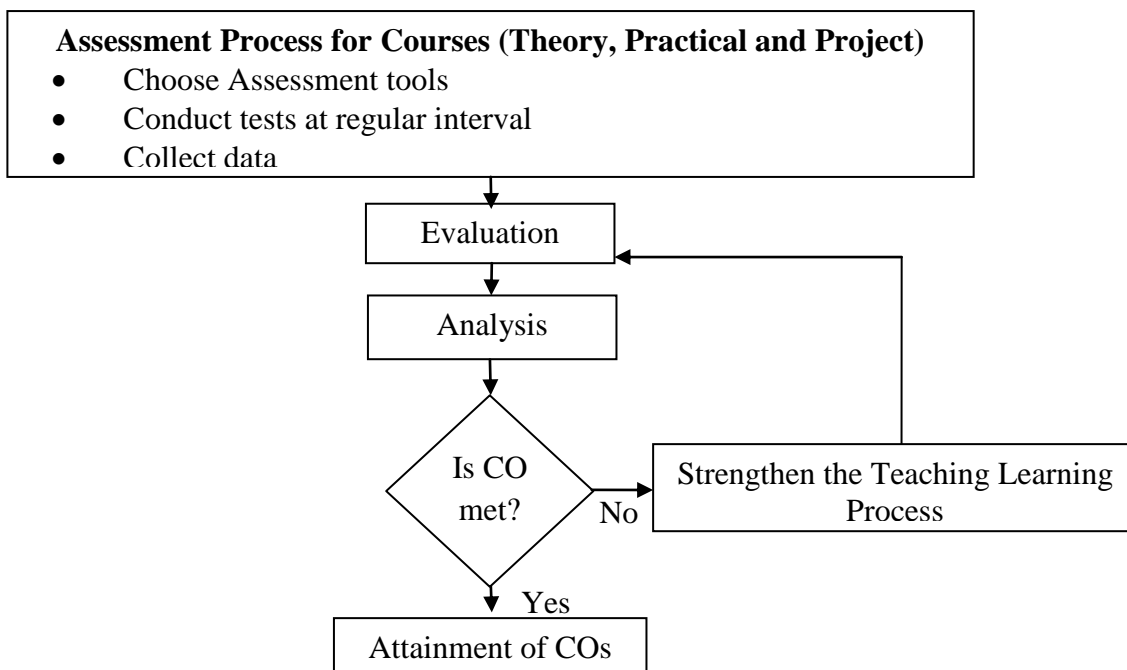


Figure : Assessment process for evaluation of Course Outcomes

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At the end of every semester, the Course Outcomes are assessed based on the assessment process followed in each course and also to ensure that the students have learnt the concepts, techniques, methodologies prescribed in the Course Outcomes and also monitor the remedial action taken thereof.

Direct Attainment of Course Outcome: Theory

Measuring Course Outcome through Internal Examination:

Assessment Test - 1

S.No	Reg No	Name	Q.1					Q.11 a	Q.11 b				Total Mark	
			COX	COX	COX	COX	COX	COX	COX	COX	COX	COX	COX	CO 1
1														
2														
N														

Assessment Test - 2

S.No	Reg No	Name	Part A					Part B/C					Total Mark	
			Q.1					Q.11 a	Q.11 b				CO X	CO X
1														
2														
N														

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Model Exam

S.No	Reg No	Name	Part A			Part B/C			Total Mark					
			Q.1		N	Q11.a		N	CO1	COX	COX	COX	CO X	CO X
			COX	COX	COX	COX	COX	COX	CO1	COX	COX	COX	CO X	CO X
1														
2														
N														

Computation of Total CO Marks

S. No	Register No.	Name of the Student	Obtained MARKS						
			CO1	COX	COX	COX	CO X	CO X	
			Tot.Marks						
1			***						
2									
3									

***=CO 1 Mark of AT test and Model Exam

Attainment Levels

ATTAINMENT LEVELS	LEVELS
1	XX% STUDENTS SCORE MORE THAN XX % OF MARKS
2	XY% STUDENTS SCORE MORE THAN YX% OF MARKS.
3	XZ% STUDENTS SCORE MORE THAN YZ% OF MARKS

Set the Target Level:1/2/3

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Attainment Level Calculation

S. No	Register No.	Name of the Student	MARKS in %= $\frac{\text{Obtained Marks}}{\text{Total Marks}}$					
			CO X	CO X	CO X	CO X	CO X	
			Tot.Marks					
1								
2								
3								
Target Attainment Levels								
Number of Students who got above YX% of Marks								
% of students								
Attainment Level								
Average			ZZZ					

Internal Exam:

Course Code: C204 - EC6404 / Linear Integrated Circuits

CO Attainment: **ZZZ**

Measuring Course Outcomes attained through University Examinations

Program shall have set Course Outcome attainment levels for all courses. Based on the student entry level survey the program average Grade is set.

The Course attainment level is set as follows:

ATTAINMENT LEVELS	LEVELS
1	XX% STUDENTS SCORE MORE THAN X of Grade
2	XY% STUDENTS SCORE MORE THAN Y of Grade
3	YZ% STUDENTS SCORE MORE THAN Z of Grade

Attainment of Course Outcomes of all courses is measured based on Result in term of Grade.

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- ❖ If targets are achieved, all the course outcomes are attained for that year. Program is expected to set higher targets for the following years as a part of continuous improvement.
- ❖ If targets are not achieved, the program should put in place an action plan to attain the target in subsequent years.

University Exam:

Course Code: Eg:C204 - EC6404 / Linear Integrated Circuits

Number of students got 'B+' Grade and above Grades =48

Total number of students = 77

$$\text{Attainment (in \%)} = \frac{\text{(Number of students got 'B+' grade and above grades)}}{\text{(Total number of students)}} = \frac{48}{77}$$

=62.34, so the attainment level is 1/2/3

Direct Attainment of CO is calculated as:

60% of Internal Exam+ 40% of University Exam="BBBB"

Indirect Attainment

Course Exit Survey

Example:

Total Number of Students Answered:100

Number of Students Answered 1:40

Number of Students Answered 2:30

Number of Students Answered 3:30

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Indirect Attainment=Total Number of Students answered 2 and 3/Total Number of Students

$$=0.6=60\%=\text{"Convert to scale"}=$$

Course attainment=90% of Direct+10% of Indirect=

Direct Attainment of Course Outcome: Lab

S. No	Register No.	Name of the Student	Observation, Record											
			EX 1	EX 2	EX 3	EX 4	EX 5	EX 6	EX 7	EX 8	EX 9	EX 10	EX 11	EX N
			CO X	CO X	CO X	CO X	CO X	CO X	CO X	CO X	CO X	CO X	CO X	CO X
			10	10	10	10	10	10	10	10	10	10	10	10

Computation of Total CO Marks

S. No	Register No.	Name of the Student	Obtained MARKS						
			CO1	COX	COX	COX	CO X	CO X	
			Tot.Marks						
1			***						
2									
3									

Attainment Levels

ATTAINMENT LEVELS	LEVELS
1	XX% STUDENTS SCORE MORE THAN XX % OF MARKS
2	XY% STUDENTS SCORE MORE THAN YX% OF MARKS.
3	XZ% STUDENTS SCORE MORE THAN YZ% OF MARKS

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Set the Target Level:1/2/3

Attainment Level Calculation

S. No	Register No.	Name of the Student	MARKS in %=Obtained Marks/Total Marks						
			CO X	CO X	CO X	CO X	CO X	CO X	
			Tot.Marks						
1									
2									
3									
Target Attainment Levels									
Number of Students who got above YX% of Marks									
% of students									
Attainment Level									
Average			ZZZ						

Direct Attainment of CO is calculated as:

60% of Observation and Record Marks+20% of Model Test and 20% of University

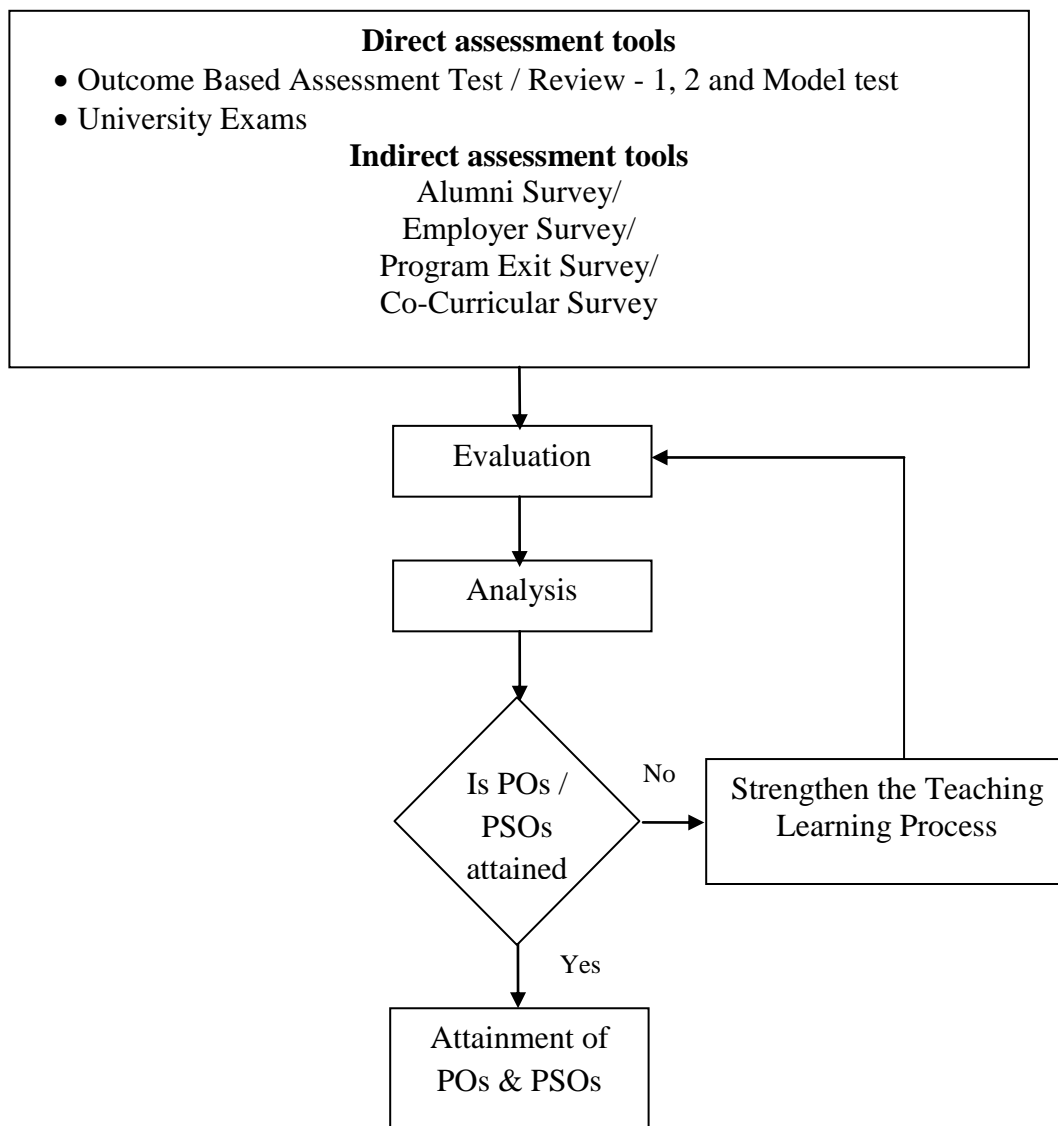
Exam="BBBB"

Course attainment=90% of Direct+10% of Indirect=

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ATTAINMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

- ❖ Assessment Tools are categorized into direct and indirect methods to assess the Program Outcomes (PO) and Program Specific Outcomes (PSO).
- ❖ **Direct Assessment Tool:** Continuous internal evaluation, University examinations are used for CO calculation. The values are calculated for individual course are formulated and summed for assessing the POs. The weighted average of the POs for all the courses is calculated.
- ❖ **Indirect Assessment Tool:** Alumni Survey/Employer Survey/Program Exit Survey and Co-Curricular Survey
- The above described process is shown in Figure.



DSEC/OBE MANUAL

The various direct and indirect tools and its frequency, the responsible authority to collect data for assessing the attainment of each POs and PSOs are given in below Table

Assessment Type	Assessment Method	Assessment Period	Assessed and reviewed by
Direct	Assessment Tests / Review - 1, 2 and 3	Once per semester	DQIC
	University Exam	Once per semester	
Indirect	Alumni Survey	Once Per Year	
	Employer Survey		
	Program Exit Survey		
	Co-Curricular Survey		

Table Assessment tools for POs and PSOs attainment

CO	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12
C101	= $(\text{BBB}^* \text{Mapping value})/3$											
C102	2											
C103	3											
C104	3											
C105	2											
	3											
	-											
CN0N	3											
Total	XXX											
Number of COs mapped with POs	8											
Direct Attainment	= $\text{XXX}/8$											
80% of Direct	= $(0.8 * \text{Direct Attainment})$											

*Similar for PSO

DSEC/OBE MANUAL

From the result of indirect tools (surveys and Portfolios) the attainment of each PO is calculated.

Total attainment will be a summation of 80% of direct attainment and 20% of indirect attainment.

Sample calculation:

Indirect attainment:

Survey	Weight age	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
Alumni Survey	10												
Employer Survey	10												
Program Exit Survey	70												
Co-Curricular Survey	10												
Total	100												
20% Indirect		=(0.2* total)											

*Similar for PSO's

Total Attainment:

Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
Direct-80%												
Indirect-20%												
Total												

ACTION TO BE TAKEN

- ❖ Improvements in Attainments of CO and PO
 - ❖ High Attainment of CO and PO: Increase Target value
 - ❖ Moderate Attainment of CO and PO :Target is not changed. Conduct more activities to attain the fixed Target
 - ❖ Low Attainment of CO and PO :Consider reducing the Target and analyze methodologies to attain the Targets.
 - ❖ No Attainment of CO and PO : Reduce Target and review the entire process of OBE to achieve the low level Attainments
- ❖ Improvements for Non Technical Program Outcomes
 - Improvements can be done by
 - ❖ Personalized learning
 - ❖ Competitions
 - ❖ Extension activities
 - ❖ Industrial Interaction
 - ❖ Project based Learning
 - ❖ Innovative Assignments
 - ❖ Teaching Life skills

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COURSE EXIT SURVEY-THEORY

Name		Reg No	
Semester/Year	Academic Year		Batch
Course Code/Name		Faculty Name	

PART-A-GENERAL

S.NO	QUESTIONS	GOOD 3	SATISFY 2	FAIR 1
1	Quality of the Course Content			
2	Internal Tests – Coverage of COs			
3	Usefulness of the assignments in promoting learning			
4	Classroom discussions were encouraged			
5	Instructor had mastery over the content.			

PART-B-COURSE OUTCOME

S.NO	I am able to	GOOD 3	SATISFY 2	FAIR 1
1	CO1			
2				
3				
4				
5				
6	CO6			

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COURSE EXIT SURVEY-LAB

Name		Reg No	
Semester/Year	Academic Year	Batch	
Course Code/Name		Faculty Name	

PART-A-GENERAL

S.NO	QUESTIONS	GOOD 3	SATISFY 2	FAIR 1
1	Laboratory work added value to the knowledge gained from the corresponding theory courses			
2	Laboratory manuals provided were helpful in attaining and demonstrating the stated outcomes			
3	Adequate training was provided on the use of tools required/helpful in the Laboratory Work			
4	The physical environment in the lab was well maintained			
5	Laboratory work helped in attaining the stated competencies			

PART-B-COURSE OUTCOME

S.NO	I am able to	GOOD 3	SATISFY 2	FAIR 1
1	CO1			
2				
3				
4				
5				
6	CO6			

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PROGRAMME EXIT SURVEY FORM

Name			
Date of Birth			
Passing Year		Branch	
Permanent Address			
Mobile No.		Email	

Sl. No.	Features	3	2	1
1	Overall Assessment of Curriculum			
a	Humanities and Social Science			
b	Basic Science			
c	Engineering Science			
d	Professional Core			
e	Professional electives			
f	Open Elective Course			
g	Employability Enhancement Course			
h	Skill development Course			
2	Assessment of Programme Outcome			
a	Ability to apply Mathematics, Science and Engineering Principles			
b	Ability to Indentify, Formulate and Solve Engineering problems.			
c	Ability to design a system, Components or Process to meet desired needs.			
d	Ability to Design and Conduct Experiments, Analyze and Interpret Data.			
e	Ability to use the techniques, skills and modern engineering tools, necessary for engineering -practice.			
f	The board education necessary to understand the impact of engineering solutions in a global and societal context.			
g	Knowledge of Contemporary issues.			
h	Understand of professional and ethical responsibility.			
i	Ability to work as an individual and as a member on multidisciplinary tasks.			
j	Ability to communicate effectively.			
k	Ability to understand and demonstrate the engineering and management principles to manage the projects and multidisciplinary environments.			
l	Recognition of the need for and an ability to engage in lifelong learning.			
	PSO1			
	PSO2			
3	Overall Assessment of Students Experience			
a	Quality of Instructions by the Faculty			

b	Quality of Facilities-Classroom, Lab and Library			
c	Quality of Career Guidance Facility			
d	Quality of Student Support Services-Sports, Cells and Clubs			
e	Quality of Research Culture			
4	Department: Strength			
5	Department: Weakness			

Any other suggestions: _____

SIGNATURE

Note:

3 -Extremely Satisfied 2 -Satisfied

1 - Somewhat Satisfied

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ALUMNI SURVEY FORM

NAME						
BRANCH & YOP						
PERMANENT ADDRESS						
MOBILE PHONE		Mail Id				
After Completion of Degree	Job	Higher Studies		Self Employment		
Details of Job						
a	Name of the Company Presently Working & Location					
b	Designation/Role					
c	Salary Package/Annum					
d	Suggest any New Technology to be added in the Curriculum to make the students Industry Ready					
Higher Studies						
a	Basis of Admission for Higher Studies	GATE	GRE	GMAT	TANCET	IELTS
b	Mention the Score					
c	Name of the Programme Enrolled					
d	Institute Name					
Self-Employment						
a	Name and Location					
b	Mention about Business					
Others						

Attainment of Programme Outcomes:

Sl. No.	Program Outcomes	3	2	1
1	Ability to apply Mathematics, Science and Engineering Principles			
2	Ability to Identify, Formulate and Solve Engineering problems.			
3	Ability to design a system, Components or Process to meet desired needs.			
4	Ability to Design and Conduct Experiments, Analyze and Interpret Data.			
5	Ability to use the techniques, skills and modern engineering tools, necessary for engineering -practice.			
6	The board education necessary to understand the impact of engineering solutions in a global and societal context.			
7	Knowledge of Contemporary issues.			
8	Understand of professional and ethical responsibility.			
9	Ability to work as an individual and as a member on multidisciplinary tasks.			
10	Ability to communicate effectively.			
11	Ability to understand and demonstrate the engineering and management principles to manage the projects and multidisciplinary environments.			
12	Recognition of the need for and an ability to engage in lifelong learning.			
	PSO1			
	PSO2			

Attainment of PEO:

Sl. No.	Program Educational Objectives	3	2	1
1				
2				
3				
4				

Overall Assessment of Alumni Experience:

Sl. No.	Features	3	2	1
1	How do you rate development activities organized by the college for your overall development?			
2	How much you are willing to contribute to the development of college?			
3	Rate the adequacy of following as they were during your tenure as a student at college			
a)	Library			
b)	Computer Facilities			
c)	Skill Development			
4	What is the level of relevance of education imparted at Institute?			
5	What was the level of Cooperation of Faculty members?			
6	Rate the following academic initiatives taken by the college to improve technical know-how of the students.			
a)	Industry Oriented Practical Projects			
b)	Co-curricular activities (Seminars/workshop etc)			
d)	Special sessions for bridging Industry Academic gap			
7	Do you like to give Technical Talk / Seminar			Y/N

Any other suggestions: _____

SIGNATURE

Note:

3 - Good

2 - Satisfy

1 - Fair

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**RECRUITERS SURVEY FORM**

Name of the Organization		
Name of the Representative/Designation		
Mail Id:	Contact Number:	Website:

Sl. No.	General Survey	3	2	1
1	The programme offered in the College has Employment potential.			
2	The Curriculum induces the Students to do Research.			
3	The Curriculum equip the Students to meet the Industrial Needs and Employability.			
4	The Curriculum is well designed and promotes learning experience of the Students.			
5	The Curriculum incorporates recent changes in the areas.			

Attainment of Programme Outcomes:

Sl. No.	Program Outcomes	3	2	1
1	Ability to apply Mathematics, Science and Engineering Principles			
2	Ability to Indentify, Formulate and Solve Engineering problems.			
3	Ability to design a system, Components or Process to meet desired needs.			
4	Ability to Design and Conduct Experiments, Analyze and Interpret Data.			
5	Ability to use the techniques, skills and modern engineering tools, necessary for engineering -practice.			
6	The board education necessary to understand the impact of engineering solutions in a global and societal context.			
7	Knowledge of Contemporary issues.			
8	Understand of professional and ethical responsibility.			
9	Ability to work as an individual and as a member on multidisciplinary tasks.			
10	Ability to communicate effectively.			
11	Ability to understand and demonstrate the engineering and management principles to manage the projects and multidisciplinary environments.			
12	Recognition of the need for and an ability to engage in lifelong learning.			
	PSO1			

	PSO2			
--	------	--	--	--

Attainment of PEO:

Sl. No.	Program Educational Objectives	3	2	1
1				
2				
3				
4				

3 -Accomplished 2 -Developing 1 - Beginning

Any other suggestions: _____

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CO-CURRICULAR SURVEY

Mapping of Co-Curricular Activities with Programme /Programme Specific Outcomes

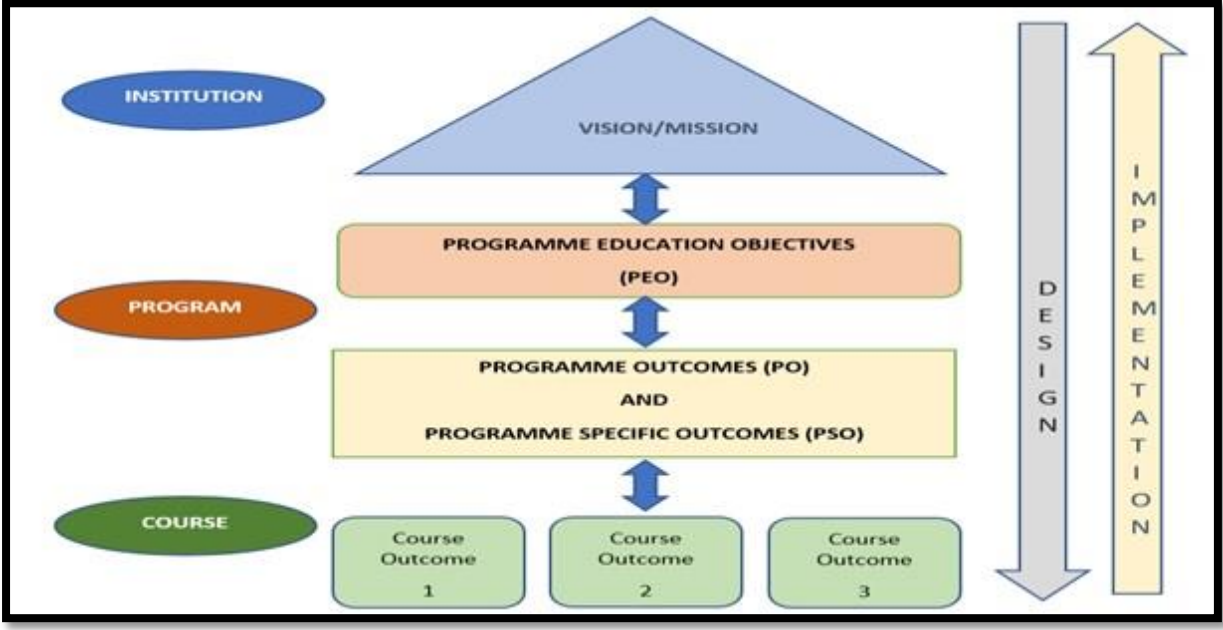
S. No	Co-Curricular Activities	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
1	Student Contest														
2	Online Course														
3	Internship														
4	Industry Projects														
5	Conference														
6	Publications														
7	Hackathon Events														
8	PS Activities														
9	Placement														
10	Higher Studies														
11	Industrial Visit														

***.For a Batch of Students**

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OBE FRAMEWORK



COMPONENTS OF OBE

