NANDHA ENGINEERING COLLEGE

(Autonomous)

Approved By AICTE, New Delhi and

Affililated to Anna University, Chennai

OUTCOME BASED EDUCATION (OBE)

INDEX

1. OUTCOME-BASED EDUCATION (OBE)

OBE is a student-centric teaching and learning methodology which focuses on what students know and can actually do, by restructuring of curriculum, pedagogy and assessment practices to reflect the achievement of high-order learning.

OBE is focusing on "what the students are capable of doing". There is clarity on what is to be achieved and that achievement (outcome) is pre-determined. OBE goes beyond usual 'structured tasks'. It demands the students to actively engaged in the learning process and demonstrate his/her skills through more challenging tasks and higher order of thinking. OBE provides a focus for assessment and help employers understand program benefits.

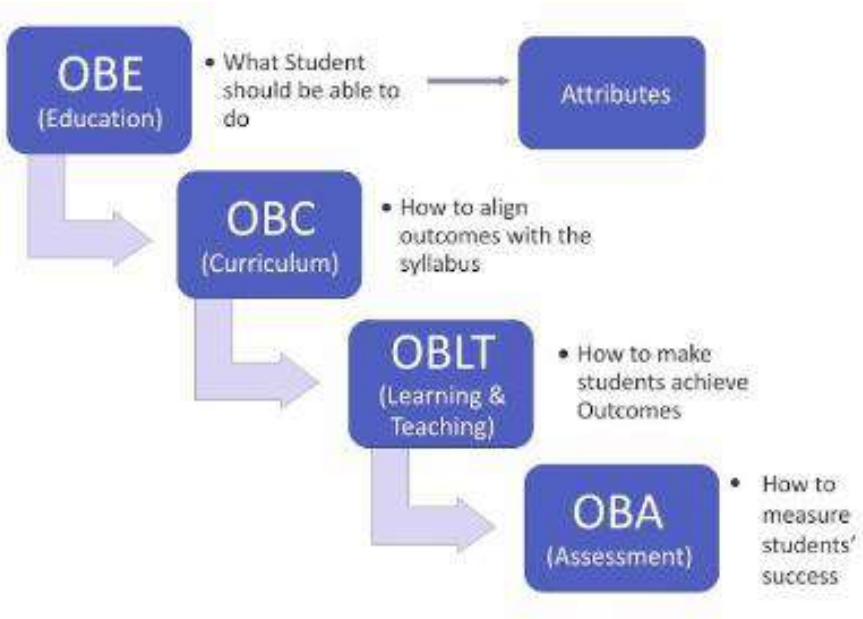

FIGURE 1.1 **OUTCOME BASED EDUCATION**

The implementation of an outcomes-based education adopts the OBE Framework which revolves around three important elements:

a) OBE Curriculum

b) OBE Teaching and Learning and

c) OBE Assessment

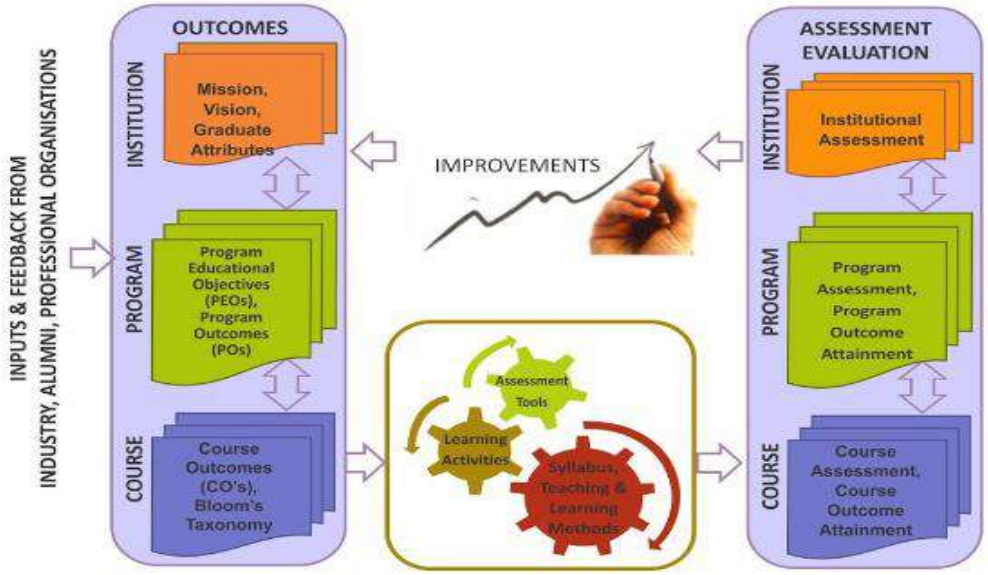

FIGURE 1.2 **OUTCOME BASED EDUCATION FRAMEWORK**

1.1 OUTCOME BASED CURRICULUM DEVELOPMENT (OBCD)

It focuses on the four distinct major components of the OBCD i.e. Curriculum Planning, Curriculum Designing, Curriculum Implementation and Curriculum Evaluation.

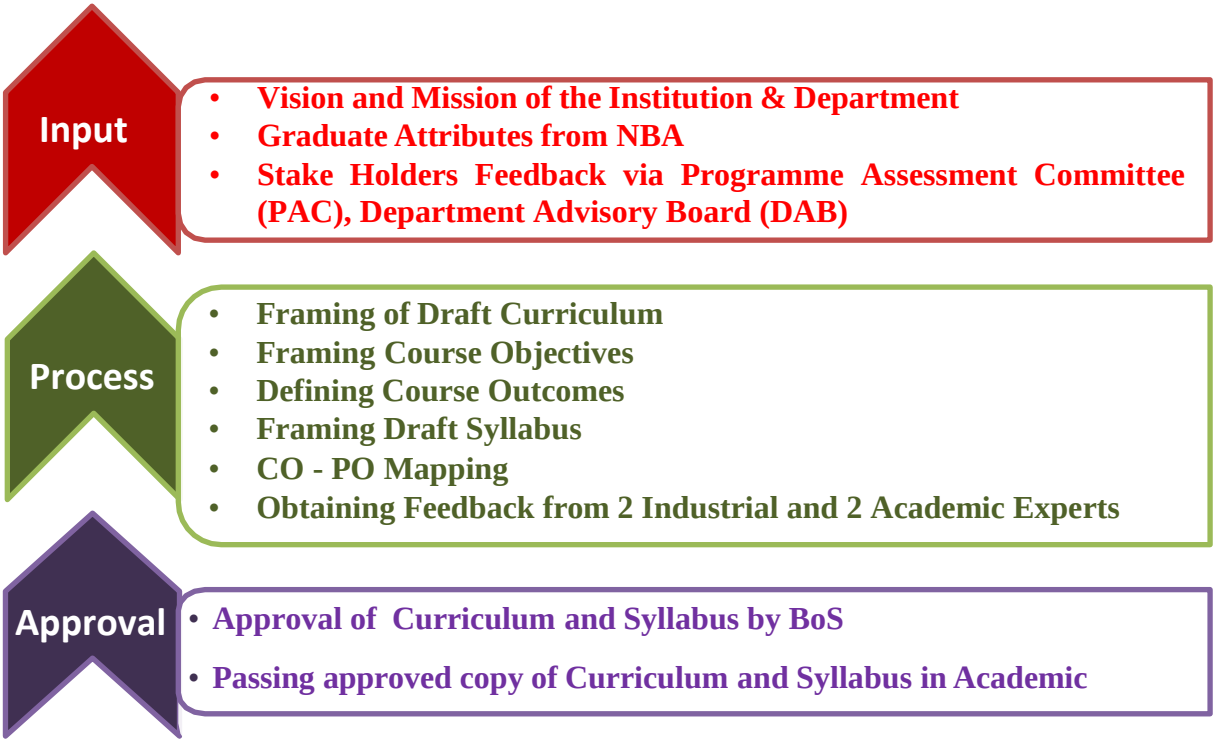

FIGURE 1.1.1 **OUTCOME BASED CURRICULUM DEVELOPMENT**

1.2 OUTCOME BASED TEACHING AND LEARNING (OBTL)

Outcome-based Teaching and Learning (OBTL) is a student-centered education approach where the programme's outcomes are explicitly defined for students to achieve. Teaching and learning activities are then designed to facilitate students to achieve these outcomes. The success of OBTL is based on evidences from the assessment results and student learning experience. Periodic reviews of these evidences will lead to continuous improvement of programme quality

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FIGURE 1.2.1 **OUTCOME BASED TEACHING LEARNING PROCESS**

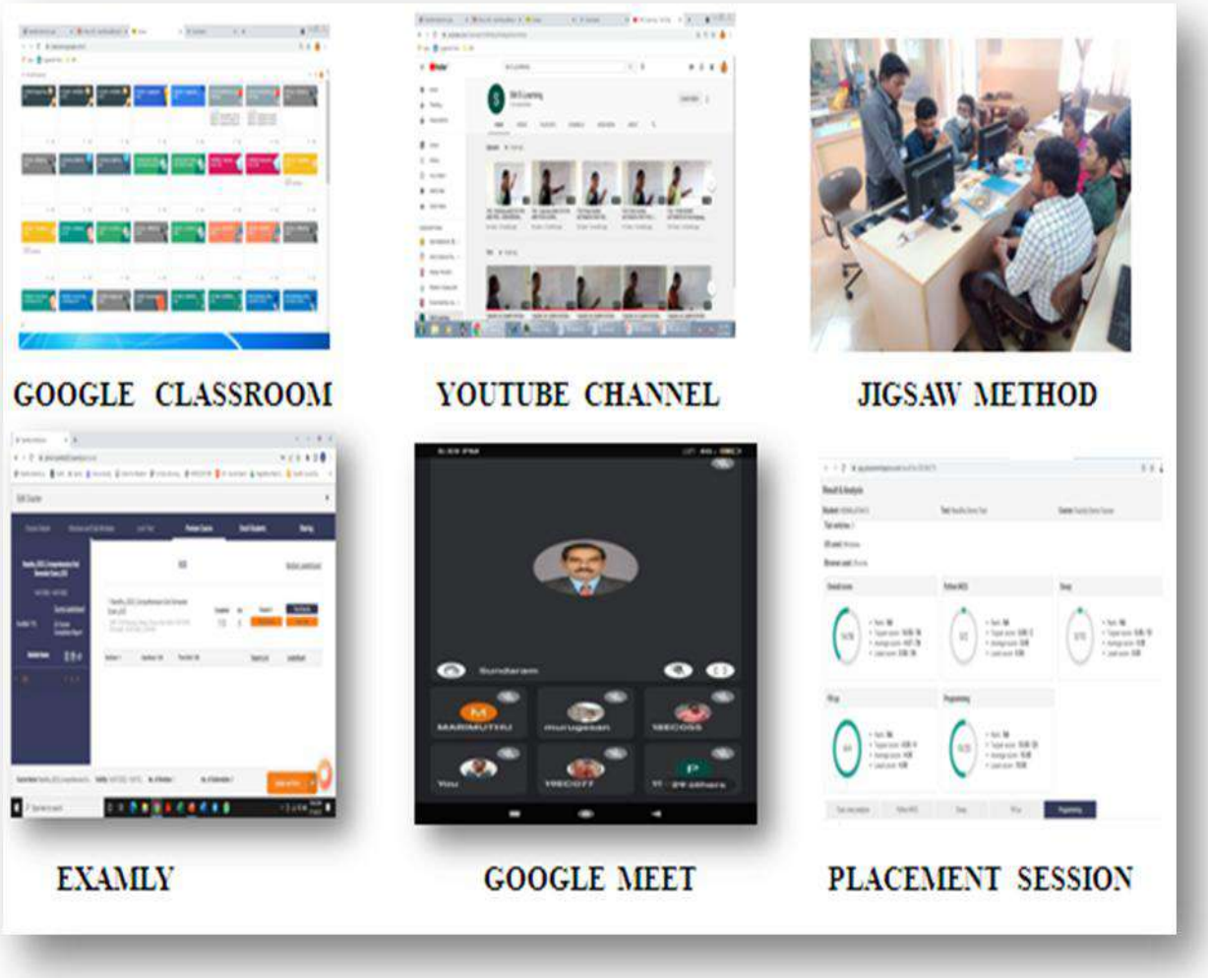


FIGURE 1.2.2 **GLIMPSE OF INNOVATIVE TEACHING METHODOLOGIES**

1.3 OUTCOME BASED ASSESSMENT (OBA)

Outcomes-based assessment is a process of gathering evidence on learning based on the number of learning outcomes achieved rather than the sum of marks on different assessment tasks.

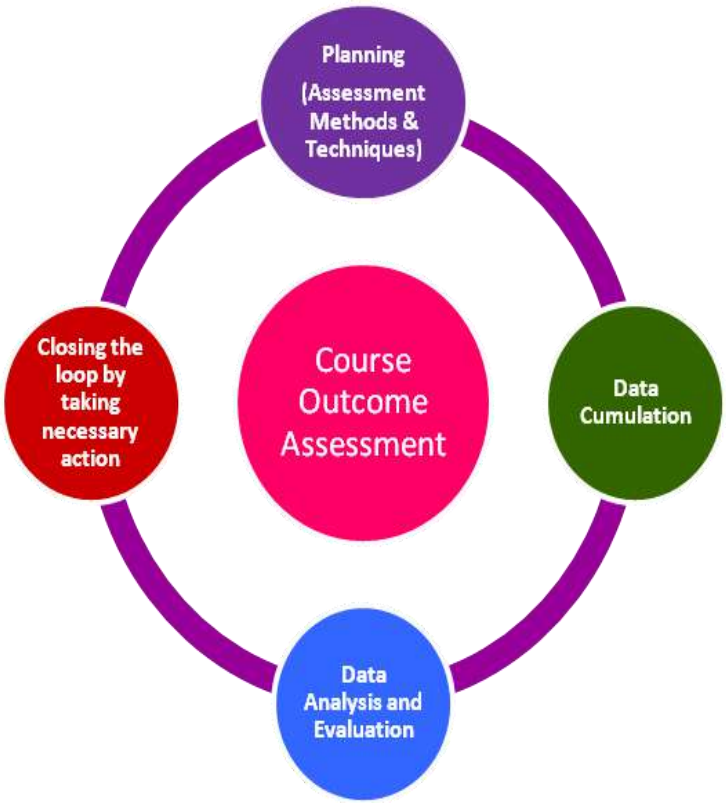


Figure 1.3.1 OUTCOME BASED ASSESSMENT

2. VISION AND MISSION

VISION OF THE INSTITUTE

To be an Institute of excellence providing quality Engineering, Technology and Management education to meet the ever changing needs of the society.

MISSION OF THE INSTITUTE

- To provide quality education to produce ethical and competent professionals with social Responsibility
- To excel in the thrust areas of Engineering, Technology and Entrepreneurship by solving real- world problems.
- To create a learner centric environment and improve continually to meet the changing global needs.

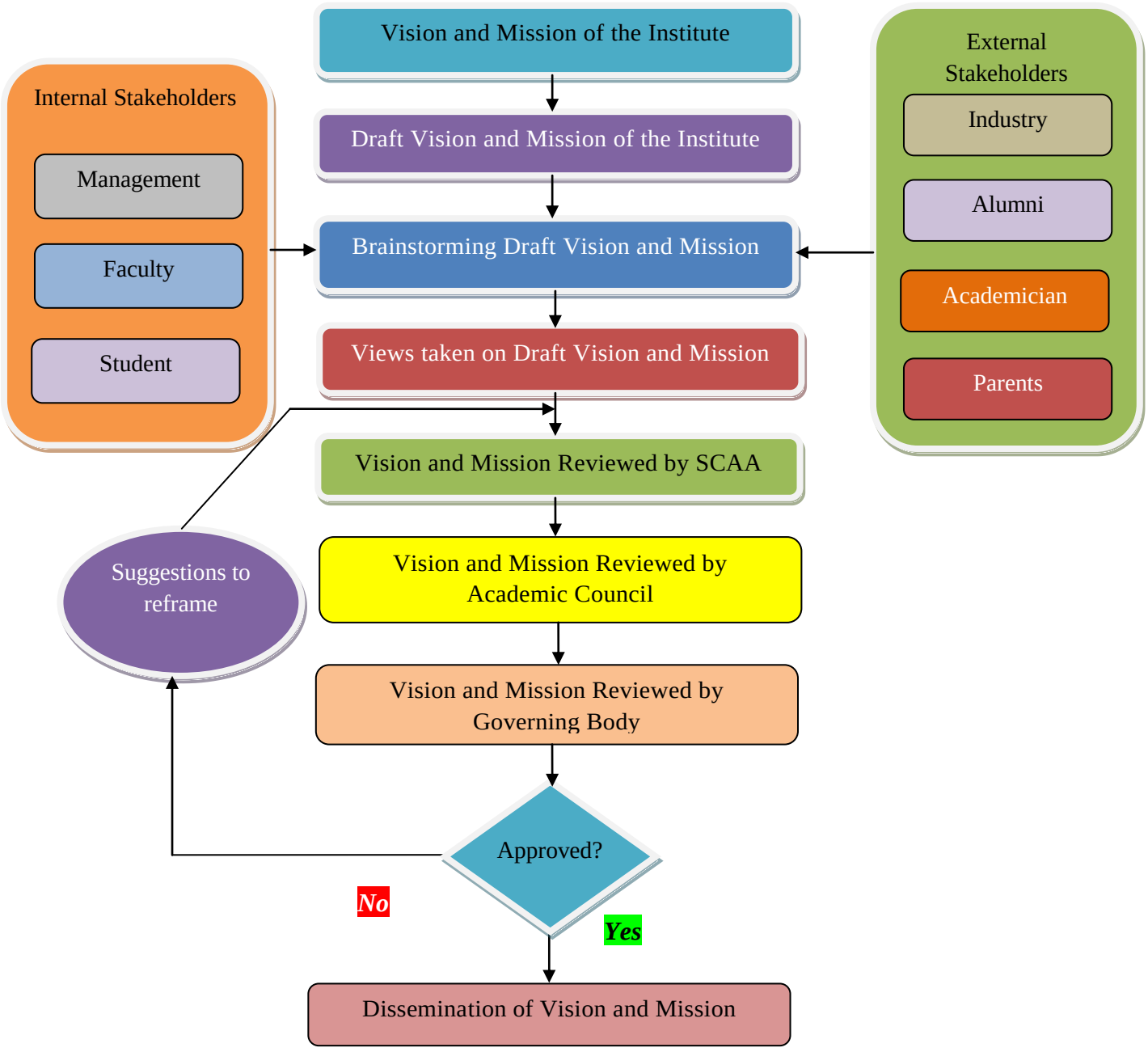


FIGURE 2.1 **DEFINING THE VISION AND MISSION OF THE INSTITUTE**

2.1 THE PROCESS FOR DEFINING THE VISION AND MISSION OF THE DEPARTMENT

The department defines the Vision and Mission statements by brainstorming with all the stakeholders, through Program Assessment Committee (PAC), Department Advisory Board (DAB), Board of Studies (BoS) and Academic Council (AC) based on the future scope of the department and the societal requirements.

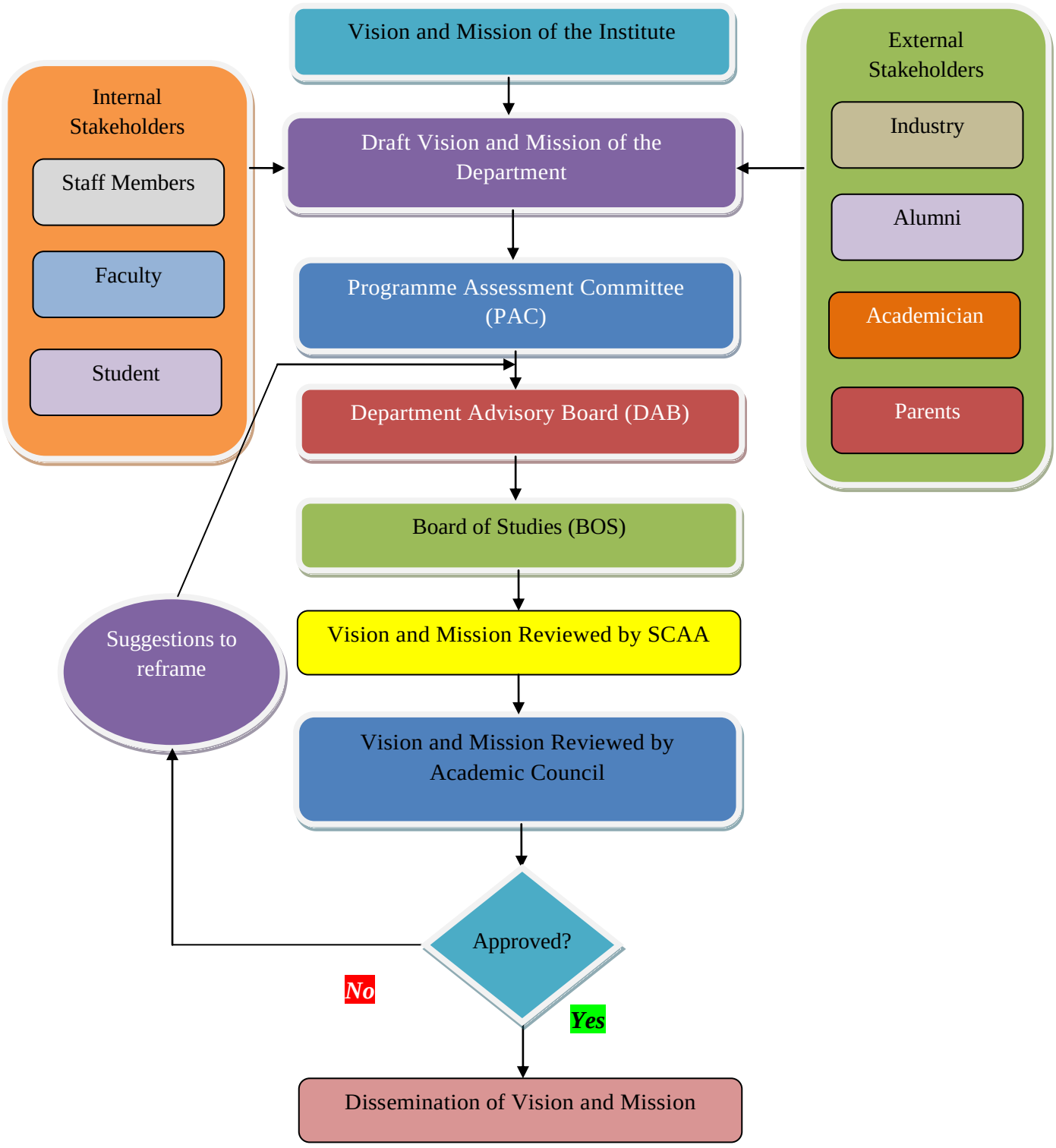


FIGURE 2.1.1 **THE PROCESS FOR DEFINING THE VISION AND MISSION OF THE DEPARTMENT**

➢ Program Assessment Committee (PAC)

Program Assessment Committee (PAC) comprises of Head of the Department (HoD) and all faculty members in the department.

The responsibilities of the PAC are as follows:

- To monitor and assess the COs, POs and PSOs.
- Planning the curricular and co-curricular activities in accordance with PEOs.
- Scheduling of the program activities during each semester.
- Implementation and control of the program activities for attainment of POs and PSOs.
- Formulation of drafted Vision, Mission and PEO statements of the department.

The PAC analyzes the direct and indirect survey reports of all the courses along with the feedback from the course coordinator concerned for finalizing the revision to be made in the course content.

➢ Department Advisory Board (DAB)

Department Advisory Board (DAB) consists of HoD, BoS Coordinator, Senior faculty members, Students, Alumni, Parents, Industry and Academic experts. The DAB supports in formulating the Vision, Mission, PEOs and PSOs. Based on the review of attainment of the POs and PSOs from PAC, necessary changes in curriculum with respect to course content, updating of syllabi, electives, practical components etc. are revised and forwarded to Board of Studies (BoS) for discussion. Suitable changes suggested by the BoS members are incorporated in the final curriculum and syllabi and submitted for the approval of the Academic Council through Standing Committee for Academic Affairs (SCAA).

➢ Board of Studies (BoS)

Board of Studies takes up planning of appropriate programs of study and the implementation of effective teaching.

The Board of Studies of a Department in the college

- Prepares syllabi for various courses keeping in view the objectives of the college, reviewing and updating syllabi from time to time, introducing new courses of study, determining details of continuous assessment with the interest of the stakeholders and national requirement for consideration and approval of

the Academic Council.

- Suggest methodologies for innovative teaching and evaluation techniques
- Suggest panel of Examiners to the Academic Council for appointment of examiners and
- Coordinate research, teaching, extension and other academic activities in the department/ college. Board of Studies meetings are conducted regularly.

Composition of Board of Studies:

- Head of the Department concerned (Chairman).
- The entire faculty of each specialization.
- Two subject experts from outside the Parent University to be nominated by the Academic Council.
- One expert to be nominated by the Vice-Chancellor from a panel of six recommended by the college Principal.
- One representative from industry/corporate sector/ allied area relating to placement.
- One postgraduate meritorious alumnus to be nominated by the Principal.

➢ **Standing Committee for Academic Affairs (SCAA)**

The Standing Committee consolidates the inputs received from Board of Studies and submits to the Academic Council for its consideration and approval.

➢ **Academic Council (AC)**

Academic Council scrutinizes and approves the proposals of the Boards of Studies with regard to courses of study, academic regulations, curricula, syllabi and modifications. The council involves faculty at all levels, experts from outside, including representatives of University and Government. Academic Council recommends to the Governing Body proposals for institution of new programmes of study.

Composition of Academic Council:

- The Principal (Chairman)
- All the Heads of Departments in the college
- Four teachers of the college representing different categories of teaching staff by rotation on the 11 basis of seniority of service in the college

- Not less than four experts/academicians from outside the college representing such areas as Industry, Commerce, Law, Education, Medicine, Engineering, Sciences etc., to be nominated by the Governing Body
- Three nominees of the university not less than Professors
- A faculty member nominated by the Principal (Member Secretary)

➢ **Governing Body (GB)**

The function of Governing Body is to decide on the overall development of the Institute which includes infrastructure, resource allocation, welfare measures, institute scholarship, medals, prizes and certificates on the recommendations of academic council and approval of new programs for the Institute.

NUMBER	CATEGORY	NATURE
5 Members	Management	Trust or Management as per the constitution or byelaws, with the chairman or the president/ Director as the chairperson
2 Members	Teachers of the College	Nominated by the Principal based on Seniority by rotation
1 Member	Educationalist or Industrialist	Nominated by the Management
1 Member	UGC Nominee	Nominated by the UGC
1 Member	State Government Nominee	Academician not below the rank of Professor or State Government Official of Directorate of Higher Education/ State Council of Higher Education
1 Member	University Nominee	Nominated by the University
1 Member	Principal of College	Ex- Officio

2.2 PROGRAM EDUCATIONAL OBJECTIVES, PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES

2.2.1 PROCESS OF DEFINING PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Program Educational Objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.

The Program Educational Objectives (PEOs) were formulated as a result of a series of meetings, comprising of faculty, Quality Improvement Committee (QIC), students, alumni and recruiters. Program Educational Objectives (PEOs) are reviewed through a consultative process involving the stakeholders including students, alumni, industry, employers, faculty and staff members.

The inputs from stakeholders typically the faculty, alumni, industry and professional bodies are collected to formulate our PEOs.

- **Faculty**

  The faculty members of the department are one of the key stakeholders empowered to evaluate the feedback received from all other stakeholders, proposing improvements in the curriculum, the outcomes and objectives, and in implementing any ratified changes. All changes in the curriculum are initiated by the faculty. Additionally, all the faculty members continually interact with all of the other stakeholders, allowing for the opportunities to receive, apart from formal, the informal feedback.

- **Alumni**

  Alumni provide vital inputs for drafting and to review our PEOs. The inquiry includes opinion on the current courses, its shortfall, suggestive changes to be considered in revising curriculum, their success in career and suitability of preparation attributed to the curriculum they were tutored in, any advice they have to give to current students, and what they have to do for succeeding in their career. Regular inputs from alumni are obtained via following interactions:

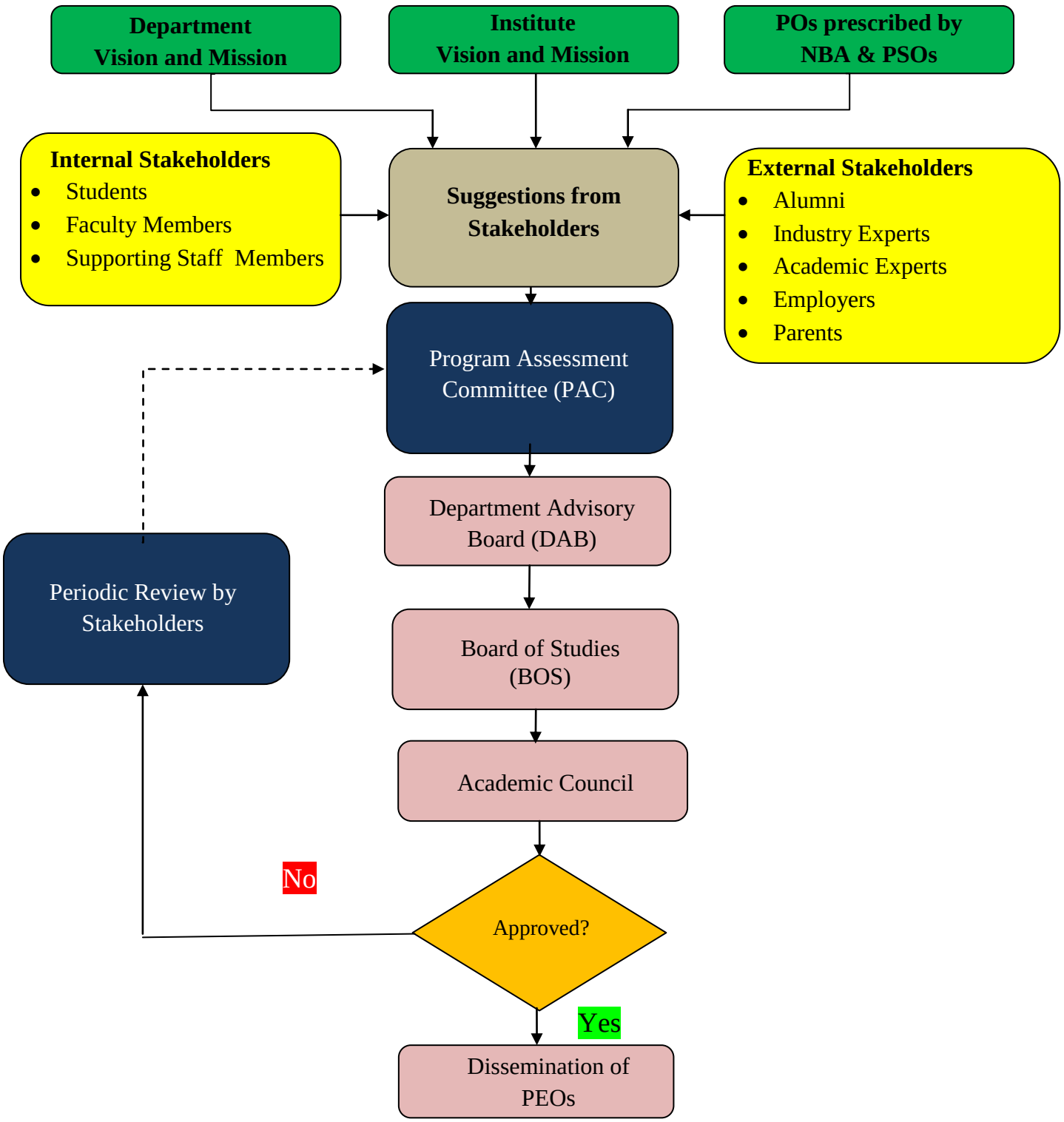


FIGURE 2.2.1.1 **THE PROCESS FOR DEFINING THE PROGRAM EDUCATIONAL OBJECTIVES (PEOs)**

- **Alumni Survey:** Formatted Survey data is utilized to gather comprehensive information for scrutiny and analysis.
- **Alumni visits:** Formal and informal visits by alumni give scope for direct personal interaction, discussions and also give an opportunity to collect and record information required for improving the program based on their professional experiences.
- **Alumni faculty interaction:** Alumni will be regularly interacting with some of the faculty with whom they are more conversant and they share their experiences, feelings, problems, etc., which will be more useful in redesigning the program.

➢ **Employers**

Input from employers plays a vital role in the formulation and review of the PEOs which reflect on the success and relevance of the designed courses. Employers are at the forefront of the practice of the profession; hence their feedback is important. They give us early indications of changing or new trends in the profession. The information is gathered from employers using both formal surveys and various informal interactions. In such interactions, employers are inquired about their views on the needs and direction of growth of the domain and correspondingly what the goals should be in educating the students. Regular input from employers is obtained via the following interactions:

- **Surveys:** Industry is directly or indirectly interacting with the Institution, during their institutional visits for guest lectures, workshops, seminars, placement drives or for any other informal interaction and the opportunity is utilized to fill in the Survey Form designed for formulating the PEOs.
- **Industrial Visits**: The department regularly arranges visit to industries as part of their education process. Discussions with the industries and the visiting faculty help to gain additional information on the current needs of industry with regard to our graduates, and thereby contribute to the understanding needed to formulate or revise the PEOs.

2.2.2 PROGRAM OUTCOMES (POs)

Program Outcomes describe what student are expected to know and would be able to do by the time of graduation. These are resulted to the Knowledge, Skills, and Attitude of the students acquire as they progress through the program.

Program outcomes can be defined as the objectives achieved at the end of any specialization or discipline. These attributes are mapped while a student is doing graduation and determined when they get a degree. POs are adopted from the graduate attributes (GA) lay down by the National Board of Accreditation (NBA).

The Vision, Mission and PEOs of the Department along with the 12 Graduate Attributes given by NBA are used in defining the POs:

GRADUATE ATTRIBUTES	PO No.	PROGRAMME OUTCOMES
Engineering Knowledge	**PO1**	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
Problem Analysis	**PO2**	Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
Design and Development of Solutions	**PO3**	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.
Investigation of Complex Problems	**PO4**	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.

Modern Tool Usage	**PO5**	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.
The Engineer and Society	**PO6**	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.
Environment and Sustainability	**PO7**	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
Ethics	**PO8**	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
Individual and Team Work.	**PO9**	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
Communication	**PO10**	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.
Project Management and Finance	**PO11**	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.
Lifelong Learning	**PO12**	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.

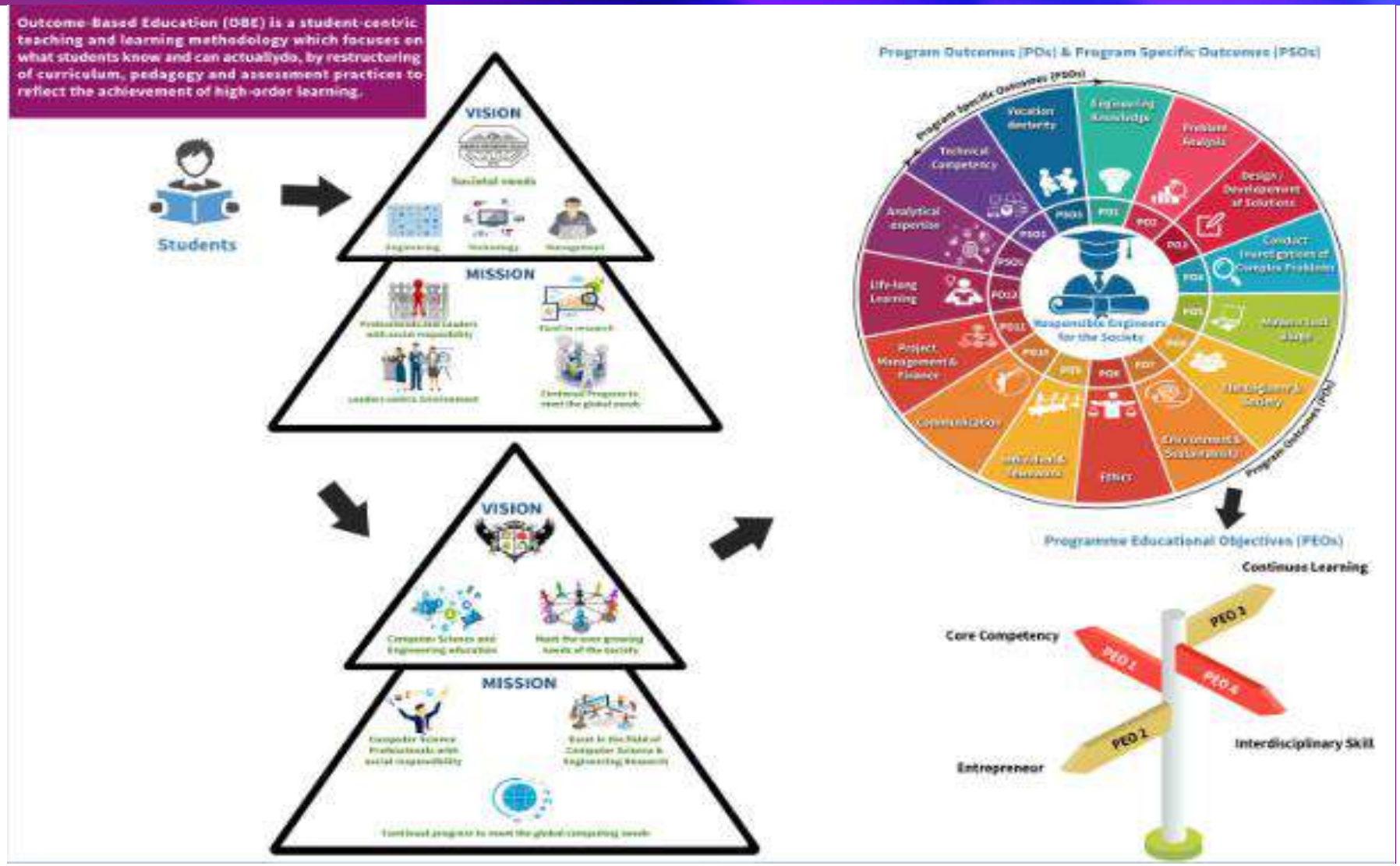


FIGURE 2.2.2.1 **OUTCOME BASED EDUCATION PROCESS**

2.2.3 PROGRAM SPECIFIC OUTCOMES (PSOs)

Program Specific Outcomes are statements that describe what students are expected to know and be able to do in a specialized area of discipline upon graduation from a program.

Program may specify 2- 4 Program Specific Outcomes (PSO), if required. These are the statements, which are specific to the particular program. They are in addition to POs. Program Curriculum and other activities during the program must help in the achievement of PSOs along with POs.

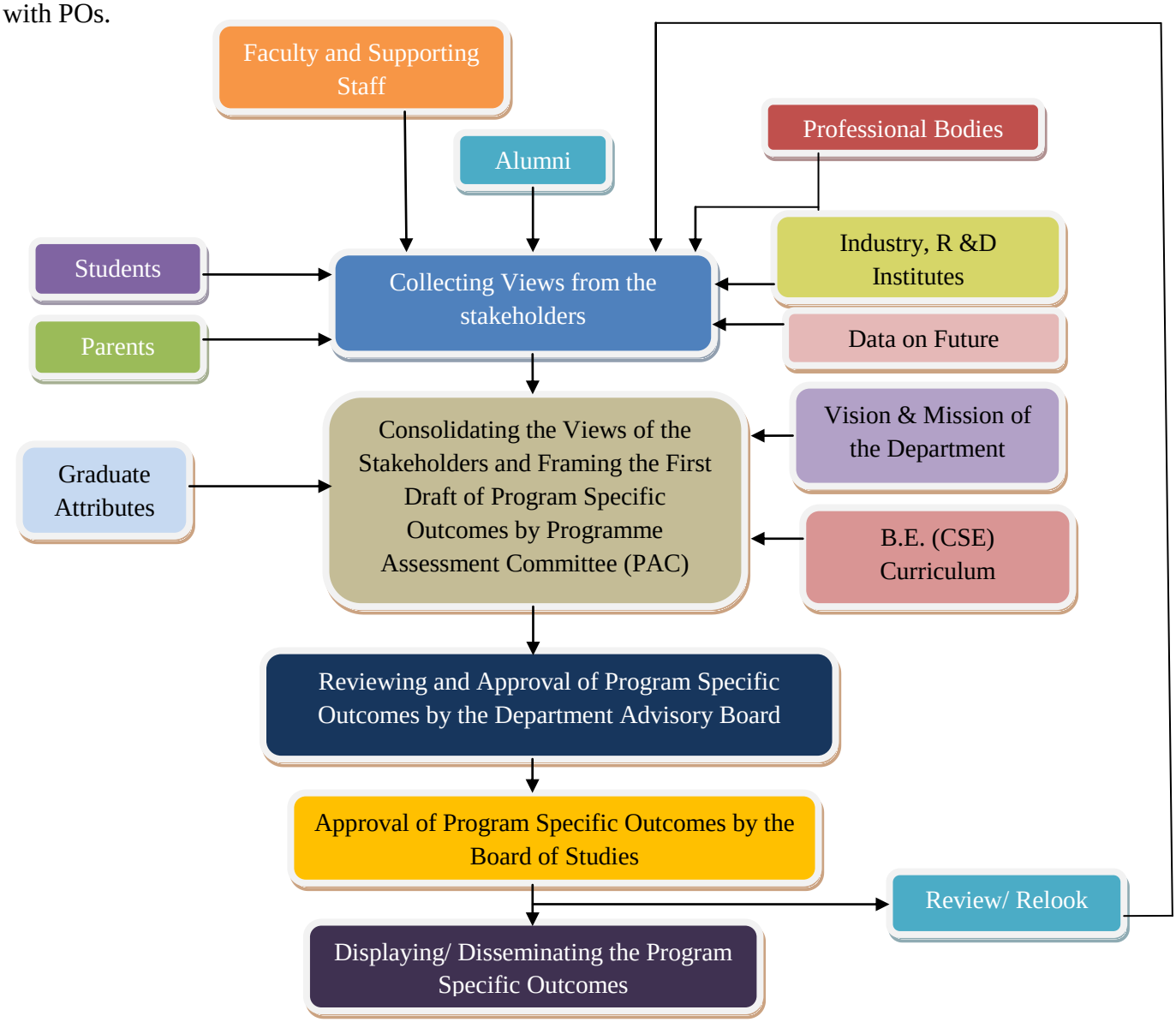


FIGURE 2.2.3.1 **PROCESS FOR DEFINING PROGRAMME SPECIFIC OUTCOME**

Design of curriculum was carried out during the years 2013, 2015 and 2017 to meet the evolutionary requirements in the industry and business sectors in compliance with the POs and PSOs in line with the recommendations of PAC through DAB and BoS.

- To identify the extent of compliance of the curriculum for attaining the POs and PSOs different processes or methods are adopted through direct and indirect methods
- To identify the shortcomings and to satisfy the compliance of POs and PSOs feedback analysis is adopted through the following methods:

  i. Direct assessment is done by processes of analyzing performance of students by
     - Continuous Assessment Test
     - Assignment
     - Online Test
     - End Semester Examinations

  ii. Indirect assessment is done by conducting
     - Alumni survey
     - Employer survey
     - Student exit survey
     - Course end survey
     - Evaluation of the quality of projects

Suggestions for improvement of teaching and learning process are collected during the survey. The course coordinators periodically monitors the attainment levels of COs, POs and PSOs.

The graduates of the department will attain:

PSO 1: Analytical expertise: Ability to demonstrate knowledge in mathematical models, algorithms and hardware/software development methodologies

PSO 2: Technical Competency: Ability to develop practical competency in programming languages and will be able to apply emerging technologies to find optimal solutions for complex problems.

PSO 3: Vocation dexterity: Ability to have a foundation for research, entrepreneurship, lifelong learning and cultivate necessary skills for a successful career.

3. BLOOM'S TAXONOMY

Bloom's Taxonomy was created in 1956 under the leadership of educational psychologist Dr Benjamin Bloom in order to promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles, rather than just remembering facts. It is most often used when designing educational, training, and learning processes. Lower Order Thinking and Higher Order Thinking of Bloom's Taxonomyis shown in Figure 3.1.

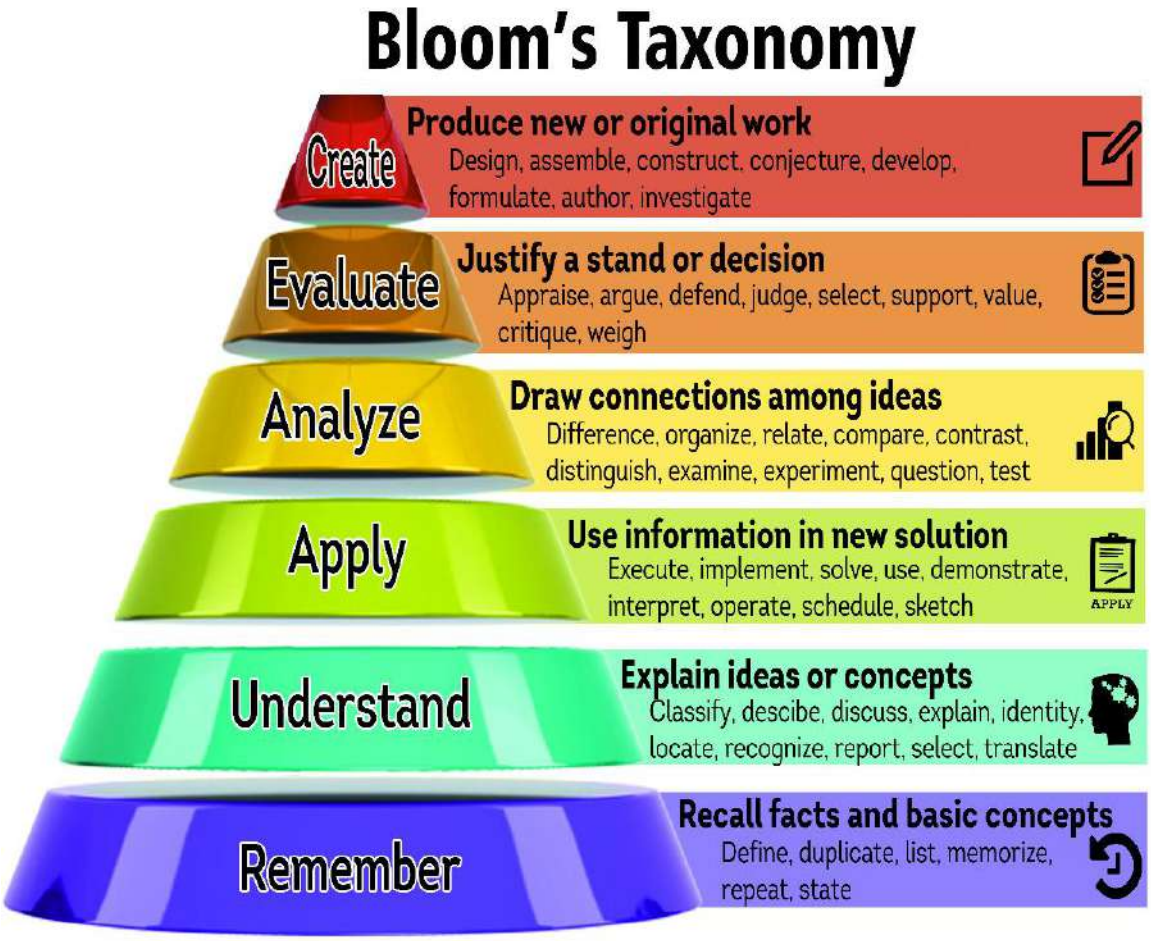


FIGURE 3.1 **PICTORIAL REPRESENTATION OF BLOOM'S TAXONOMY**

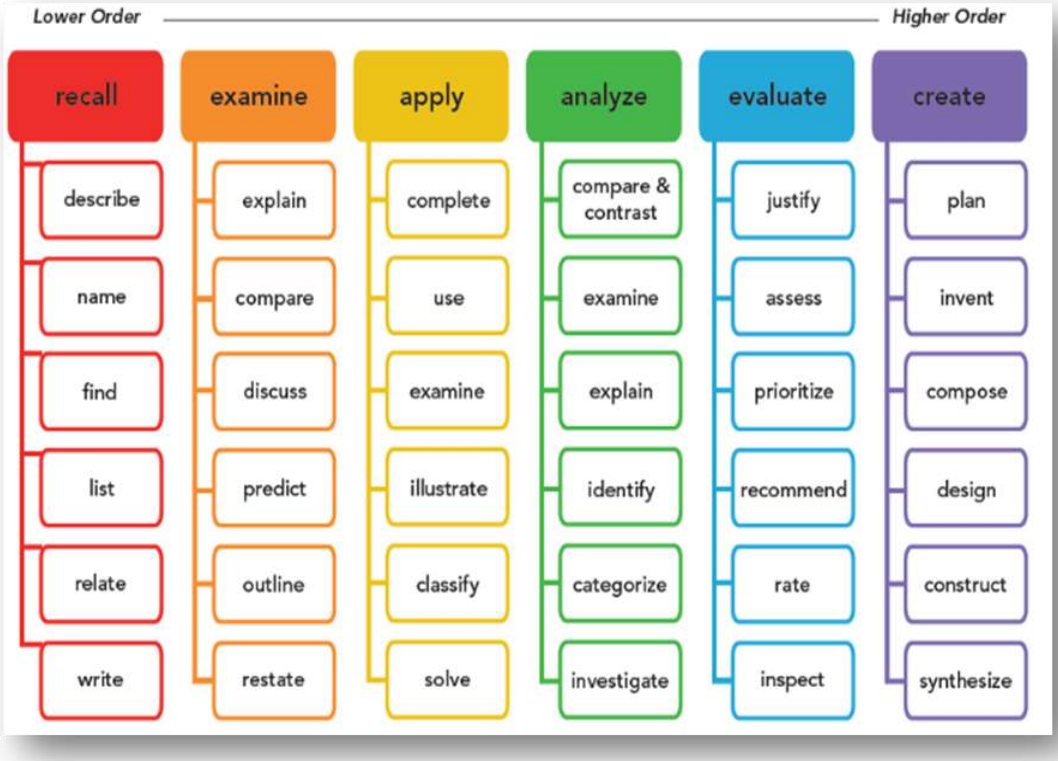


FIGURE 3.2 **REVISED BLOOM'S TAXONOMY ACTION VERBS**

4. COURSE OUTCOME

Course Outcomes are the statements that help the learners to understand the reason for pursuing the course and helps him to identify what he will be able to do at the end of the course.

4. 1 SAMPLE COURSE OUTCOMES

CO	17CSC16 PRINCIPLES OF COMPILER DESIGN
CO1	The students will be able to describe different phases of a Compiler and its applications
CO2	The students will be able to build parsers for syntax analysis using context free grammars.
CO3	The students will be able to create intermediate code for programming constructs.

CO4	The students will be able to develop the optimized intermediate code.
CO5	The students will be able to analyze and optimize the code to design a compiler.

The Course Outcomes developed will be S.M.A.R.T – Specific, Measurable, Achievable, Relevant and Time Bounded.

- **Specific -** Students should be able to understand that it's mapped to which unit of that particular course.
- **Measurable -** After the completion of the unit, if the faculty is able to assess the understanding of the course content by using various assessment tools, then the CO becomes measurable.
- **Achievable -** When the student is able to express the verb given in the CO, then it becomes achievable.
- **Relevant -** Here it refers "How far" the Course Outcome is correlated with the Course Content.
- **Time Bounded -** Specific time bound should be given to each course outcome. The course content has to be designed accordingly.

➢ Considering the CO1 from the above table,

CO	17CSC16 PRINCIPLES OF COMPILER DESIGN
CO1	The students will be able to describe different phases of a Compiler and its applications

All the five characteristics are considered in developing the Course Outcomes.

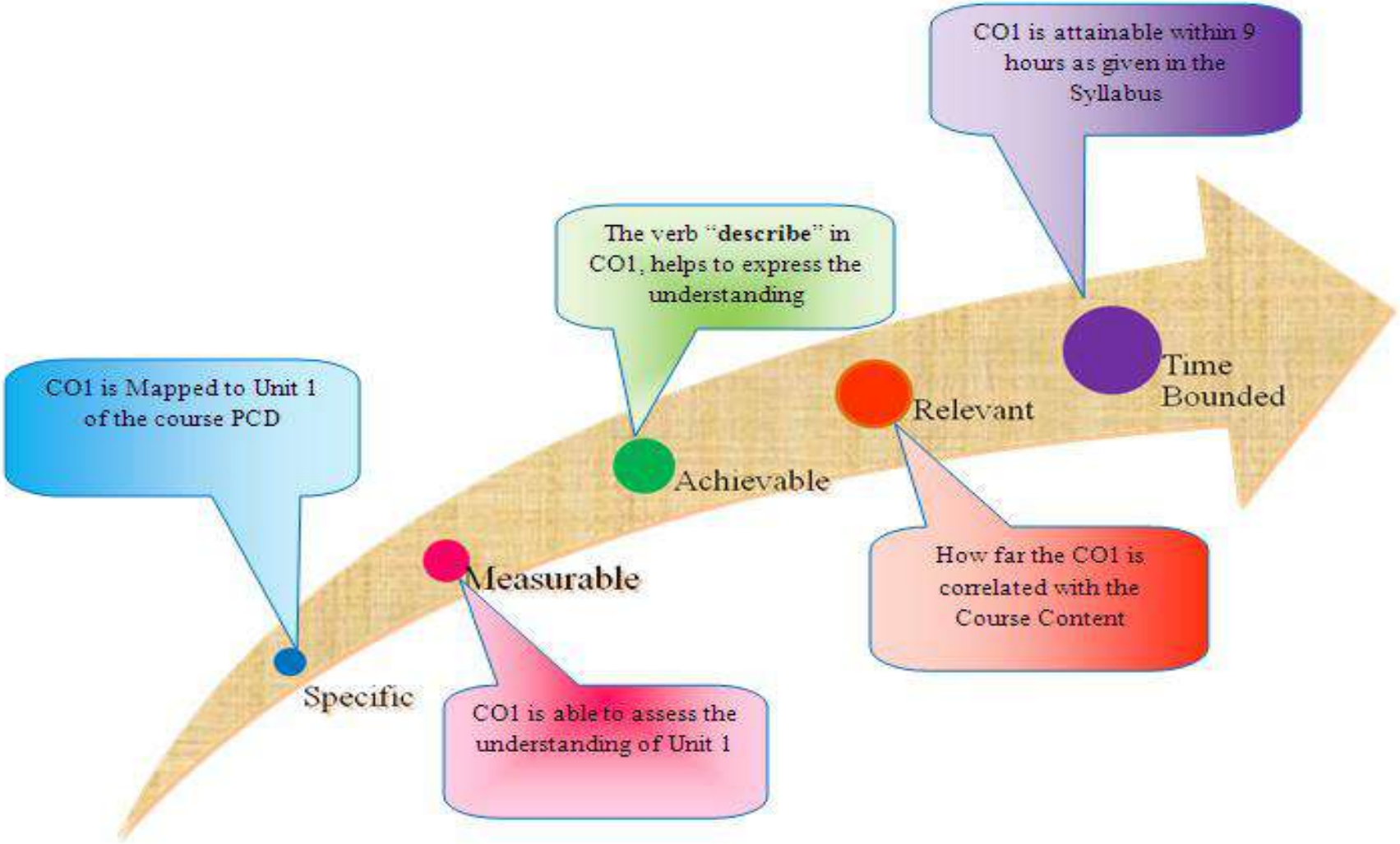


FIGURE 4.1 **S.M.A.R.T COURSE OUTCOMES**

4.2 CO – PO/ CO - PSO MAPPING OF COURSE

All the courses together must cover all the POs and PSOs. For a course, we map the COs to POs through the CO-PO matrix and to PSOs through the CO-PSO matrix as shown below. The various correlation levels are:

"1" – Slight (Low) Correlation

"2" – Moderate (Medium) Correlation

"3" – Substantial (High) Correlation

"-" indicates there is no correlation

4.3 SAMPLE CO-PO AND CO-PSO MAPPING

CO-PO-PSO Articulation Matrix																
CO No.	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**	**PSO4**
1	3	2	3	2	3	-	-	1	1	3	3	3	3	3	3	3
2	3	2	3	2	3	-	-	1	1	3	3	3	3	3	3	3
3	3	3	3	2	3	-	-	1	1	3	3	3	3	3	3	3
4	3	3	3	2	3	-	-	1	2	3	3	3	3	3	3	3
5	3	3	3	2	3	-	-	1	2	3	3	3	3	3	3	3
AVERAGE OUT OF 3	**3.00**	**2.60**	**3.00**	**2.00**	**3.00**	**0.00**	**0.00**	**1.00**	**1.40**	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**

4.4 SAMPLE QUESTION PAPER

R17 Register No.

NANDHA ENGINEERING COLLEGE, ERODE - 52 (An Autonomous Institution, Affiliated to Anna University, Chennai)		
B.E	Continuous Assessment Test - II	JULY 22
Year : 03	Semester: 5	CSE
17CSC16 – PRINCIPLES OF COMPILER DESIGN		
Time : 90 minutes	Maximum Marks : 50	
QUESTION PATTERN TYPE-III		

Bloom's Taxonomy levels

R- Remembering (K1)	U- Understanding (K2)	Ap-Applying (K3)
An- Analysing (K4)	E- Evaluating (K5)	C- Creating (K6)

COURSE OUTCOMES :

CO1	The students will be able to describe different phases of a compiler and its applications.
CO2	The students will be able to build parsers for syntax analysis using context free grammars.
CO3	The students will be able to create intermediate code for programming constructs.
CO4	The students will be able to develop the optimized intermediate code
CO5	The students will be able to analyze and optimize the code to design a compiler.

Part – A (Answer All the Questions)-5 X 2 = 10 Marks		CO	Marks	BTL
A1	Give the triple representation of a ternary operation x:=y[i]	3	2	K4
A2	What are the applications of DAG?	4	2	K2
A3	How would you calculate the cost of an instruction?	4	2	K3
A4	Mention the criteria for code improving transformations.	5	2	K1
A5	How do you find leader in Basic block?	5	2	K3
Part – B (Answer Any Four Questions)-4 X 4 = 16 Marks		**CO**	**Marks**	**BTL**

B1	Generate intermediate code for the following code segment.
	int a,b;
	float c;
	a=10;
	switch(a)
	{
	case 10:c=1;
	case 20:c=2;
	}
		3	4	K4

B2	Write the grammar for flow-of-control statements.	3	4	K3
B3	Identify the issues in the design of code generator.	4	4	K3
B4	Define Common sub-expression elimination with example.	4	4	K2
B5	Construct an algorithm for natural loop of a back edge.	5	4	K1
B6	Explain different methods of parameter passing	5	4	K3
Part – C (Answer Any Two Questions)-2 X 12 = 24 Marks		**CO**	**Marks**	**BTL**
C1	What are the three address codes? How it is implemented?	3	12	K3

C2	Generate DAG representation for the following code and list out the applications of DAG representation.
	i=1;S=0;
	while(i<=10)
	S=S+a[i][j];
	i=i+1;
		4	12	K3

C3	Briefly discuss about basic blocks and flow graphs.	4	12	K1
C4	Describe about peephole optimization methods used in code optimization.	5	12	K1

Prepared by

Approved by

4.5 LEVEL OF OUTCOMES

There are four levels of outcome such as Course Outcome (CO), Program Outcome (PO), Program Specific Outcome (PSO) and Program Educational Objective (PEO). Course Outcomes are the statements that declare what students should be able to do at the end of a course. POs are defined by Accreditation Agencies of the country (NBA in India), which are the statements about the Knowledge, Skills and Attitudes, Graduate Attributes of a formal engineering program should have. Graduates Attributes (GAs) are the components indicative of the graduate's potential to acquire competence to practice at the appropriate level. GAs form a set of individually assessable outcomes of the programme. The NBA laid down the GAs relating to POs and is to be derived by program.

The Program Outcomes reflect the ability of graduates to demonstrate knowledge in fundamentals of Basic Sciences, Humanities and Societal Sciences, Engineering Sciences and apply these principles in understanding and practically apply the knowledge in professional core subjects, electives and projects which enables the graduates to be competent at the time of graduation. The graduates must adhere to professional and ethical responsibilities in the pursuit of their careers and also for the benefit of the society.

These outcomes also enable the graduates to pursue higher studies and engage in R&D for a successful professional career. The proper definition and the attainment of POs contribute to the attainment of Program Educational Objectives which will help the graduate to perform his/ her duties, professional responsibilities, design, development, production and testing of novel products, ability to deal with finances and project management during his/her early professional career of 3 to 4 years.

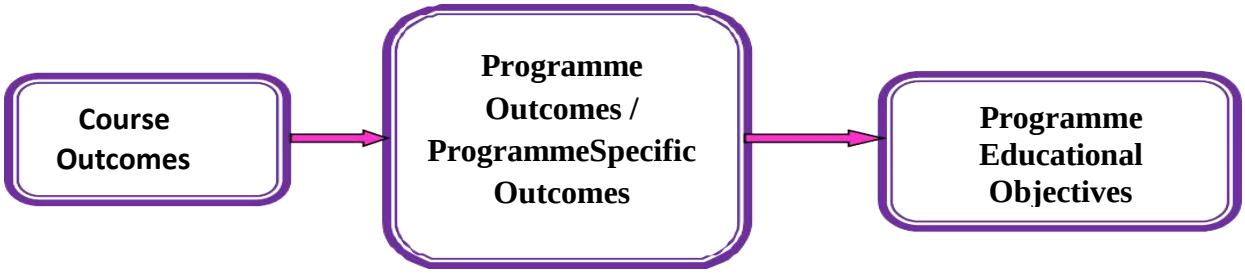


FIGURE 4.5.1 **RELATING THE OUTCOMES (CO-PO/ PSO-PEO)**

Program Specific Outcomes are the statements that assert what the graduates of a specific engineering program should do what they can able to do. Program Educational Objectives are the broad statements which describe in detail about the career and professional accomplishments after significant years of graduation that the program prepare the grandaunts to achieve.

Figure 4.5.1 shows the building block of CO-PO/PSO-PEO relationship. After CO statements are developed by the respective course in-charge, CO-PO/PSO matrix will be derived with each CO that will map with possible POs/PSOs based on the relationship exist between them. But the POs that are not necessarily mapped with any CO may be leftblank. It is mandatory that all COs should be mapped with any one of the POs and PSOs and these POs and PSOs are mapped with PEO which is specified in the program.

5. ASSESSMENT PROCESS

The Assessment of course outcome for theory subjects are based on

- Continuous Assessment Tests
- Assignments
- Online Tests
- End Semester Examinations

Laboratory courses' outcomes are evaluated based on the student's performance in regular Laboratory Classes, Model Examination and End Semester Examination performance. The course outcomes for project work I and II are evaluated based on the presentations in Project Reviews and End Semester Viva Voce Examinations.

Course Outcomes are assessed based on the performance of the students in Continuous Assessment Test and Semester End Examinations. The weightage for Internal Assessment is taken as 40% and the weightage for End Semester Examination is taken as 60%.

Course Sample

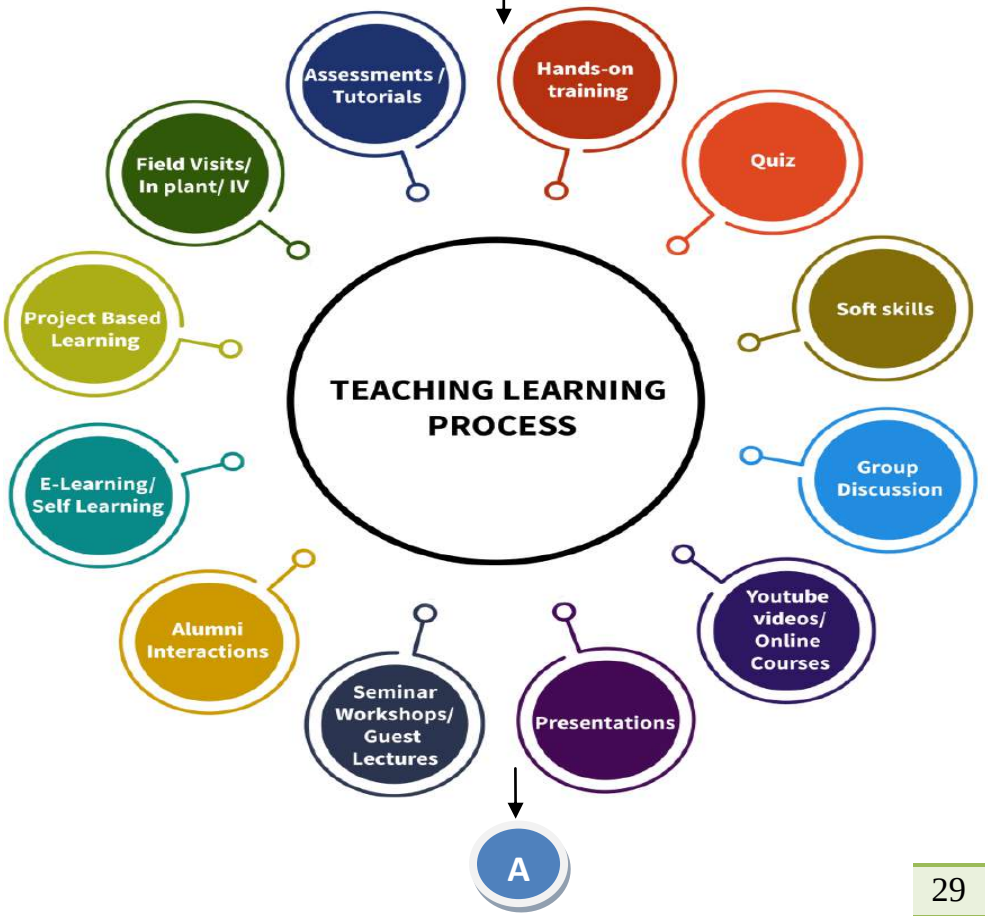
Course Outcomes

CO – PO & CO – PSO Mapping

B

How to fix the attainment target?

- Nature of the course
- Semester in which the course is offered
- Attainment achieved in the previous year of the same course
- Attainment achieved by the particular batch of students in the



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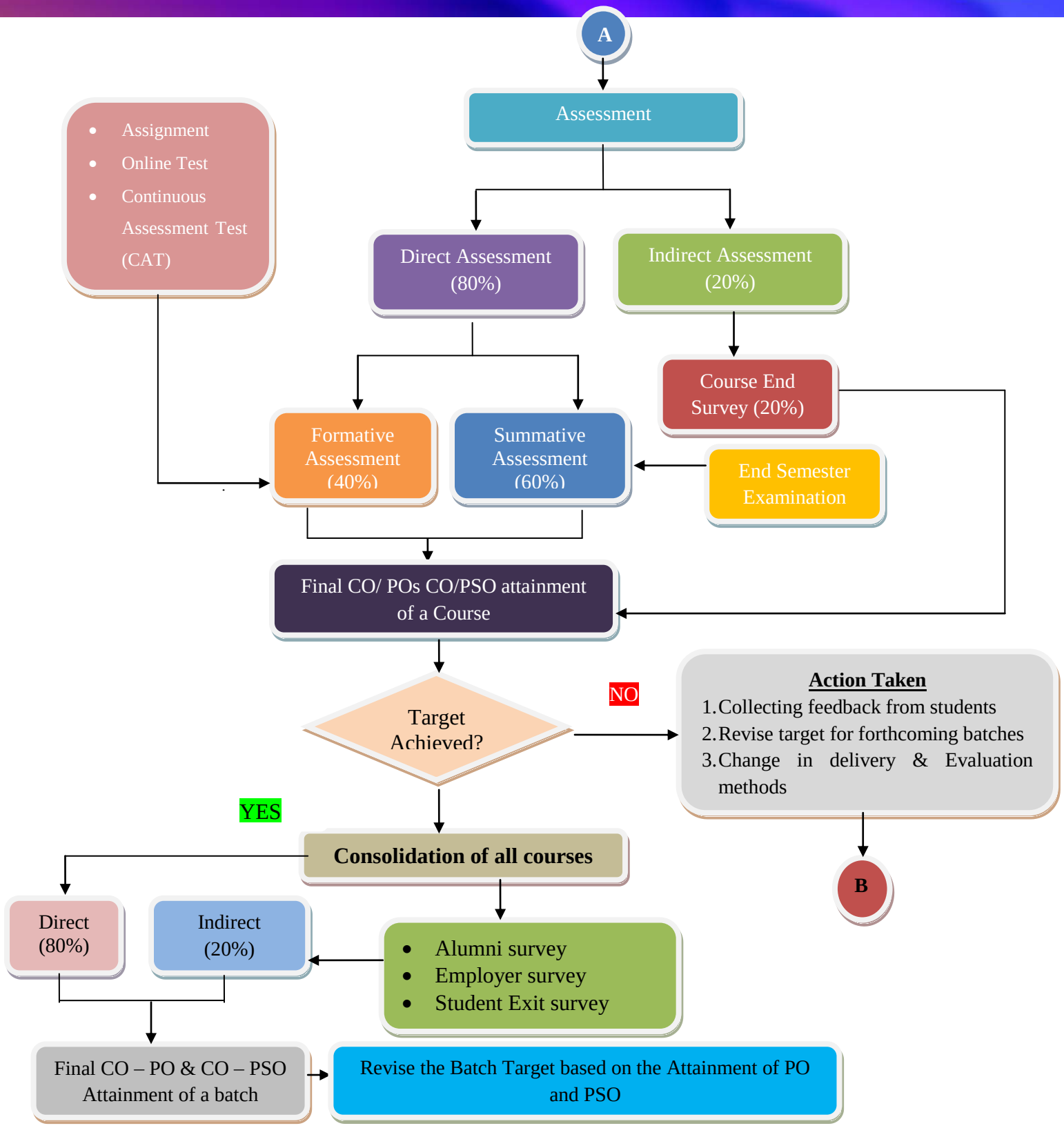

FIGURE 5.1 **PROCESS OF ATTAINMENT CALCULATION**

5.1 PROCESS OF CO ASSESSMENT AND ATTAINMENT

Figure 5.1 PROCESS OF CO ASSESSMENT AND ATAINMENT

5.2 SAMPLE ATTAINMENT CALCULATION OF CO VIA CAT

NANDHA ENGINEERING COLLEGE, PERUNDURAI, ERODE-638052

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

TEST-1 ANALYSIS

COURSE NAME & CODE :17CSC16 - PRINCIPLES OF COMPILER DESIGN

FACULTY NAME: Dr.S.K.MAHALINGAM,ASP/CSE Ms.D.VINOPARKAVI,AP/CSE

Each question Expected Level of attainment - 70%

TOTAL STRENGTH = 128

ROLL NO	A1(2)	A2(2)	A3(2)	A4(2)	A5(2)	B1(4)	B2(4)	B3(4)	B4(4)	B5(4)	B6(4)	D1(8)	D1(4)	D2(12)	D3(12)	D4(12)	TEST SCORE
Expected Marks to attainment	1.4	1.4	1.4	1.4	1.4	2.8	2.8	2.8	2.8	2.8	2.8	5.6	2.8	8.4	8.4	8.4	
19CS001	2	2	2	2	2	3		4	4		4				12	10	47
19CS002	2	1	1	2	1	2	1		3	1				9	11		34
19CS003	2	2	2	2	2	4	3	4	4					10	12		47
19CS004		1	1	1	2	2	2		4		2	8			10		33
19CS005	1	2			2	2	1		1			8				12	29
19CS011	2	2	0	2	2				4						12	12	36
19CS012	2	2	1	1	2	3	1		2	3		8	1		12		38
19CS013	2	2	0	2	2	3			4			7	3			11	36
19CS0L14	2	1	1	1	2			1	3					7	7		25
19CS0L15	2	2	2	0	2	4		1	4		3			10		9	39
19CS0L17	2	2	2	1	0	4		4	4		3			11		12	45
19CS0L18	2	1	0	1	0	2	1		2						9	10	28
No of students scored upto expected level (70%)	93	87	41	78	112	81	19	42	104	10	50	27	5	39	80	68	
% of scoring above the attainment level	72.7	68	32	60.9	87.5	63.3	14.8	32.8	81.3	7.81	39.1	21.1	3.91	30.5	62.5	53.1	

2. Course Outcome attainment level indicator

					3				2				1				
Range of attainment					>70				50-70				<50				
Mapping with CO	CO1	CO1	CO1	CO2	CO2	CO1	CO2	CO2	CO2	CO2	CO2	CO2	CO2	CO1	CO2	CO2	
Attainment level of each CO	3	2	1	2	3	2	1	1	3	1	1	1	1	1	2	2	
ATTAINMENT LEVEL OF ALL CO	CO1	CO2															
	1.80	1.64															
Mapping with PO	1,2,3,4,12	1,2,3,4,12															

5.3 SAMPLE ATTAINMENT CALCULATION OF CO VIA ASSIGNMENT

NANDHA ENGINEERING COLLEGE, PERUNDURAI, ERODE-638052				
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING				
ASSIGNMENT II ANALYSIS				
COURSE NAME & CODE : 17CSC16 - PRINCIPPLES OF COMPILER DESIGN				
FACULTY NAME: Dr.S.K.MAHALINGAM,ASP/CSE Ms.D.VINOPARKAVI,AP/CSE				
Each question Expected Level of attainment - 70%				
			TOTAL STRENGTH =	128
ROLL NO	A1(5)	A2(10)	A3(10)	TEST SCORE
Expected Marks to attainment	3.5	3.5	3.5	
19CS001	5	10	10	25
19CS002	5	10	10	25
19CS003	5	10	10	25
19CS004	5	10	10	25
19CS0L14	5	10	10	25
19CS0L15	5	10	10	25
19CS0L17	5	10	10	25
19CS0L18	5	10	9	24
No of students scores upto expected level (70%)	127	127	127	
% of scoring above the attainment level	99.22	99.22	99.22	
2. Course Outcome attainment level indicator				
		3	2	1
Range of attainment		>70	50-70	<50
Mapping with CO	CO5	CO4	CO3	
Attainment level of each CO	3	3	3	
ATTAINMENT LEVEL OF ALL CO	CO5	CO4	CO3	
	3.00	3.00	3.00	
Mapping with PO	1,2,3,4,12	1,2,3,4,12	1,2,3,4,12	

The direct assessment tools used to assess the student's knowledge, skills and attitudes for the specific domain through Theory and laboratory course.

- **CONTINUOUS ASSESSMENT TEST**

Continuous assessment test is carried out twice in a semester. Faculty member prepares two sets of question paper based on Bloom's Taxonomy covering the prescribed syllabus and each question will be mapped to the concern course outcomes. Any one set of question paper will be chosen by Exam Cell Coordinator by checking the knowledge levels and Bloom's Taxonomy. Then the question paper will be finalized and chosen for conducting the test. This method of assessment is used to monitor students' progression and learning across pre-defined periods of time. Results are used to assess desired course outcomes, identify the areas of skill deficiency instudents and to track the improvement of the students.

- **ASSIGNMENT**

Assignment is a formative assessment tool designed to assess students' knowledge in a particular topic. The assignment question will also be mapped to knowledge levels and Bloom's Taxonomy. Students' are assessed based on their performance.

- **RUBRICS**

A rubric explains the criteria where the students' work will be judged with the "scoring rules". Scoring rubrics are typically grids that outline identified criteria for successfully completing the task and establishing levels for meeting the levels of these criteria. Thus Rubrics produce a global score for performance.

- **END SEMESTER EXAMINATION (ESE)**

The purpose of End Semester Examination is to make a final review of the topics covered and assessment of each students' knowledge of the course. End Semester Examination is a metric for assessing all the Course outcomes. This examination is more focused on descriptive type of questions which has a combination of higher order thinking level and lower order thinking level questionnaires.

5.4 SAMPLE PO & PSO ATTAINMENT CALCULATION OF A BATCH

NANDHA ENGINEERING COLLEGE (AUTONOMOUS), ERODE - 638052
DEPARTMENT OF CSE
OVERALL ATTAINMENT OF CO - PO & CO - PSO
BATCH : 2017 - 2021

Courses (All courses from I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
C101	0	0	0	0	0	2	0	0	3	3	0	3	0	0	0	1
C102	2	1	2	3	3	2	0	0	3	0	2	2	0	1	0	1
C112	1	2	2	3	3	0	0	0	3	3	2	2	1	1	2	1
C402	3	2	3	0	0	0	0	0	0	3	3	0	3	3	3	3
C407	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
C408	3	0	0	3	3	3	3	3	3	3	0	3	3	3	3	3
C409	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3
SUM	131	124	122	115	116	79	65	58	122	121	113	125	119	114	112	113
DIRECT ATTAINMENT OUT OF 3	2.30	2.18	2.14	2.02	2.04	1.39	1.14	1.02	2.14	2.12	1.98	2.19	2.09	2.00	1.96	1.98
% of DIRECT ATTAINMENT	76.61	72.51	71.35	67.25	67.84	46.20	38.01	33.92	71.35	70.76	66.08	73.10	69.59	66.67	65.50	66.08
ALUMNI SURVEY	2.52	2.56	2.34	2.77	2.45	2.35	2.12	2.15	2.37	2.34	2.55	2.33	2.82	2.84	2.76	2.95
EMPLOYER SURVEY	2.31	2.55	2.64	2.35	2.33	2.23	2.11	2.17	2.34	2.22	2.79	2.35	2.75	2.66	2.63	2.92
STUDENT EXIT SURVEY	2.23	2.18	2.13	2.32	2.33	2.28	2.30	2.32	2.46	2.37	2.34	2.28	2.29	2.17	2.46	2.17
INDIRECT ATTAINMENT	2.35	2.43	2.37	2.48	2.37	2.29	2.18	2.21	2.39	2.31	2.56	2.32	2.62	2.56	2.62	2.68
OVER ALL ATTAINMENT	2.31	2.23	2.19	2.11	2.10	1.57	1.35	1.26	2.19	2.16	2.10	2.22	2.19	2.11	2.10	2.12
% OVER ALL ATTAINMENT	76.98	74.21	72.88	70.33	70.07	52.20	44.92	41.89	73.01	72.01	69.93	73.95	73.14	70.38	69.84	70.73

6. ASSESSMENT PROCESS & ATTAINMENT PROCEDURE FOR PROGRAM EDUCATIONAL OBJECTIVES

Program Educational Objectives are the broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve. Each department has its own PEOs aligned with the keywords like Core Competency, Innovative Skill, Continuous Learning and Interdisciplinary Skill. To assess whether the educational practices prepare our students for reaching the intended Program Educational Objectives, the first step is to examine how the POs and PSOs are mapped to the PEOs. By measuring the success level of each outcome, we can show that our students are well-prepared and will meet the intended Program Educational Objectives. The success level is measured by considering placement, higher studies, entrepreneurship, scientists, technocrats and administrator statistics of the batch after 4 to 5 years of graduation.

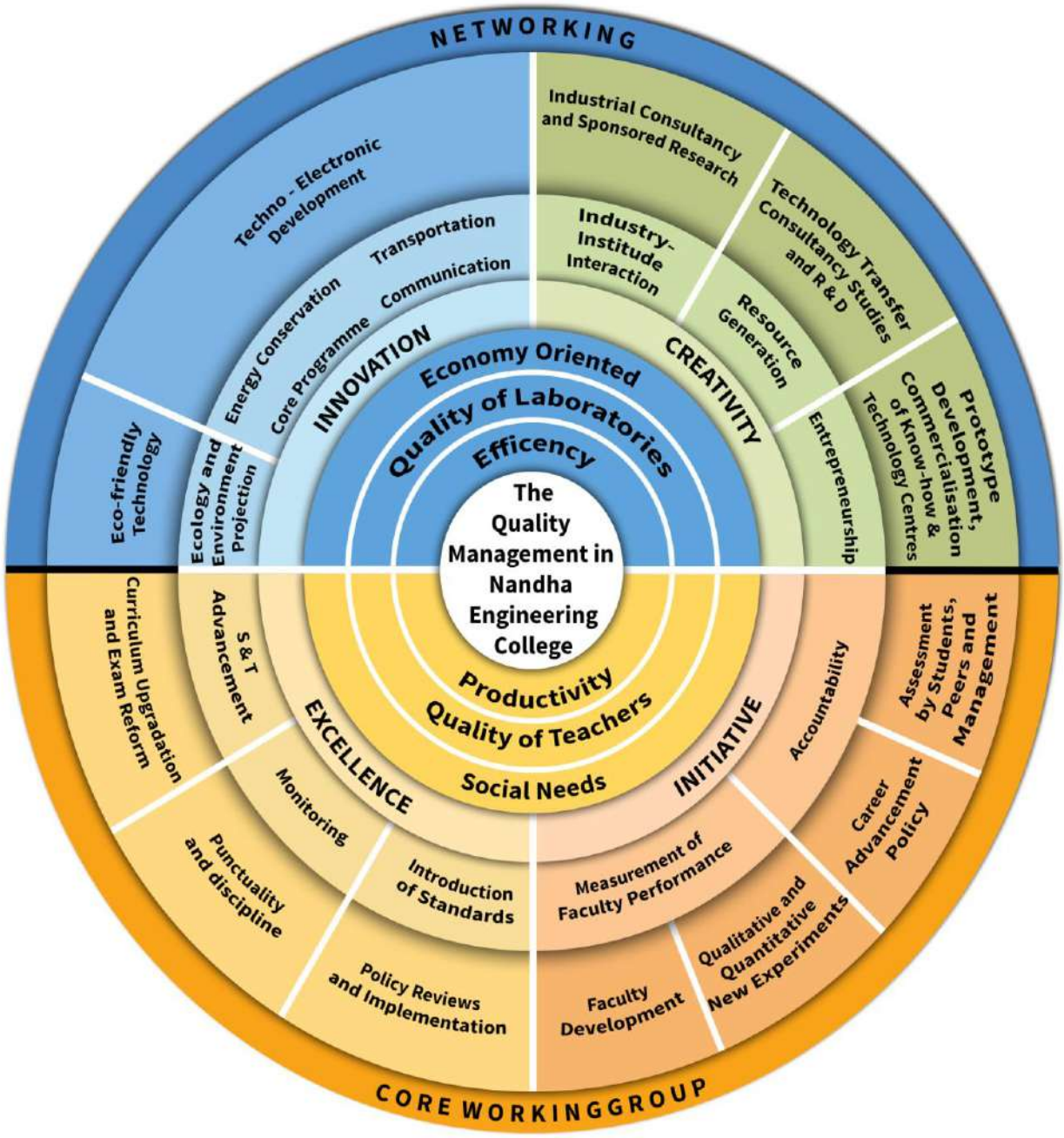

FIGURE 6.1 **PROCESS OF QUALITY MANAGEMENT**

IN

NANDHA ENGINEERING COLLEGE

NANDHA
ENGINEERING COLLEGE (Autonomous)
Erode – 638 052.
(Affiliated to Anna University, Chennai, Approved by AICTE, New Delhi, Accredited by NAAC (A+ grade))

Outcome Based Education

OBE Activities

NANDHA ENGINEERING COLLEGE

(Autonomous)
ERODE – 638 052
INTERNAL QUALITY ASSURANCE CELL

Events Organized

OUTCOME BASED EDUCATION ACTIVITIES			
S. No.	**Date**	**Name of the Programme**	**Resource Persons**
1	**25.11.2017**	Outbound Training for Leaders	Dr. N. Devaraj, Professor & Head - MBA, NEC
2	**20.12.2017**	Discover the Teacher in You	Dr. Jayanthasri Balakrishnan, Professor, PSGCAS, Coimbatore
3	**17.02.2021**	Outcome Based Curriculum Development (Phase - 1)	Dr. D. Deepa, Professor, ECE, BIT, Sathy Ms. G. Srinithya, Assistant Professor, IT, BIT, Sathy
4	**10.03.2021**	Outcome Based Curriculum Development (Phase - 2)	Dr. T. Ramesh Kumar, Professor, Mechatronics, BIT, Sathy
5	**13.09.2021**	Administrative Training Programme for Non-Teaching Staffs	Mr. A.K. Velusamy, Administrative Officer, NEC
6	**12.06.2021**	Rapid Transition to Online Teaching during COVID Period	Mr. Aravind Warrier, HR, Director, Rapid Value Solutions, Bengaluru
7	**09.04.2022**	Outcome Based Education and Attainment	Dr. J. Senthil, Professor & IQAC Coordinator, NEC
8	**07.08.2022**	Outcome Based Education and Attainment	Ms. S. Maheswari, Assistant Professor & IQAC Coordinator, NEC
9	**17.02.2024**	Teaching and learning the OBE way & Happiness- Motivational session	Dr. U.S. Ragupathy Principal-NEC Dr. Babu Rangarajan Clinical Psychologist
10	**26.02.24 & 27.02.2024**	Train your Brain on Aptitude Shortcuts	Mr. R. Shankar, Assistant Professor, Bio-Medical Engineering, NEC

12	**06.04.2024**	Networking and Collaborative Research & Demonstration of Winning Proposal	Dr. T. Daniel Thangadurai, KPRIET, Coimbatore
13	**12.04.2024**	All About Attainment (NBA Orientation Programme)	Dr. U.S. Ragupathy Principal-NEC
14	**18.05.2024**	Faculty Development Programme- FDP- Expert Interaction	Thiru. Kannan Narasimhan Dean- Industry & International Relationships, Sri Eshwar College of Engineering
15	**08.06.2024**	Effective Implementation on OBE	Dr. Kanmani Buddhi Professor/ E&TE, BMS College of Engineering, Bengaluru Dr. U.S. Ragupathy Principal-NEC
16	**17.07.2024**	Leadership Enrichment - Outbound Learning	Mr. Premnath Leap Learning Activity, Coimbatore
17	**19.07.2024**	Innovative Teaching Methods for Engineering Mathematics using MATLAB	Dr. B. Venkatesan Assistant Professor (Sr.G) Kongu Engineering College Dr. U.S. Ragupathy Principal-NEC
18	**10.08.2024**	Enhancement of Leadership Skills Through Outbound training	Dr. P.Y. Naveen, Professor, MBA, Psychologist, Outbound & Soft Skills
19	**14.08.2024**	Linked Kick Starter Programme	Mr. O. Aswin, Training Associate, FACE PREP, Coimbatore
20	**28.09.2024**	FDP-Tour to Office Automation	Mr. Suresh, Lab Technician, Dept. of Computer Applications, NEC
21	**28.09.2024**	FDP-Self Improvement Through KAIZEN	Dr. P.Y. Naveen, Professor, MBA, Psychologist, Outbound & Soft Skills
22	**19.10.2024**	Question paper Brainstorming Session	, Ms. S. Maheswari, Ms. G. Kokila, Mr. T. Venkateshan OBE Coordiators, NEC

OUTCOME BASED EDUCATION

Our institution has been fully committed to addressing the challenges associated with the adoption of Outcome-Based Education. By fostering a supportive learning environment and equipping all stakeholders with the necessary knowledge and skills, we aim to ensure that OBE is successfully implemented and integrated into all aspects of our educational practices.

Dissemination of OBE among Faculty members

Our institution has been consistently organizing a series of workshops on Outcome-Based Education (OBE) to enhance the understanding of our faculty members and improve the overall delivery of education. These workshops aim to ensure that our faculty members are well-equipped with the necessary tools and strategies to design and implement curriculum in alignment with the OBE framework, which focuses on ensuring that students acquire the knowledge, skills, and competencies necessary to meet the desired learning outcomes.

Dissemination of OBE among students

Dissemination of Outcome-Based Education (OBE) among students is most important in its successful implementation and creating a student-centered learning environment. OBE is disseminated to the students through

1. Orientation Sessions
2. Explaining the mapping of course syllabi with the course outcome defined and how it is assessed.

Imparting OBE in teaching learning process

As part of our commitment to adopting OBE principles, the institution has embraced several innovative teaching methods and pedagogies. One of the key approaches is the organization of **Hackathons**, which provide students with a hands-on, real-world problem-solving experience. Hackathons encourage creativity, critical thinking, and collaboration among students, while simultaneously fostering technical skills and innovative solutions. These events also allow students to engage directly with industry professionals, giving them a glimpse into current trends and technologies in their field of study.

In addition to Hackathons, we have incorporated **Project-Based Learning (PBL)** as an essential teaching methodology. PBL allows students to work on complex, real-world projects that require them to apply their theoretical knowledge and work collaboratively to find practical solutions. By taking ownership of these projects, students develop essential skills such as problem-solving, communication, and teamwork, which are crucial in their professional careers.

Our institution also integrates **Activity-Based Learning (ABL)**, which focuses on active student participation. Through interactive classroom activities, simulations, and role-playing, students are not only able to learn the concepts but also able to apply them in real-world situations. This dynamic approach ensures that students are engaged and experience the knowledge they gained.

To further strengthen the learning process, we involve **industry professionals** in the teaching process. These professionals bring their industry-specific expertise and practical insights into the

classroom, providing students with a bridge between academic theory and professional practice. Their involvement helps students understand the current demands of the industry and prepares them to meet those challenges upon graduation.

In addition, the institution places great emphasis on **field visits** and **internships**. Field visits allow students to observe real-world applications of their academic knowledge, while internships offer valuable on-the-job experience in their chosen field. Both experiences provide students with the opportunity to apply classroom learning in a professional environment, gain practical skills, and build industry connections.

Another important aspect of our OBE implementation is the active engagement with our **alumni network**. Through regular alumni interactions, students are exposed to the experiences and success stories of former graduates, which can serve as both inspiration and guidance. These interactions often include career advice, industry insights, and even internship or job placement opportunities.

Finally, our institution actively encourages participation in **professional society activities**. By engaging with professional bodies, students have access to a wide range of resources, networking opportunities, and industry-specific events that help them stay updated on the latest trends in their field.

In conclusion, our institution bridges the gap between theoretical knowledge and practical application by incorporating Hackathons, Project-Based Learning, Activity-Based Learning, industry collaborations, field visits, internships, alumni interactions, and professional society engagements. These initiatives provide a comprehensive and holistic learning experience, aligning with the evolving demands of the industry and equipping our students with the competencies required to excel in their professional lives.

Glimpses of OBE Activities in Nandha Engineering College

Dr. U.S. Ragupathy, Principal-NEC explained the importance of outcome-based education and its salient features

Dr. Babu Rangarajan, Clinical Psychologist addressed the faculty members about the importance of mental health and Happiness

Faculty Interaction/ Hand on session with the expert- Dr.Kanmani Buddhi

Principal Dr. U.S Ragupathy honoured the guest speaker during the event

Administrative Heads performed various Team Building activities during the OBL training

Faculty members eagerly participated in the Outbound Training for Experiential learning and Time management

Dr. P.Y. Naveen explained the essence of Kaizen principles during his introductory speech

The faculty team thoroughly participated and enjoyed their involvement in the collaborative work during Kaizen program

OUTCOME BASED TEACHING - LEARNING IMPLEMENTATION

PARTICIPATIVE LEARNING

Site Visit during Boom Pumping Concrete

Digital Learning

EXPERIENTIAL LEARNING

Hands on Training in Medical Equipments

Project Based Learning

PROBLEM SOLVING SKILLS

Activity Based Learning

Peer Group Learning

GAMIFIED LEARNING

UI/UX Designing Task

OUTDOOR LEARNING

Field Visit to STEM PARK ,Erode

LIVE CODING

Java Programming & Full Stack Development

BLENDEDLEARNING

Peer Bridge Activity

ACTIVITY BASED LEARNING

Exploring Hardware Components

INTERACTIVE LEARNING

Group Activities

NANDHA ENGINEERING COLLEGE, AUTONOMOUS- ERODE-52

CENTRE FOR LEARNING AND DEVELOPMENT & OFFICE OF CoE

PROGRAMME: FACULTY DEVELOPMENT PROGRAMME-FDP

DATE: 17.02.2024- SATURDAY

EVENT REPORT

SESSION DETAILS:

SESSION	TIME	TOPIC	RESOURCE PERSON
I	9.45 AM-10.45 AM	HAPPINESS MOTIVATIONAL SESSION	Dr. BABU RANGARAJAN CLINICAL PSYCHOLOGIST
II	11.00 AM – 1.00 PM	TEACHING AND LEARNING THE OBE WAY	Dr. U.S. RAGUPATHY PRINCIPAL-NEC

PARTICIPANT DETAILS:

TOTAL NUMBER OF FACULTY PARTICIPANTS (From all the Departments)	**117**

Session - I

Session Outcome:

At the end of this motivational session on Happiness, participants will be able to

1. Understand the importance of cultivating happiness in their lives.
2. Identify key strategies and practices to enhance their overall sense of well-being and contentment.
3. Empowered to prioritize their mental and emotional health by incorporating positive habits and perspectives into their daily routines.

About the session:

Dr. Babu Rangarajan, Clinical Psychologist encouraged participants to reflect on what happiness means to them personally and emphasize that happiness is a subjective and individual experience. He also discussed the importance of resilience and the ability to learn and grow from difficulties. He demonstrated different laughing therapy exercises and made everyone to laugh in high decibels.

KEY TAKE AWAYS FROM THE SESSION

Self- Care and well- being

- Emphasize the importance of taking care of one's physical and mental health.

- Discuss activities that promote well-being, such as regular exercise and adequate sleep.

Finding Purpose:

- Discuss the significance of having a sense of purpose in life.
- Help participants explore their passions and identify activities that bring them joy and fulfilment.

Laughter and Humour

- Share the therapeutic benefits of laughter and humour.
- Encourage participants to find joy in the lighter side of life.

SESSION- I- HAPPINESS- MOTIVATIONAL SESSION

Inaugural Session

Dr.Babu Rangarajan, Clinical Psychologist addressed the faculty members about the importance of mental health and Happiness

SESSION- II

TEACHING AND LEARNING -THE OBE WAY

Session Outcome:

At the end of the session on Teaching and Learning – The OBE way, participants will be

- Understand the Revised Bloom Taxonomy of learning, and the three domains (Cognitive, Affective and Psychomotor) of learning.
- Write good outcomes of a course in an engineering program.
- Design instruction for attaining the course outcomes ensuring good alignment between course outcomes, instruction and assessment

About the session:

Dr.U.S. Ragupathy explained the importance of integrating OBE principles into their teaching practices. He discussed the various instructional methods and classroom activities to ensure that they support the attainment of learning outcomes. He also insisted the participants to gain insights into quality assurance processes related to OBE and understand how OBE aligns with accreditation standards.

KEY TAKE AWAYS FROM THE SESSION

Continuous Improvement

- Participants should understand the importance of ongoing assessment and feedback to continually improve the educational process. This involves using assessment data to make informed decisions about curriculum and instructional improvements.

Designing Aligned Curriculum:

- Training should empower participants to design or modify curriculum in a way that aligns with the identified learning outcomes. This includes selecting appropriate teaching and assessment strategies to support the achievement of these outcomes.

Stakeholder Engagement

- Participants should be able to deliver OBE concepts and benefits to all student. Effective communication is crucial for gaining support and understanding for the implementation of OBE.

Dr.U.S. Ragupathy, Principal-NEC explained the importance of outcome-based education and its salient features

Dr.U.S. Ragupathy, Principal-NEC explained the importance of outcome-based education and its salient features

NANDHA ENGINEERING COLLEGE, AUTONOMOUS- ERODE-52

CENTRE FOR LEARNING AND DEVELOPMENT

PROGRAMME: FACULTY DEVELOPMENT PROGRAMME-FDP

DATE: 26.02.2024 & 27.0.2.2024 – MONDAY & TUESDAY

EVENT REPORT

(TRAIN YOUR BRAIN ON APTITUDE SHORTCUTS)

SESSION DETAILS:

SESSION	TIME	TOPIC	RESOURCE PERSON
I	9.30 AM TO 12.50 PM	RATIO AND PROPORTION, AVERAGE	**R.SHANKAR, AP/BME**
II	2.00 PM TO 4.30 PM	PERCENTAGE,PROFIT AND LOSS	
III	9.30 AM TO 12.50 PM	SIMPLE & COMPOUND INTEREST	
IV	2.00 PM TO 4.30 PM	**TIME AND WORK**	

PARTICIPANT DETAILS:

TOTAL NUMBER OF FACULTY PARTICIPANTS (From all the Departments)	**12**

Outcome:

At the end of this Train your Brain on Aptitude shortcuts, participants will be able to

1. Employ shortcuts, individuals can solve quantitative problems more quickly and efficiently.
2. Improve their accuracy in solving quantitative problems, minimizing the risk of making mistakes and achieving more consistent results through shortcuts.
3. Recognize patterns, identifying common shortcuts, and understanding the rationale behind them, individuals develop stronger problem-solving

skills that transcend specific techniques.

About the session:

Mr.R.Shankar, Aptitude Trainer encouraged participants to get an overview of a quantitative aptitude session designed to enhance numerical reasoning and problem-solving abilities. Depending on the level of the session, participants might also learn advanced problem-solving techniques and shortcuts to tackle quantitative problems more efficiently. These shortcuts can be particularly helpful in timed assessments where speed is crucial.

KEY TAKE AWAYS FROM THE SESSION

Problem-Solving Skills:

- Enhanced their problem-solving skills in quantitative aptitude and logical reasoning. They should be able to apply various techniques and strategies to solve different types of problems efficiently and accurately.

Time Management:

- Time management in aptitude involves planning and allocating time for different types of questions or sections in an exam.
- Prioritize questions based on difficulty level, personal strengths, and time constraints.

Challenge Level:

- Develop a strategic approach for tackling challenging questions, including breaking down complex problems into smaller, manageable parts.
- Use shortcut methods and logical reasoning to approach difficult questions easily.

Mr.R.Shankar, Aptitude Trainer delivered the shortcuts to the faculty members about the importance of problem solving.

NANDHA ENGINEERING COLLEGE, AUTONOMOUS- ERODE-52

CENTRE FOR LEARNING AND DEVELOPMENT& R & D Cell

PROGRAMME: WORKSHOP

DATE: 06.04.2024- SATURDAY

EVENT REPORT

SESSION DETAILS:

SESSION	TIME	TOPIC	RESOURCE PERSON
I	9.30 AM - 11.00 AM	Networking and Collaborative Research	Dr. R. Maheshwar Director In-charge-CFRD, KPR Institute of Engineering and Technology, Coimbatore
II	11.15 AM – 12.45 PM	Art of Publishing Books	
III	01.30 PM - 03.00 PM	How to Write a Competitive Research Proposal- A General Guide	Dr. T. Daniel Thangadurai Associate Director-CFRD, KPR Institute of Engineering and Technology, Coimbatore
IV	03.15 PM – 04.15 PM	Demonstration of Winning Proposal	

PARTICIPANT DETAILS:

TOTAL NUMBER OF FACULTY PARTICIPANTS (From all the Departments)	**100**

Session - I & II: NETWORKING AND COLLABORATIVE RESEARCH & ART OF PUBLISHING BOOKS

Session Outcome:

At the end of this session on Networking and Collaborative Research, participants will be able to

4. Understand valuable insights and practical guidance on various aspects of research.
5. Identify key strategies and practices to enhance their skill in networking, collaborative research, paper publishing, and research proposal writing.
6. Empowered to excel in their research endeavours.
7. identify suitable publishers, writing book proposals, and navigating the publication process.

About the session:

Dr. Maheshwar delivered an insightful session on networking and collaborative research. He shared valuable strategies and tips for establishing effective research

networks and fostering collaborations. Additionally, resource person provided guidance on the art of publishing papers, covering key aspects such as selecting suitable journals, writing impactful manuscripts, and navigating the publication process.

KEY TAKE AWAYS FROM THE SESSION

Networking Opportunities:

- ❖ Provide networking opportunities for participants to connect with peers, researchers, and experts in their respective fields.
- ❖ Collaboration and knowledge-sharing with conducive environment for future research endeavors.

Collaborative Research Activities:

- ❖ Discuss the significance of having diverse expertise enhances research outcomes.
- ❖ Help participants explore their Collaboration which enhances innovation and productivity in research.

Art of Publishing Book:

- ❖ Help the faculty members in Writing and publishing books which contribute to academic.
- ❖ Selection of wise topics, considers target audiences, and adheres to publisher guidelines.

Dr. R. Maheshwar addressed the faculty members about the networking and collaborative research & Art of publishing papers

SESSION- III & IV: HOW TO WRITE A COMPETITIVE RESEARCH PROPOSAL A GENERAL GUIDE & DEMONSTRATION OF WINNING PROPOSAL

Session Outcome:

At the end of the session on How to Write a Competitive Research Proposal- a general guide and Demonstration of winning proposal, participants will be

1. Gained clarity on essential components of a research proposal, including problem definition, objectives, and methodology.
2. Practical insights for structuring a compelling proposal to attract funding.
3. Learned effective presentation techniques to showcase the research's significance and feasibility

About the session:

Dr. T. Daniel Thangadurai conducted a session focused on writing competitive research proposals. He offered practical advice on structuring proposals, identifying research gaps, formulating research questions, and highlighting the significance of the

proposed research. Participants gained valuable insights into crafting compelling proposals that stand out in competitive grant applications.

KEY TAKE AWAYS FROM THE SESSION

Understanding Research Proposal Essentials:

- ❖ Participants gained a comprehensive understanding of the essential components of a research proposal.
- ❖ They learned about the importance of clearly defining the research problem, objectives, and methodology.

Crafting a Competitive Proposal:

- ❖ Dr. T. Daniel Thangadurai provided practical guidance on structuring a research proposal to make it competitive.
- ❖ Attendees learned how to present their research in a compelling and persuasive manner to attract funding.

Demonstration of Winning Proposal:

- ❖ Through a demonstration of a winning research proposal, participants gained insights into effective proposal writing strategies.
- ❖ They learned from real-life examples of successful proposals and identified key elements contributing to their success.

Dr. T. Daniel Thangadurai addressed the faculty members about the Demonstration of winning proposal

NANDHA ENGINEERING COLLEGE, AUTONOMOUS- ERODE-52

CENTRE FOR LEARNING AND DEVELOPMENT & IQAC

PROGRAMME: FACULTY DEVELOPMENT PROGRAMME-FDP

DATE: 18.05.2024- SATURDAY

EVENT REPORT

SESSION DETAILS:

SESSION	TIME	TOPIC	RESOURCE PERSON
I	10.00 AM-11.00 AM	Academics & Placement	**Thiru. Kannan Narasimhan**

PARTICIPANT DETAILS:

TOTAL NUMBER OF FACULTY PARTICIPANTS (From all the Departments)	**105**

Session Outcome:

At the end of the interaction with the expert, participants will be able to

1. Get insights about current trends, practices, and real-world challenges, helping faculty ensure that their curriculum remains relevant and up-to-date.
2. Develop practical examples and case studies that bridge the gap between theoretical concepts and real-world application.
3. Gain professional development opportunities by interacting with industry experts

About the session:

Thiru. Kannan Narsimhan is an experienced industry person currently working as a Dean- Industry & International Relationships, Sri Eshwar College of Engineering, Coimbatore.

During his session, he insisted that faculty members can build connections with industry experts, leading to potential collaboration opportunities such as joint research projects, internships, or job placements for student and he also added that Collaboration between faculty members and industry experts can lead to joint research

projects, funding opportunities, and the exchange of ideas that benefit both academia and industry.

KEY TAKE AWAYS FROM THE SESSION

Professional Development

- Faculty members can gain valuable professional development opportunities by interacting with industry experts, staying abreast of the latest advancements, and expanding their own networks and knowledge

Feedback Loop

- Industry experts can provide feedback on academic programs, suggesting areas for improvement or emerging skills that students should develop to meet industry demands.

Event Photos:

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Thiru. Kannan Narasimhan interacted with the faculty members of Nandha Engineering College

NANDHA ENGINEERING COLLEGE, AUTONOMOUS- ERODE-52

CENTRE FOR LEARNING AND DEVELOPMENT

PROGRAMME: LEADERSHIP ENRICHMENT – OUTBOUND LEARING

DATE: 17.07.2024- WEDNESDAY

EVENT REPORT

SESSION DETAILS:

SESSION	TIME	TOPIC	RESOURCE PERSON
7.30 am – 6.00 pm		LEADERSHIP ENRICHMENT OUTBOUND LEARING	Mr. Premnath Leap Learning Academy

PARTICIPANT DETAILS:

TOTAL NUMBER OF FACULTY PARTICIPANTS (Heads & Administrative Team)	**32**

Session Outcome:

At the end of the interaction with the expert, participants will be able to

1. Develop or refine leadership qualities such as decision-making, problem-solving, communication, and teamwork under challenging and unfamiliar conditions.
2. Adapt to unpredictable situations, manage stress, and bounce back from setbacks, which are crucial traits for effective leadership in dynamic environments
3. Handle conflicts and challenges during outdoor activities provides opportunities to practice conflict resolution skills and improve interpersonal relationships within the team.

About the session:

The outbound learning session started at Leap Learning Academy, Mathamaplayam- Coimbatore. Mr. Premnath, the trainer instructed the list of activities to all the participants. The Outbound Learning Program (OBL) is designed in such a way that the participants would be put on tasks on self-exploring to unleash one's potential to bring the " I CAN ATTITUDE ". Slowly the program moved on to activities to make the participants understand his/her role within the team focusing on their objective success, complementing each other, being a good listener and using the positive aspects for the team's benefits.

The activities and its outcomes are as follows:

Dynamic obstacle course, Hiropes and Numbers are the three activities carried by the trainers and followed by extensive discussion had been done.

Activity 1- Dynamic Obstacle Course

Activity Overview: Participants are encouraged to put through an obstacle course of 80 feet long with different challenging structures. The activity involved a lot of restrictions overcoming which the teams have to crossover with limited available resources.

Activity Purpose – Merely it was a team building activity where the importance of the individual team members is highly emphasised. It is also tested teamwork, listening & executing ability.

Discussion points: The reason for failure were discussed elaborately. The Participants reflected on their performance and addressed the areas of improvement.

Outcome

1. Benefits of listening and not only talking.

2. Benefits of investing time in planning.

3. What basic behaviours like taking notes would impact big on the performance.

Activity - 2 -Hiropes

Activity Overview: Participants are allowed to put across a high ropes course involving 3 activities – 1. Zig Zag Walk, 2. Sloth Walk, 3. Horizontal Walk and a Zip line of distance 200 feet.

Activity Purpose – To check the individual confidence levels to overcome a fear factor.

Discussion points: In the reflective session, few were discussed on how to overcome a fearful situation in real life working environment.

Outcome

1. Fighting fear
2. Confidence Building
3. Being Brave

Activity- 3- Numbers

Activity Overview: Team leaders were picked voluntarily and asked to set a target and strive to achieve it. The activity is all about numbers and how to achieve the set numbers

Activity Purpose- This activity emphasised how small things in a project could be brainstormed and solved before the actual task, more emphasis would be given on prototyping

Discussion points: In the reflective session points would be discussed on how to overcome a fearful situation in real life working environment.

Outcome

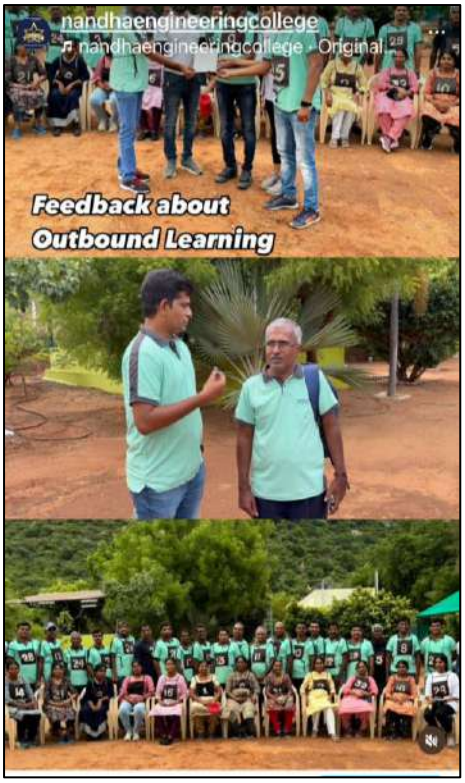
1. How micro level planning could result in great performance.

2. Prototyping before the actual process? To increase productivity &reduce mistakes.

Group Photo:

Certification:

Participants & Trainer Feedback:



Feedback video in Instagram	Feedback video in Instagram	Feedback video in Instagram

CLD Coordinator **Principal**

NANDHA ENGINEERING COLLEGE, AUTONOMOUS- ERODE-52

CENTRE FOR LEARNING AND DEVELOPMENT & DEPARTMENT OF MBA

PROGRAMME: LEADERSHIP ENRICHMENT – OUTBOUND TRAINING

DATE: 09.08.2024 & 10.08.2024 – FRIDAY & SATURDAY

EVENT REPORT

SESSION DETAILS:

DATE	TIME	TOPIC	RESOURCE PERSON
DAY -1 09.08.2024	9.20 AM - 6. 00 PM	Enhancement of Leadership Skills Through Outbound Training	**Dr, P.Y.Naveen** Psychologist Outbound & Soft Skills Trainer
DAY -2 10.08.2024	9.20 AM - 6. 00 PM		

PARTICIPANTS DETAILS:

Day 1: 09.08.2024 TOTAL NUMBER OF FACULTY PARTICIPANTS: (Faculty Members Having experience more than 12 Years)	**54**
Day 2: 10.08.2024 TOTAL NUMBER OF FACULTY PARTICIPANTS: (Faculty Members Having experience between 4 years and 12 years)	**43**

Session Outcome:

At the end of the Outbound Training on leadership enhancement, participants will be able to

1. Improve their teamwork and Collaboration
2. Enhance their leadership skills, such as decision making and problem- solving.
3. Increase their self-awareness and emotional intelligence.

About the session:

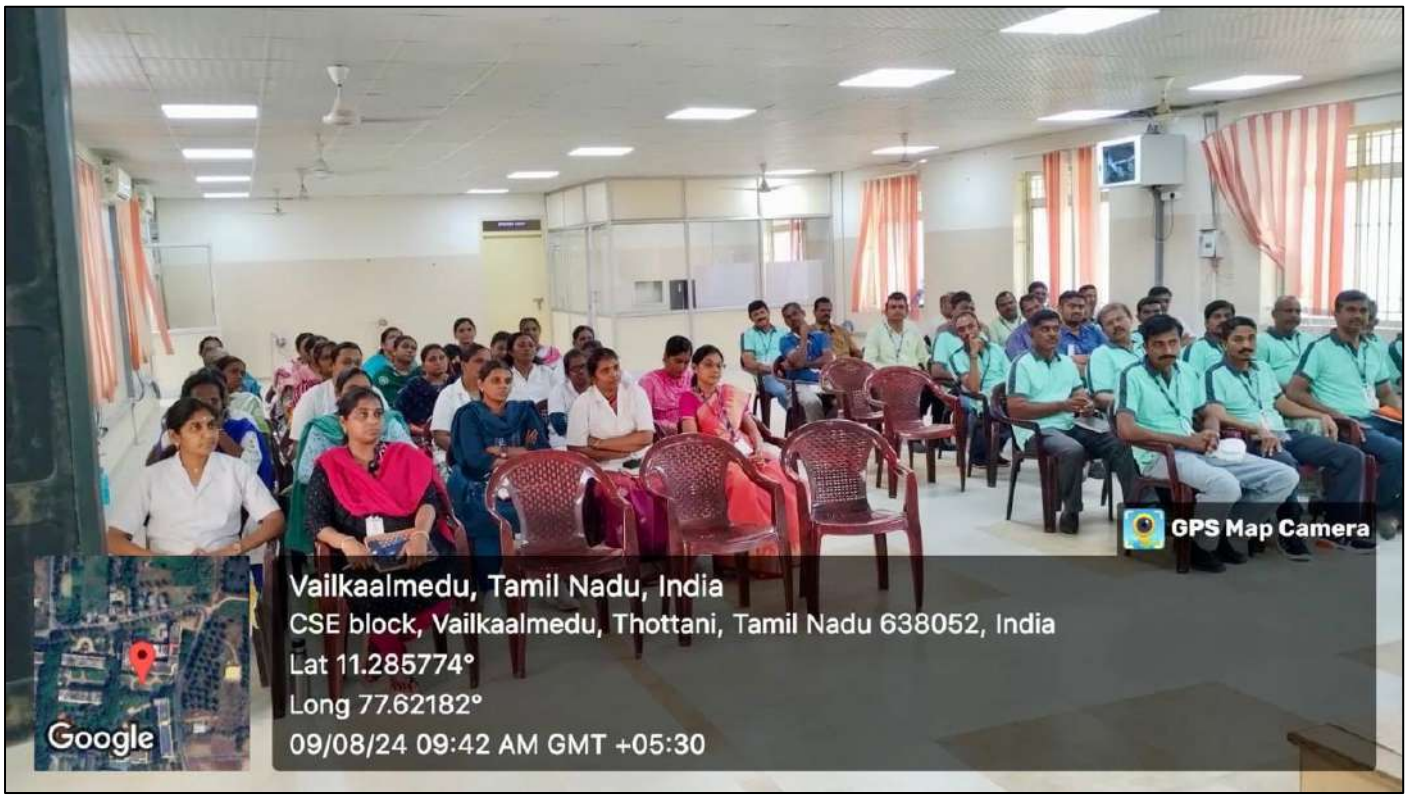
The outbound Training session is planned and executed for two categories of faculty members having experience more than 12 years and between 4 to 12 years.

Dr.P.Y. Naveen, Phycologist & OBT Trainer instructed the list of activities to all the participants at the beginning of the day. The primary aim of the outbound training was to enhance leadership skills among faculty members. This included improving their ability to lead teams, manage conflicts, inspire and motivate students, and foster a collaborative environment. The training focused on practical applications of leadership theories through experiential learning activities.

Inauguration Agenda:

Welcome Address	R. Thiruneelakkandan, CLD Coordinator
Chief Guest Introduction	Dr. Manimegalai, HoD-MBA
Key Note Address	Dr.U.S. Ragupathy, Principal

Principal Dr.U. S Ragupathy offered the key note address during the Inauguration of the event



Day 1- OBL Participants

Highlights of the key activities and their outcomes are as follows:

Activity 1- Strategic Planning

Activity & Purpose – The balloon activity was highly engaging and effectively captured participants' attention, making complex strategic concepts more accessible and memorable. The activity promoted teamwork and communication as participants had to work together to develop and execute their strategies.

Key Take Aways:

Interactive Learning: Hands-on, interactive activities like the balloon exercise are effective in engaging participants and facilitating experiential learning.

Time Management: Allowing ample time for both planning and execution phases can enhance the depth of strategy development and execution.

Faculty members eagerly participated in the balloon activity that meant for understanding the importance experiential learning and Time management

Activity 2: Identifying Strength and weakness of Team Members

Activity & Purpose – The activity intended to Identify the Strengths and Weaknesses of Team Members Activity and help participants to gain a deeper understanding of their own and their colleagues' strengths and weaknesses.

Key Take Aways:

This insight aims to improve team dynamics, enhance individual performance, and foster more effective collaboration within teams. The activity was designed to encourage self-awareness, constructive feedback, and personal development.

Self-Awareness: The self-assessment and peer feedback processes were effective in increasing participants' awareness of their own and others' strengths and weaknesses.

Active participation of faculty members in identifying their own strength and weakness

Activity 3: Trust Building

Activity & Purpose – The Trust Building Activity aimed to foster trust among participants by engaging them in activities that promote open communication, mutual respect, and collaboration. The goal was to enhance team cohesion, improve interpersonal relationships, and create a more supportive and effective team environment.

Key Take Aways: Structured reflection and debriefing sessions about the activity greatly helped the participants to connect themselves in real-world applications and reinforcing learning.

Engagement and Participation: Participants actively engaged in the activities, demonstrating enthusiasm and openness throughout the exercises.

Practical Experiences: The trust fall and communication challenges effectively illustrated the importance of trust and collaboration in a tangible way.

Faculty Participation in Trust Building activity

Faculty Feedback:

The activities were engaging and interactive, encouraging participants to actively apply leadership concepts. The use of real-world scenarios and simulations was particularly effective.

There was a good mix of individual and group activities. Adding more diverse types of exercises could further enhance engagement and learning outcomes.

- - ***Mr. Jayachandran, Assistant Professor- Department of ECE***

The facilitators demonstrated strong expertise and were effective in delivering the content. Their ability to answer questions and provide real-world examples was valuable.

The facilitators engaged well with participants, offering constructive feedback and fostering a collaborative environment. However, providing more personalized feedback during activities could be beneficial.

- Mr.Elango, Assistant Professor- Department of BME

The session was well-organized, with a logical flow from theoretical knowledge to application through activities. However, a bit more time could be allotted for reflection and discussion to deepen understanding.

- Mr. A. Satheeshkumar -Assistant Professor- Department of CSE

The training session was effective in enhancing leadership skills among participants. The combination of theoretical knowledge and practical application led to meaningful development.

- Ms. P. Kokila -Assistant Professor- Department of ECE

More time need be dedicated to specific topics of interest and that additional follow-up sessions could reinforce learning.

To further improve, consider integrating more advanced leadership scenarios and providing ongoing support or follow-up sessions to reinforce the skills learned.

- Dr.Manimegalai – Professor& HoD- Department of MBA

Group Photo: Day- 1: 09.08.2024

Group Photo: Day- 2: 10.08.2024

Event Videos @ Institution's Instagram page

Day 1 OBT Programme	Day 1 OBT Programme	Faculty Activity

CLD Coordinator **Principal**

NANDHA ENGINEERING COLLEGE, AUTONOMOUS- ERODE-52

CENTRE FOR LEARNING AND DEVELOPMENT & DEPARTMENT OF CSE (CYBER SECURITY)

PROGRAMME: LINKEDIN KICK STARTER PROFRAMME

DATE: 14.08.2024 – THURSDAY

EVENT REPORT

SESSION DETAILS:

DATE	TIME	TOPIC	RESOURCE PERSON
14.08.2024	4.45 PM - 6. 00 PM	**LINKEDIN KICK STARTER PROFRAMME**	**Mr. Aswin. O** Training Associate FACE PREP, Coimbatore (Final Year- IT Student @ NEC)

PARTICIPANTS DETAILS:

Heads of the Departments & Key Portfolio Incharges	**25**

Session Outcome:

At the end of the session, the participants will be able to

1. Learn best practices for engaging with LinkedIn connections and growing their professional network.
2. Understand how to engage with their network through comments, shares, and interactions to boost visibility and influence.
3. Familiarize with advanced LinkedIn features, such as LinkedIn Ads, analytics tools, and LinkedIn Groups, to further enhance their presence and reach.

About the session:

The session was handled by Mr. Aswin, the student of Final year Information Technology who has adequate knowledge in LinkedIn, an online professional networking platform. He delivered a lecture about the creation of LinkedIn profile and the ways to make the page as a professional one.

He demonstrated how to use LinkedIn for professional networking with people, branding and also learning new skills. He also clarified the doubts regarding the skills to create engaging and relevant content that showcases your expertise and attracts your target audience.

Inauguration Agenda:

Welcome Address	Dr.S.Prabhu,HoD-CSE (CS)
Session By	Mr. Aswin. O
Vote of Thanks	Mr.R. Thiruneelakkandan, HoD (S & H)

M.Aswin.O , the resource person explained about LinkedIn Profile & its features

Participants involved in Hands- On Training

CLD Coordinator **Principal**

NANDHA ENGINEERING COLLEGE, AUTONOMOUS- ERODE-52

CENTRE FOR LEARNING AND DEVELOPMENT

PROGRAMME: FDP- SELF-IMPROVEMENT THROUGH KAIZEN

DATE: 28.09.2024 – SATURDAY

EVENT REPORT

SESSION DETAILS:

DATE	TIME	TOPIC	RESOURCE PERSON
28.09.2024	9.15 am – 4.30 pm	**Self-Improvement through Kaizen Faculty Development Programme**	**Dr,P.Y.Naveen** Psychologist Outbound & Soft Skills Trainer

PARTICIPANTS DETAILS:

Heads of the Departments & Key Portfolio Incharges	**184**

Session Outcome:

1. **Improve Institutional Processes**: By applying Kaizen principles, faculty can streamline institutional processes, eliminate waste, and optimize resource utilization, resulting in increased efficiency and productivity.

2. **Culture of Continuous Improvement:** Faculty development programs through Kaizen can foster a culture of continuous improvement within the institution.

3. **Increased Collaboration and Interdisciplinary Approaches:** Kaizen's focus on teamwork and cross-functional collaboration fosters interdisciplinary research, teaching, and community engagement.

About the session:

The session was handled by Dr. P.Y Naveen, an able Outbound Trainer & Psychologist who is having vast experience in conducting faculty development programmes in many educational institutions and industries. He conducted a one-day faculty development programme in the topic “Self-Improvement through Kaizen. Kaizen is a Japanese philosophy of continuous improvement, emphasizing incremental, ongoing change for the betterment of an organization. By understanding these aspects, organizations can design and implement effective Kaizen programs to drive continuous improvement and excellence.

Inauguration Agenda:

Welcome Address & Chief Guest Introduction	Mr. R.Thiruneelakkandan ,HoD- S & H
Key Note Address	Dr.U.S. Ragupathy, Principal
Session by	Dr.P.Y. Naveen

Dr.P.Y. Naveen explained the essence of Kaizen principles during his introductory speech

The participants performed an ice breaking activity during the event

Highlights of the key activities and their outcomes are as follows:

Activity 1- Importance of Coordination, Cooperation & Collaboration

Activity & Purpose – Newspaper dress making is a creative and collaborative activity that involves designing and crafting dresses using newspaper as the primary material with the objectives like encouraging creativity and self-expression, developing problem-solving and critical thinking skills and fostering teamwork and collaboration

Key Take Aways:

By dividing participants into teams and providing materials, the 45 minutes hour activity encouraged problem-solving, critical thinking, and effective communication. Key benefits include promoting self-expression, confidence, and fine motor skills. Overall, this engaging activity develops essential skills while promoting eco-friendly fashion and creative thinking, making it an excellent addition to educational, community, or team-building programs.

News paper Dress making activity

Teams executing their plans in making newspapers as adorable dresses.

The Outcome of the activity!!!

The outcome of the activity!!!

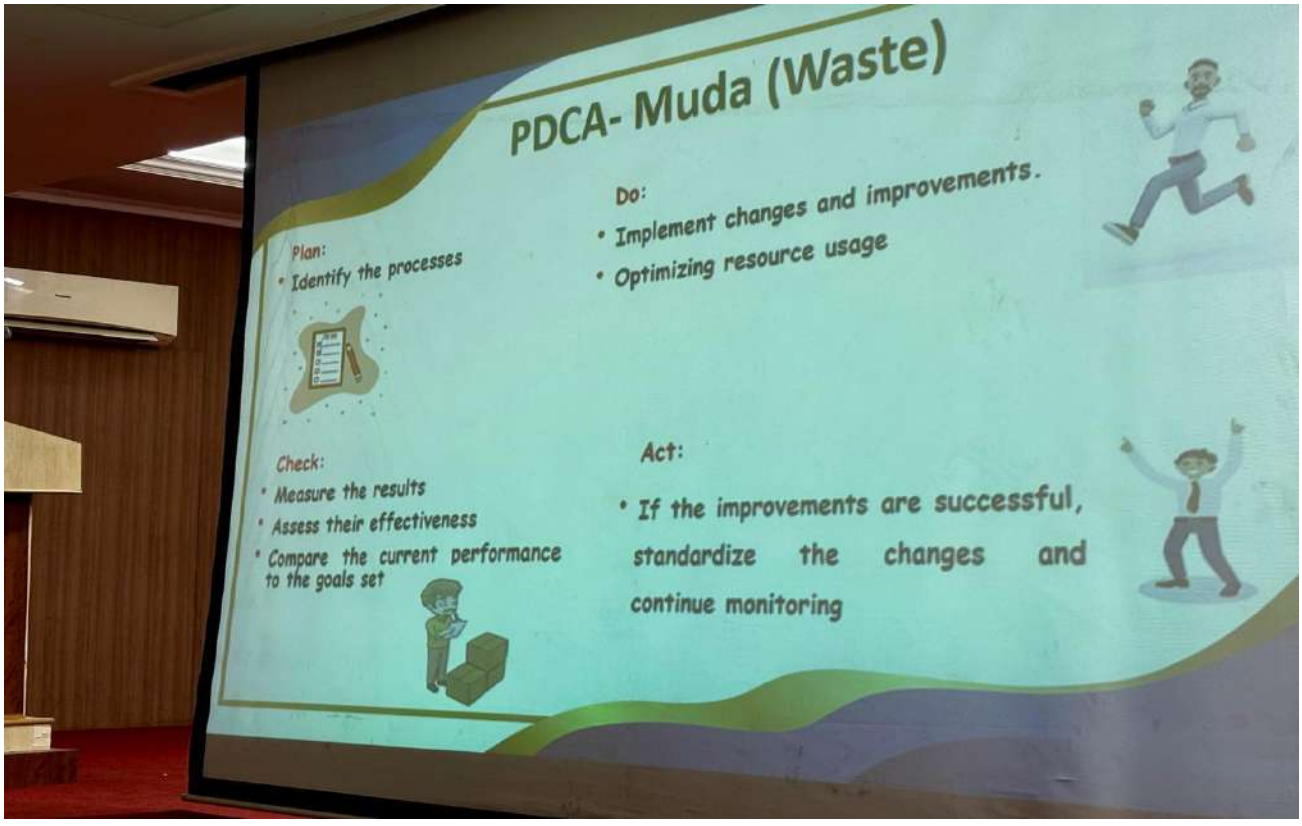
The faculty team thoroughly enjoyed the activity and learnt some valuable insights regarding collaborative work.

Activity 1- PDCA- Plan- Do- Check - Act

About PDCA

The PDCA cycle, developed by Walter Shewhart and popularized by W. Edwards Deming, is a problem-solving methodology that consists of four stages:

1. Plan:
   - Identify a problem or opportunity for improvement.
   - Define objectives and targets.
   - Develop a plan to address the issue.
2. Do:
   - Implement the plan.
   - Execute the solution.
   - Collect data.
3. Check:
   - Monitor and evaluate the results.
   - Compare actual outcomes with expected outcomes.
   - Identify any deviations or issues.
4. Act:
   - Take corrective action based on the evaluation.
   - Standardize and sustain the improvements.



The faculty team actively participated in PDCA activity.

Faculty Feeback

I appreciated how the workshop connected Kaizen principles to our institution's strategic goals. The facilitator helped us see how individual improvements can contribute to the larger organizational vision."

The interactive exercises were engaging and thought-provoking

- ***- Mr. Jayachandran, Assistant Professor- Department of ECE***

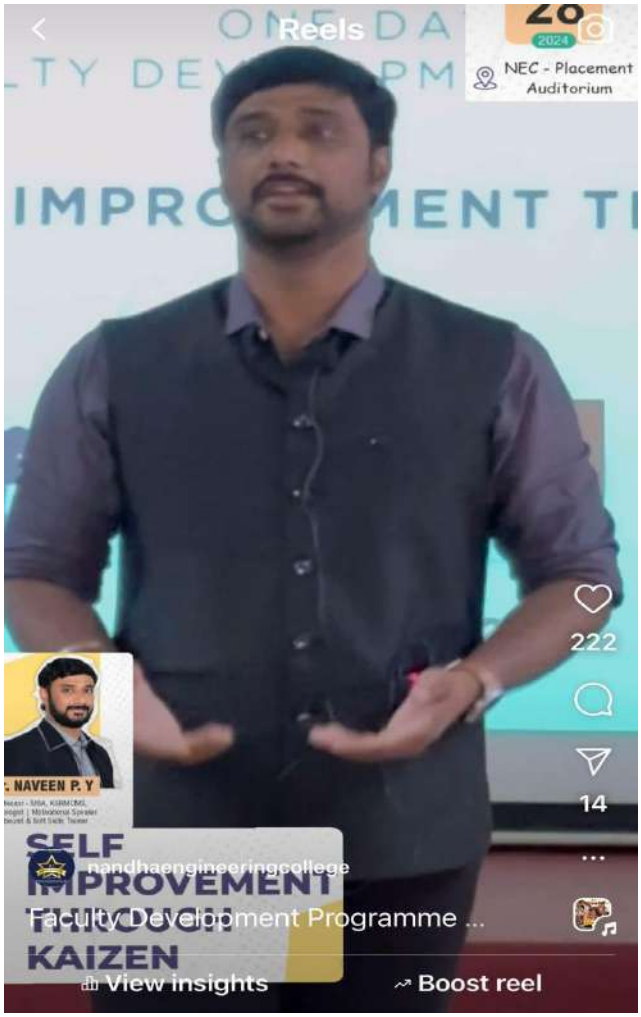
"The Kaizen workshop was an eye-opener! I realized how small changes can add up to make a significant impact on our students' learning experience. I've already started implementing some of the ideas in my classroom."

- ***Mr.Elango, Assistant Professor- Department of BME***

" Kaizen's focus on continuous improvement resonated deeply with me. The workshop provided practical tools and strategies to enhance our department's operations. I'm excited to share these with my colleagues.

-Dr. Lalitha, Professor- Department of Artificial Intelligence & Data Science

Event Videos @ Institution's Instagram page



Instagram post-1	Instagram post-2

CLD Coordinator **Principal**