

**SYMBIOSIS INSTITUTE OF BUSINESS MANAGEMENT, (SIBM) PUNE**  
 Constituent of Symbiosis International (Deemed University), Pune

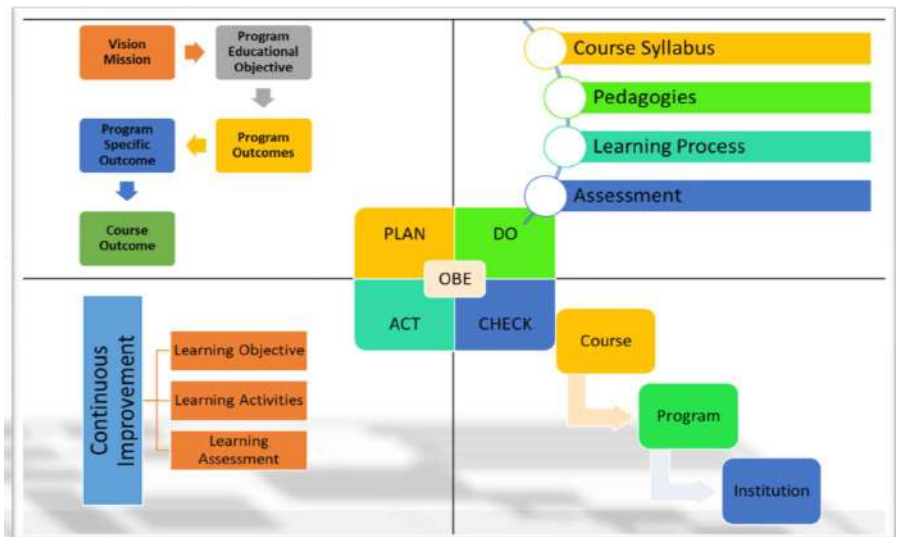
**PROGRAM | MASTER OF BUSINESS ADMINISTRATION (MBA)**

# Outcome Based Education-Manual

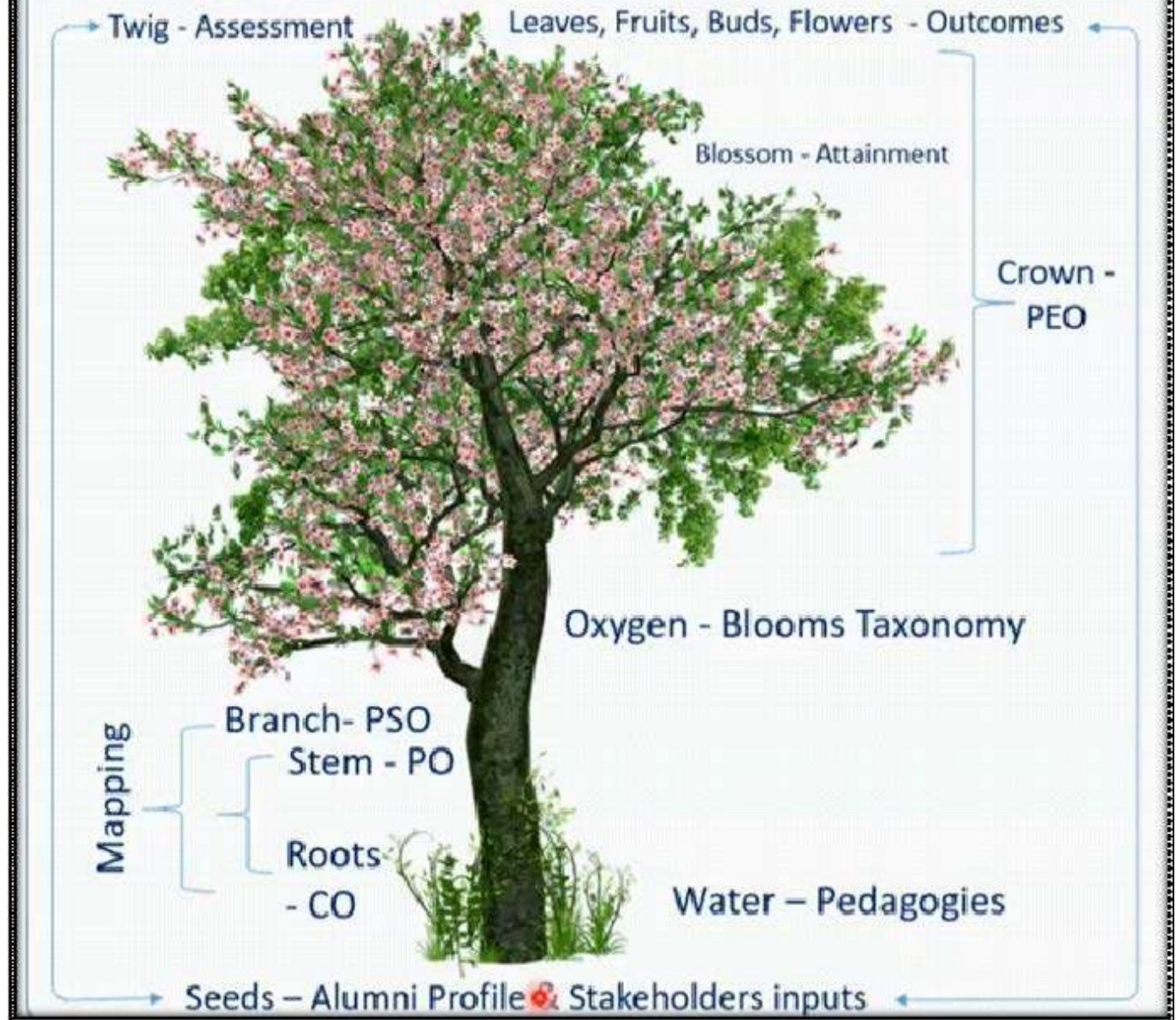
Outcome Based Education (OBE) focuses on students achieving outcomes (required attributes, skills, qualities) after undergoing the learning process through the OBE methodology. The attainment of the outcomes is a learning process that may temporally vary from one student to the other; regarded as means and not the end objectives. If the outcomes are not attained, they are rethought, thus ensuring the Continuous Quality Improvement (CQI) in the education system. OBE shifts the paradigm from the teacher-centered learning to the student-centered learning. The new teaching and learning (T&L) approach transforms from an emphasis on traditional input, such as course credits earned and hours spent in class, to results or outcomes. It focuses on empirically measuring student performance, or the outcomes. OBE implementation requires that students demonstrate that they have learned the required knowledge and developed

quired skill and attributes.  
**What OBE is:**

- ✚ Outcome-Based Education (OBE) is an educational philosophy and approach that focuses on defining specific learning outcomes or competencies that students should achieve by the end of a course or program.
- ✚ The emphasis in OBE is on what abilities/skills students can demonstrate.
- ✚ OBE often involves an iterative process of assessment and feedback.
- ✚ If students are not achieving the desired outcomes, modifications can be made to teaching methods, content, and assessments to enhance learning.



## Root to Fruit Approach – OBE Tree





# Why OBE

OBE is implemented to bring clarity, effectiveness, and relevance to education, ensuring that students acquire the skills and knowledge needed for success in their academic pursuits and future careers.

OBE stands for Outcome-Based Education. It is an educational approach that focuses on defining specific, measurable learning outcomes or objectives for students at the beginning of an instructional process. The emphasis is on what students should know, understand, and be able to do by the end of a course or program.

OBE shifts the focus from traditional teaching methods to a more student-centered approach, ensuring that educational goals are clearly defined and that the assessment is aligned with these predetermined outcomes. This approach aims to produce graduates who possess the skills and knowledge needed for success in their chosen fields and in the broader context of life and work.



## India, OBE and Accreditation

From 13 June 2014, India has become the permanent signatory member of the Washington Accord. Implementation of OBE in higher technical education also started in India. The National Assessment and Accreditation Council (NAAC) and National Board of Accreditation (NBA) are the autonomous bodies for promoting global quality standards for technical education in India. NBA has started accrediting only the programs running with OBE from 2013. The National Board of Accreditation mandates establishing a culture of outcome based education in institutions that offer Engineering, Pharmacy, Management program. Reports of outcome analysis help to find gaps and carryout continuous improvements in the education system of an Institute, which is very essential.



**Fig. 1. Important Features of OBE**

**Categorization of Academic Institution:** NBA categorizes Higher Education Institutions into two groups:

Tier - 1 Institutions:	Tier - 2 Institutions:
This includes IITs, NITs, Central Universities, State Universities, and Autonomous Institutions. These institutions, known as Tier - 1, can also enjoy benefits under the Washington Accord.	Tier - 2 comprises affiliated colleges of universities.

# Vision & Mission

## Institute's Vision & Mission

### Vision

Building domestic and global capabilities through quality education to promote international understanding.

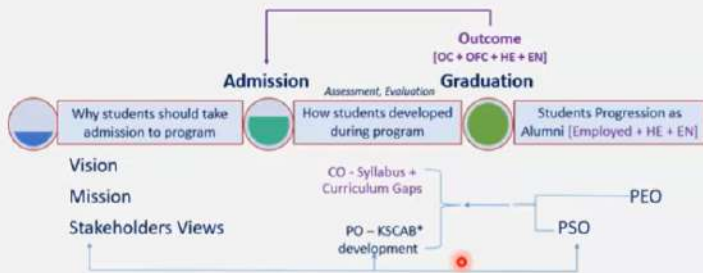
### Mission

- To boost the employability quotient of students
- To develop domestic and global competencies amongst students to take up national and international roles
- To develop a sense of social responsiveness amongst internal stakeholders
- To instill cross cultural sensitivity through student mobility
- To promote ethical and value-based learning for producing global citizens
- To build a culture of original knowledge creation, and dissemination to all stakeholders

## Program Educational Objectives (PEOs)

- To gain contemporary knowledge of the business concepts and their application in problem solving.
- To apply different decision-making tools required for solving complex managerial problems with a passion for innovation.
- To develop leaders who are able to adapt to the needs of the dynamic domestic and global Business contexts.
- To develop students who are competent to take up independent entrepreneurial ventures
- To produce industry ready graduates having the highest ethical standards and concern for environment.

**Program Educational Objectives – PEOs**  
(O – Objective and not Outcome)





## Program Outcomes (POs) and Program-Specific Outcomes (PSOs)

**Program Outcomes (POs):** POs are statements that describe what students are expected to know and be able to do upon graduating from the program. The POs essentially indicate what the students can do from subject-wise knowledge acquired by them during the program. As such, POs define the professional profile of an Management Graduate. These are in line with the Graduate Attributes as defined by the Washington Accord:

**PO1** Develop knowledge in core areas of business based on current research and best practice.

**PO2** Utilize qualitative and quantitative methods for effective decision making and to overcome critical business challenges.

**PO3** Develop a world view that understands and appreciates a global cross-cultural business context.

**PO4** Identify new business opportunities and innovate at the workplace.

**PO5** Apply management practices in the context of societal, health, safety, legal, and cultural issues with a concern for the environment.

**PO6** Communicate effectively as a manager under different situations with all stakeholders.

**PO7** Demonstrate Leadership and Team work capabilities in multidisciplinary settings.

**PO8** Engage in independent and life-long learning and take up challenging assignments for self- development.

**PO9** Integrate ethical considerations while taking business decisions.

### **Program Specific Outcomes (PSOs):**

**PSO1** Prepare the students for an excellent corporate career ahead with a strong value system and ethical conduct to bring positive change in organization, economy, and society.

**PSO2** Apply the knowledge of management concepts to solve complex corporate problems within available resources.





**SIBM Vision Statement:**

**Building domestic and global capabilities through quality education to promote international understanding**

**Aligned POs:**

- **PO1: Develop knowledge in core areas of business based on current research and best practice. A strong foundation in business principles is essential for success in both domestic and international settings.**
- **PO2: Utilize qualitative and quantitative methods for effective decision making and to overcome critical business challenges. The ability to analyze data and make sound decisions is crucial for navigating the complexities of global business.**
- **PO3: Develop a world view that understands and appreciates a global cross-cultural business context. Understanding different cultures and business practices is fundamental for working effectively in a globalized world.**
- **PO4: Identify new business opportunities and innovate at the workplace. Innovation is key to remaining competitive in the global marketplace.**
- **PO6: Communicate effectively as a manager under different situations with all stakeholders. Clear communication across cultures is essential for building trust and fostering collaboration in international business.**

**Aligned PSOs:**

- **PSO1: Prepare the students for an excellent corporate career ahead with a strong value system and ethical conduct to bring positive change in organization, economy, and society. A strong value system and ethical conduct are essential for success in any business environment, both domestically and internationally.**
- **PSO2: Apply the knowledge of management concepts to solve complex corporate problems within available resources. The ability to solve complex problems is crucial for navigating the challenges of a global business landscape.**

**Justification:**

The mission statement emphasizes building capabilities for both domestic and international success. The aligned POs equip students with the knowledge, skills, and understanding necessary to thrive in this environment. Additionally, the PSOs focus on preparing students for successful careers and applying their knowledge to solve problems, which are crucial for both domestic and international business.

By promoting international understanding through quality education, this program fosters graduates who can navigate the complexities of a globalized world, contribute to positive change, and create value in diverse business contexts.

SIBM, Pune's Mission Statements alignments with PO's & PSO's

SIBM Mission Statement	Aligned POs/PSOs	Justification
1. To boost the employability quotient of students	PO1, PO2, PO3, PO4, PO5, PO6, PSO1, PSO2	Strong knowledge in core business areas (PO1), effective decision-making skills (PO2), understanding of the global business landscape (PO3), innovative thinking (PO4), responsible management practices (PO5), and clear communication (PO6) are all crucial for employability. PSO1 directly addresses preparing students for corporate careers, and PSO2 equips them to solve complex problems, making them valuable assets to any organization.
2. To develop domestic and global competencies amongst students to take up national and international roles	PO1, PO2, PO3, PO4, PSO1, PSO2	Understanding core business areas (PO1) combined with skills in decision-making (PO2) and problem-solving (PSO2) is essential for any role. PO3 fosters a global perspective, while PO4 encourages exploring new opportunities. PSO1 prepares students for successful careers, domestically or internationally.
3. To develop a sense of social responsiveness amongst internal stakeholders	PO5, PO7, PO9, PSO1	Responsible management practices (PO5) and ethical decision-making (PO9) are key to social responsiveness. Effective teamwork (PO7) allows for collaboration towards social good. PSO1 emphasizes a strong value system, which underpins social responsibility.
4. To instill cross-cultural sensitivity through student mobility	PO3, PSO1	Understanding and appreciating diverse cultures (PO3) is crucial for success in today's globalized world. PSO1 aims to prepare students for a corporate career, where cross-cultural sensitivity is essential for effective communication and collaboration.
5. To promote ethical and value-based learning for producing global citizens	PO5, PO6, PO9, PSO1	Responsible management practices (PO5), ethical decision-making (PO9), and clear communication (PO6) are all central to ethical and value-based learning. PSO1 emphasizes a strong value system and ethical conduct, making students responsible global citizens.
6. To build a culture of original knowledge creation, and dissemination to all stakeholders	PO1, PO4, PO8, PSO2	A strong knowledge base (PO1) fosters innovation and original knowledge creation (PO4). Lifelong learning (PO8) encourages continuous knowledge acquisition and sharing. PSO2 equips students to apply management concepts, which can involve creating new solutions.

**Aligning Program Educational Objectives (PEOs), Program Outcomes (POs), and Program Specific Outcomes (PSOs)**  
**Here's how each PEO aligns with the listed POs and PSOs:**

		Gain Contemporary knowledge Application	Students to Apply different decision-making tools with creativity	Develop leaders	Develop entrepreneurial competencies	Produce students with ethical standards and concern for environment
PO1	Develop Business Knowledge	Yellow				
PO2	Utilize Qualitative & Quantitative methods for DM		Yellow			
PO3	Develop World view			Yellow		
PO4	Identify new business opportunities and innovate at the workplace		Peach		Yellow	
PO5	Apply Management practices					Yellow
PO6	Communicate Effectively	Peach	Peach		Peach	
PO7	Demonstrate Leadership & Teamwork capabilities			Yellow		
PO8	Engage in Independent & Lifelong learning				Peach	
PO9	Integrate Ethical considerations					Yellow
PSO1	Prepare Students with ethical conduct					Yellow
PSO2	Apply Knowledge of management concepts	Yellow	Yellow			

Yellow - Direct Alignment, Peach - Indirect Alignment

**PEO 1: Gain contemporary knowledge of business concepts and their application in problem solving.**

- **PO1: Develop knowledge in core areas of business based on current research and best practice.** (Direct Alignment) This PEO emphasizes acquiring current knowledge, which directly translates to PO1's focus on knowledge based on recent research and best practices.

**PEO 2: Apply decision-making tools for complex problems with a passion for innovation.**

- **PO2: Utilize qualitative and quantitative methods for effective decision making and to overcome critical business challenges.** (Direct Alignment) PEO 2 highlights using decision-making tools, aligning with PO2's focus on utilizing various methods for effective decision making.
- **PO4: Identify new business opportunities and innovate at the workplace.** (Indirect Alignment) The innovation aspect of PEO 2 connects with PO4's focus on identifying new opportunities and innovation.

**PEO 3: Develop leaders who adapt to dynamic domestic and global business contexts.**

- **PO3: Develop a world view that understands and appreciates a global cross-cultural business context.** (Direct Alignment) Understanding the global business landscape is crucial for leaders adapting to dynamic contexts, as mentioned in PEO 3.
- **PO7: Demonstrate Leadership and Teamwork capabilities in multidisciplinary settings.** (Direct Alignment) Effective leadership often involves adapting to different situations, which partially aligns with PEO 3.

**PEO 4: Develop students for independent entrepreneurial ventures.**

- **PO4: Identify new business opportunities and innovate at the workplace.** (Direct Alignment) Identifying opportunities is a key skill for entrepreneurs, directly aligning with PEO 4.
- **PO8: Engage in independent and life-long learning and take up challenging assignments for self-development.** (Indirect Alignment) The independent learning aspect of PO8 partially aligns with PEO 4's focus on entrepreneurial ventures.





**PEO 5: Produce industry-ready graduates with high ethical standards and environmental concern.**

- **PO5: Apply management practices in the context of societal, health, safety, legal, and cultural issues with a concern for the environment.** (Direct Alignment) PEO 5 emphasizes ethical and environmentally conscious graduates, directly aligning with PO5's focus on applying management practices considering these aspects.
- **PO9: Integrate ethical considerations while taking business decisions.** (Direct Alignment) PEO 5 highlights high ethical standards, directly aligning with PO9's focus on integrating ethics in decision making.

**Program Specific Outcomes (PSOs):**

- **PSO1: Prepare the students for an excellent corporate career ahead with a strong value system and ethical conduct to bring positive change in organization, economy, and society.** (Alignment with PEOs 3, 4, & 5) This PSO emphasizes aspects covered in PEOs 3 (leadership), 4 (entrepreneurship), and 5 (ethics and environment), indicating the program aims to prepare graduates for various career paths while upholding strong values.
- **PSO2: Apply the knowledge of management concepts to solve complex corporate problems within available resources.** (Alignment with PEOs 1 & 2) This PSO focuses on applying knowledge to solve problems, aligning with PEOs 1 (contemporary knowledge) and 2 (decision-making for complex problems).

**Additional Notes:**

- PO6 (communication) can be indirectly linked to most PEOs as effective communication and leadership are essential for achieving all the program's educational objectives.

**This analysis shows a strong connection between the PEOs, POs, and PSOs. The program is well-designed to equip students with relevant knowledge, skills, and ethical considerations for successful business careers, while also preparing them for specific career paths like corporate jobs or entrepreneurship.**

# Bloom's Taxonomy for Assessment Design








Fig 2. Revised Blooms Taxonomy

✚ Bloom's Taxonomy provides an important framework to not only design curriculum and teaching methodologies but also to design appropriate examination questions belonging to various cognitive levels.

✚ Action verbs as shown in Table 1, from AICTE and NEP are instrumental in curriculum design, teaching methodology, and question paper preparation as they provide clear direction and objectives for educators.

Table 1. Action Verbs form AICTE NEP - For MBA, Levels 4, 5, 6 are used

Level	Skill Demonstrated	Question cues / Verbs for tests
 Remember	<ul style="list-style-type: none"> <li>✚ Ability to recall of information like facts, conventions, definitions, jargon, technical terms, classifications, categories, and criteria</li> <li>✚ ability to recall methodology and procedures, abstractions, principles, and theories in the field</li> <li>✚ knowledge of dates, events, places</li> <li>✚ mastery of subject matter</li> </ul>	list, define, tell, describe, recite, recall, identify, show, label, tabulate, quote, name, who, when, where
 Understand	<ul style="list-style-type: none"> <li>✚ understanding information</li> <li>✚ grasp meaning</li> <li>✚ translate knowledge into new context</li> <li>✚ interpret facts, compare, contrast</li> <li>✚ order, group, infer causes</li> <li>✚ predict consequences</li> </ul>	describe, explain, paraphrase, restate, associate, contrast, summarize, differentiate interpret, discuss
 Apply	<ul style="list-style-type: none"> <li>✚ use information</li> <li>✚ use methods, concepts, laws, theories in new situations</li> <li>✚ solve problems using required skills or knowledge</li> <li>✚ Demonstrating correct usage of a method or procedure</li> </ul>	calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, experiment, show, examine, modify
 Analyse	<ul style="list-style-type: none"> <li>✚ break down a complex problem into parts</li> <li>✚ Identify the relationships and interaction between the different parts of a complex problem</li> <li>✚ identify the missing information, sometimes the redundant information and the contradictory information, if any</li> </ul>	classify, outline, break down, categorize, analyze, diagram, illustrate, infer, select
 Evaluate	<ul style="list-style-type: none"> <li>✚ compare and discriminate between ideas</li> <li>✚ assess value of theories, presentations</li> <li>✚ make choices based on reasoned argument</li> <li>✚ verify value of evidence</li> <li>✚ recognize subjectivity</li> <li>✚ use of definite criteria for judgments</li> </ul>	assess, decide, choose, rank, grade, test, measure, defend, recommend, convince, select, judge, support, conclude, argue, justify, compare, summarize, evaluate
 Create	<ul style="list-style-type: none"> <li>✚ use old ideas to create new ones</li> <li>✚ Combine parts to make (new) whole,</li> <li>✚ generalize from given facts</li> <li>✚ relate knowledge from several areas</li> <li>✚ predict, draw conclusions</li> </ul>	design, formulate, build, invent, create, compose, generate, derive, modify, develop, integrate

# Course Outcomes (COs)



## What are COs?

- It is a detailed description of what a student must be able to do at the end of a course.
- COs are the statements of Knowledge/ Skills/ Attitude that students are expected to know, understand and perform, as a result of learning experiences.
- Course Outcome remains the base of the hierarchy of outcomes and is the tools that can be used to measure student performance in each course.
- The course outcomes need to be concise descriptions of what learning is expected to take place by course completion.
- It should be narrower and measurable statements.
- Well-written COs facilitate the faculty in measuring the achievement of the CO at the end of the semester.
- It also helps the faculty in designing suitable delivery

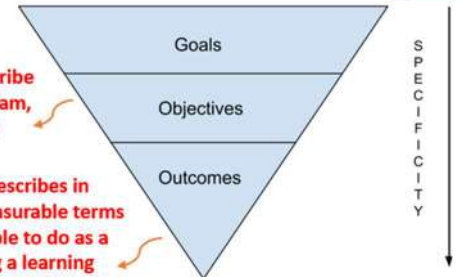


## Objective vs Outcome



Learning goals and objectives generally describe what an instructor, program, or institution aims to do.

learning outcome describes in observable and measurable terms what a student is able to do as a result of completing a learning experience



**Fig. 3. Objective Vs Outcome [Source: DePaul University]**

Figure 3, shows the difference between Objective and outcome. One must understand learning outcome is always different from objective. Outcome is student centric, whereas objective is faculty or program centric. The following guideline can be helpful in designing the Course outcomes.



## Guideline for Writing/ Framing COs

- The CO statements are defined by considering the course content covered in each module of a course.
- Focus on the learning that results from the course rather than describing activities or lessons that are in the course.
- Create statements that have a student focus rather than an instructor-centric approach.
- For every course there may be 4 to 6 Course Outcomes.
- The keywords used to define CO are based on Bloom's Taxonomy.
- It also helps the faculty in designing suitable delivery and assessment methods to achieve the designed Course Outcomes.

**Table 2: Good vs Bad Course Outcomes (COs)**

Good COs	Bad COs
<ul style="list-style-type: none"> <li>Clearly articulate what students are expected to achieve using action verbs that align with Bloom's Taxonomy levels.</li> <li>Emphasize the application, synthesis, and evaluation of knowledge, indicating a deeper understanding of the subject.</li> </ul>	<ul style="list-style-type: none"> <li>Lack specificity and clarity, making it difficult to assess the depth of understanding.</li> <li>May focus on lower-order thinking skills, such as remembering or simple application, without challenging students to analyze, synthesize, or evaluate their knowledge.</li> </ul>

### When developing learning outcomes, here are the core questions to ask yourself:

- What do we want students in the course to learn?
- What do we want the students to be able to do?
- Are the outcomes observable, measurable and are they able to be performed by the students?

### Course outcome statements on the course level describe:

- What faculty members want students to know at the end of the course AND
- What faculty members want students to be able to do at the end of the course?

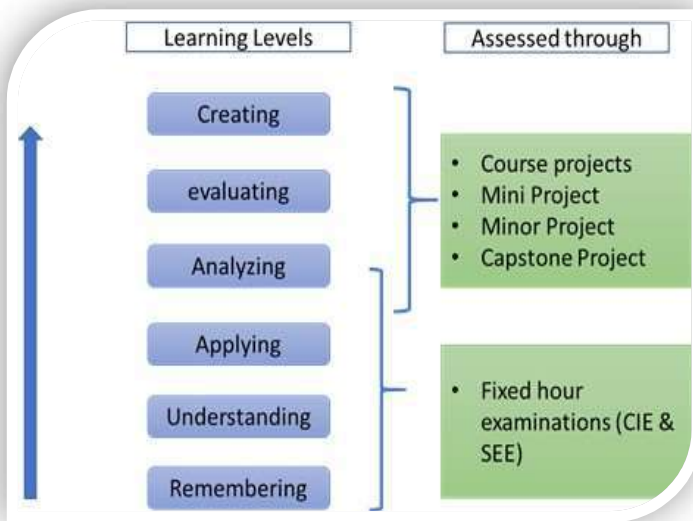
### Course outcomes have three major characteristics

- They specify an action by the students/learners that is observable
- They specify an action by the students/learners that is measurable
- They specify an action that is done by the students / learners rather than the faculty members

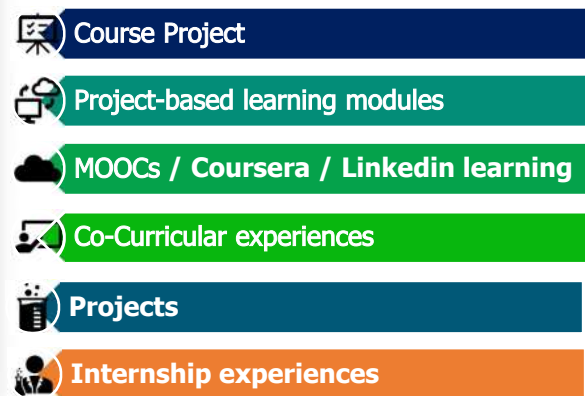


# Assessment Planning

While using Bloom’s taxonomy framework in planning and designing of assessment of student learning, following points need to be considered: 1. Normally the first three learning levels; remembering, understanding and applying and to some extent fourth level analysing are assessed in the Continuous Internal Evaluation (CIE) and Semester End Examinations (SEE), where students are given a limited amount of time, and, 2. Abilities; analysis, evaluation and creation can be assessed in extended course works or in a variety of student works like course projects, mini/ minor projects, internship experience and final year projects as shown in Figure 4. **Internship, Projects related SOP, Seminar are department specific, hence their assessment plan can be set by course coordinator with Head of program permission.**



**Fig. 4. Assessment methods for different Bloom’s cognitive levels [Source: AICTE Examination Reform]**



**Fig. 5. Innovative Teaching Learning**

## Innovative Teaching Learning

While our programs predominantly focus on imparting technical knowledge and skills, the assessment is confined to these abilities. Acquiring professional outcomes often extends beyond class participation. To meet these challenges, comprehensive reforms are required in curriculum design, learning experiences, and outcome assessment. Globally, various attempts are underway to address these issues through recommended educational experiences. Innovative Teaching learning methodology is shown in figure 5.

Communication Skills				
	Unsatisfactory 1	Developing 2	Satisfactory 3	Exemplary 4
Performance criteria				
Performance criteria				
Performance criteria				
Performance criteria				

**Fig. 6. Examples of Rubrics (Accessed from Rogers 2010)**

## Rubrics

To Assess student performance in achieving course outcomes, reliable methods are crucial. Rubrics serve as powerful tools for transparent assessment and grading, communicating expectations and criteria. They consist of criteria, descriptors, and a performance scale to evaluate students' mastery levels across various dimensions. Fig 6, shows the rubrics format. Rubrics format can be designed by the faculty for the courses they teach, and get it approved through course coordinator.

# CO-PO MAPPING GUIDELINES

To connect high-level learning outcomes (POs) with course content, course outcomes and assessment, there is a necessity to bring further clarity and specificity to the program outcomes.

## Example of CO-PO Mapping: Course – Materials Management

CO	PO1: Develop Business Knowledge	PO2: Utilize Qualitative & Quantitative methods for DM	PO3: Develop World view	PO4: Identify new business opportunities and innovate at the workplace	PO5: Apply Management practices in social, health, legal, cultural & environment	PO6: Communicate Effectively	PO7: Demonstrate Leadership & Teamwork capabilities	PO8: Engage in Independent & Lifelong learning	PO9: Integrate Ethical considerations in DM	PSO1: Prepare Students for excellent corporate career	PSO2: Solve complex corporate problems
Discuss Significance of Materials Management	2	2	3	3	1	1	1	1	2	3	3
Decide the importance Materials Planning & Control	3	3	3	1	1	2	2	2	2	2	3
Analyze forecasting Models	1	3	3	1	2	1	2	1	3	3	3
Develop Vendor Rating & Evaluation Criterion	3	3	3	2	2	2	1	1	1	1	1
Assess Inventory Management Models	1	1	3	1	2	2	2	2	3	3	3

- **The justification is based on the nature and depth of each CO in relation to the corresponding PO or PSO. This is a subjective assessment and may vary based on the specific details of the course and program. It's essential to consider the context, learning objectives, and the intended outcomes of the course as well as evaluation of the course. Following is the sample justification with Levels 1, 2 and 3. On the similar lines the justification and mapping of COs and POs for the entire course can be carried out.**

**CO1: Students will be able to discuss the significance of materials management and supply chain in the value chain**

**PO3: Develop a world view that understands and appreciates a global cross-cultural business context.**

**Level 3:** Understanding materials management and supply chain often requires a global perspective due to the interconnected nature of supply chains.

**PO1: Develop knowledge in core areas of business based on current research and best practice.**

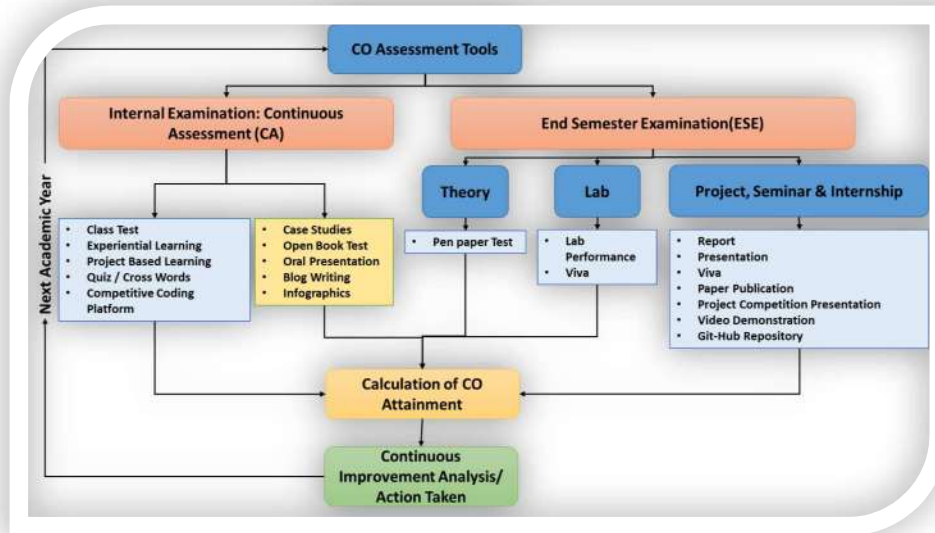
**Level 2:** The course involves discussing the significance, which contributes to knowledge but may not directly involve current research.

**PO6: Communicate effectively as a manager under different situations with all stakeholders.**

**Level 1:** The focus is on materials management discussion, which may not necessarily involve complex communication situations.

# Attainment of Course Outcomes

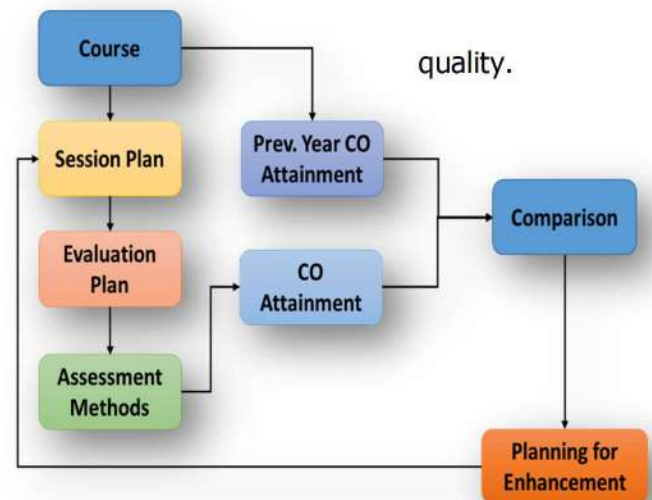
The determination of Course Outcomes (COs) relies on students' performance in both internal and end-semester exams based on Theory or practical subjects. Figure 10, depicts the process of course outcome and Attainment.



**Fig. 10. Process of Course Outcome Attainment**

## The quality /relevance of assessment processes and tools

- Process of attaining COs and enhancing educational quality.
  - ✚ Before the start of the semester, faculty members are requested to indicate their preferences for the subjects they will teach. Using this preference list, an internal committee determines the faculty member responsible for each individual course.
  - ✚ faculty member develops a session plan, devising an evaluation strategy, and selecting assessment methods that align with the course syllabi and intended course outcomes.
- The calculation of CO attainment is an integral part of the teaching-learning process.
  - ✚ It involves assessing both internal (continuous assessment) and external exams using tools aligned with questions targeting the defined COs and Program Outcomes (POs) or Program Specific Outcomes (PSOs).
  - ✚ The final calculation of CO attainment is then compared with the CO attainment of the previous year. This comparison aids in the planning and improvement of the course for the upcoming year.



**Fig. 11. Process of Attaining COs**



# COURSE CO – PO/PSO ATTAINMENT

## Level:

- Attainment Level 3: 80% students scoring more than set attainment level (60% of Max marks associated with particular Cos) in the Internal Component or End Sem examination.
- Attainment Level 2: 70% students scoring more than set attainment level (60% of Max marks associated with particular Cos) in the Internal Component or End Sem examination.
- Attainment Level 1: 60% students scoring set attainment level (60% of Max marks associated with particular Cos) in the Internal Component or End Sem examination.

**Table 5. Rubrics for deciding Levels**

Rubric for deciding level of attainment	Range	Level
If the percentage of students is more than equal to 60% secured $\geq 60\%$ marks	$\geq 60\% \ \& \ < 70\%$	1
If the percentage of students is $> 60\%$ and $< 70\%$ secured $\geq 60\%$ marks	$\geq 70\% \ \& \ < 80\%$	2
If the percentage of students is greater than or equal to 80% secured $\geq 60\%$ marks	$\geq 80\%$	3

## Example:

The below Figure demonstrate the Internal component CA1 mapping and attainment calculation, based on the student performance in exam.

SIBM, Pune CO Attainment										
Academic Year	2022-23			Batch	2022-24			Examination Season	OCTOBER	
Course Name	MATERIALS MANAGEMENT			Course Code	0201410121					
Sr. No.	Seat No	Roll No.	Name of the Student	ESE Marks	1 CO1	2 CO2	3 CO3	4 CO4	5 COS	
1	A			40	8	8	8	8	8	
2	B			30	5	5	8	5	7	
3	C			0	0	0	0	0	0	
4	D			27	4	5	6	5	7	
5	E			33	5	5	8	7.5	7.5	
6	F			31	7	6	5	8	5	
7	G			32	5	4	8	8	7	
8	H			27	7	0	6	7	7	
9	I			25	4	0	7	7	7	
10	J			29	4	7	8	6	4	
11	K			28	6	5	8	7	2	
12	L			36	8	5	8	8	7	
13	M			36	6	8	8	7	7	
14	N			36	8	6	8	8	6	
15	O			27	6	6	5	7	3	
16	P			33	6	5	7	8	7	
17	Q			34	4	7	8	8	7	
18	R			29	4	7	6	6	6	
18	S			33	6	6	8	6	7	
20	T			28	3	2	8	8	7	
21	U			34	6	6	7	8	7	
22	V			29	3	3	8	8	7	
23	W			32	5	7	8	6	6	
24	X			36	7	6	8	8	7	
				26	5	5	6	6	4	
CO No	Level	No of students who attempted			24	24	24	24	24	
CO1	1	CO No			CO1	CO2	CO3	CO4	CO6	
CO2	2	Max			8.00	8.00	8.00	8.00	8.00	
CO3	3	Target			4.8	4.8	4.8	4.8	4.8	
CO4	3	No. of students scored $\geq$ target			16	18	23	23	19	
CO5	2	Percentage			66.67	75.00	95.83	95.83	79.17	
CO6		Level			1	2	3	3	2	

**Fig. 12. Process of Attaining Cos**



# Attainment of Program Outcomes and Program Specific Outcomes

Direct and Indirect assessment tools in the ratio of 80:20 are used for attainment of the PO and PSO respectively. Direct Assessment steps followed are: Performance of the students is assessed through continuous assessment (CA) with 60% weightage and end semester examination (ESE) with 40% weightage. For internal core courses students is assessed through continuous assessment (CA) with 100%.

- CA is distributed throughout the semester as,
  - Theory course: Components for CA are planned in the beginning of the semester and informed to the students. The questions for CA component are designed on the basis of CO or PI (Performance Indicators) and Blooms Levels. The innovative methods are used for the continuous assessment. The direct PO-PSO attainment is computed based on CO attainments for each course.
  - Internship / Project course: The monthly progress report for the internship/ project is evaluated as per the rubrics by the project supervisors.
- ESE: The End Semester Examination is a comprehensive assessment and contributes 40% of the overall evaluation. ESE is conducted as per the Examination policy and rules laid down by Symbiosis International (Deemed University) (SIU). CO attainment is computed separately for both CA and ESE. The PO and PSO attainment is computed by taking the weighted average of CO attainment and articulation matrix.

**Table 6. Tools for Attainment of PO-PSOs**

Methods	Tools	Frequency	Weightage
Direct Attainment	Internal Exam	As per number of credits for a particular course	80%
	End Sem Exam	Once in a Semester	
Indirect Attainment	Program Exit Survey	Once in 2 year for a particular batch	20%

## Sample CO-PO Attainment

**Consolidation of evaluations of Course Compiler Construction:** The final determination of Course Outcome Attainment for the specific subject is arrived at through the meticulous weighing of Internal CA and ESE Attainment, in a ratio of 60:40. This balanced consideration ensures that both continuous engagement and end-of-semester performance contribute significantly to the overall assessment of student understanding and proficiency in the subject matter.

**Table 7. Overall CO Attainment Calculation**

CO No / Weightage	CO Attainment using CIE					CO attainment			Overall Att
	CA1	CA2	CA3	CA4	CA5	Internal	External	Final	
						40	60	100	
CO1	3					3.00	2.5	2.70	2.48
CO2	1.9285714	2.5				2.21	2.5	2.39	
CO3		3				3.00	2	2.40	
CO4		2.75				2.75	2	2.30	
CO5			3	3		3.00	3	3.00	
CO6				3		3.00	1.5	2.10	

**Table 8. Articulation Matrix and Attainment Calculation for One Course Compiler Construction**

CO	Attainment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2.70	3	3												
CO2	2.39	3	3												
CO3	2.40	3	3												
CO4	2.27	3	3												
CO5	3.00	3	3												
CO6	2.10	3	3												
Articulation Average		3.00	3.00	-	-	-	-	-	-	-	-	-	-	-	-
CO-PO PSO Attainment	2.48	2.48													

$$\text{Attainment of } PO_i = \frac{\sum_{j=1}^n PO_{ij} * \text{Attainment}_j}{3 * \text{count}(PO_i)}$$

Where,  $i = 1, 2, \dots, 12, PSO1, PSO2$ . And  $n$  is the total number of COs framed. Count ( $PO_i$ ) returns the total number of values mapped with  $i^{th}$  PO



## Action Taken Report

Action Taken report is to be prepared for the missed POs/PSO (if any) by program wise before the starting of each academic year. For example, Any PO attainment is missed by the Program of Master of Business Administration, Program Coordinator need to revise the assessment plan after discussion with course in charge. In consecutive year those activity or assessment need to be completed.





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This OBE manual is prepared after discussion and approval from OBE committee members.

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