Dr. D.Y. Patil Institute of Management & Entrepreneur Development, Varale, Pune

CO - PO and PSO ATTAINMENT HANDBOOK

Dr. D. Y. Patil Educational Federation

Dr. D.Y. Patil Institute of Management & Entrepreneur Development, Varale, Pune

Department of MBA

1 *CO - PO AND PSO ATTAINMENT HANDBOOK*

CONTENT

1. VISION AND MISSION STATEMENTS

VISION

Achieving excellence through value based quality education in continual learning environment.

MISSION

To impart quality education through effective teaching-learning process. To nurture and maintain an environment of academic excellence, research, innovations and entrepreneurship through strong industry interface.

2. PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO1: Graduates of the MBA program will successfully integrate core, cross-functional and inter-disciplinary aspects of management theories, models and frameworks with the real-world practices and the sector specific nuances to provide solutions to real world business, policy and social issues in a dynamic and complex world.

PEO2: Graduates of the MBA program will possess excellent communication skills, excel in cross-functional, multi-disciplinary, multi-cultural teams, and have an appreciation for local, domestic and global contexts so as to manage continuity, change, risk, ambiguity and complexity.

PEO3: Graduates of the MBA program will be appreciative of the significance of Indian ethos and values in managerial decision making and exhibit value centered leadership.

PEO4: Graduates of the MBA program will be ready to engage in successful career pursuits covering a broad spectrum of areas in corporate, non-profit organizations, public policy, entrepreneurial ventures and engage in life-long learning.

PEO5: Graduates of the MBA program will be recognized in their chosen fields for their managerial competence, creativity & innovation, integrity & sensitivity to local and global issues of social relevance and earn the trust & respect of others as inspiring, effective and ethical leaders, managers, entrepreneurs, intrapreneurs and change agents.

3. PROGRAMME OUTCOMES (PO)

PO1. Apply Knowledge Of Management Theories And Practices To Solve Business Problems.

PO2. Foster Analytical And Critical Thinking Abilities For Data-Based Decision Making.

| PO3 Ability To Develop Value Based Leadership Ability. |
|---|
| PO4. Ability To Understand, Analyze And Communicate Global, Economic, Legal, And Ethical Aspects Of Business. |
| PO5. Ability To Lead Themselves And Others In The Achievement Of Organizational Goals, Contributing Effectively To A Team Environment. |

4. PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO1. Empowered with entrepreneurial competencies and equipped with practical industry knowledge

PSO2. Instilled with Research oriented analytical and Critical thinking capability for rational decision making
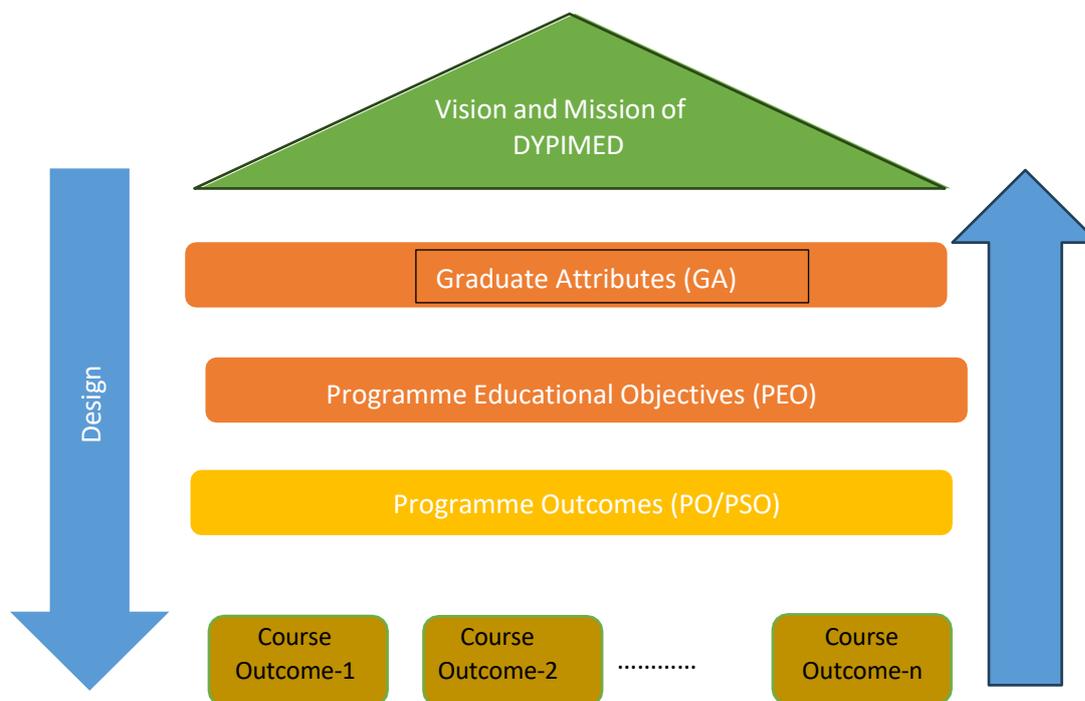
5. TERMINOLOGY

1. **Outcome Based Education (OBE) Approach:** Outcomes are about performance, and this implies:

   a) There must be a performer – the student (learner), not only the teacher

   b) There must be something performable (thus demonstrable or assessable) to perform

   c) The focus is on the performance, not the activity or task to be performed

2. **Programme Educational Objectives (PEOs):**

   Programme Educational Objectives are a set of broad future-focused student performance outcomes that explicitly identify what students will be able to do with what they have learned, and what they will be like after they leave school and are living full and productive lives. Thus PEOs are what the programme is preparing graduates for in their career and professional life (to attain within a few years after graduation).

3. **Programme Outcomes (POs):** Programme Outcomes are a set of narrow statements that describes what students (learners) of the programme are expected to know and be able to perform or attain by the time of graduation.

4. **Programme Specific Outcomes (PSOs):** Programme Outcomes are a set of narrow statements that describes what students (learners) of a particular specialization of the programme are expected to know and be able to perform or attain by the time of graduation. PSOs are also a function of the various course combinations offered by the Institute.

5. **Course Outcomes (COs):** A set of specific statements that describes the complex performances a student should be capable of as a result of learning experiences within a course.

6. **Teaching and Learning Activities (TLAs):** The set of pedagogical tools and techniques or the teaching and learning activities that aim to help students to attain the intended learning outcomes and engage them in these learning activities through the teaching process.

7. **Outcome Based Assessment (OBA):** An assessment system that asks course teachers to first identify what it is that we expect students to be able to do once they have completed a course or program. It then asks course teachers to provide evidence that they are able to do so. In other words, how will each learning outcome be assessed? What evidence of student learning is most relevant for each learning outcome and what standard or criteria will be used to evaluate that evidence? Assessment is therefore a key part of outcome-based education and used to determine whether or not a qualification has been achieved.

8. **Comprehensive Concurrent Evaluation (CCE) / Concurrent Internal Evaluation (CIE):** The course teacher shall prepare the scheme of Comprehensive Concurrent Evaluation (Formative Assessment) before commencement of the term. The scheme of Comprehensive Concurrent Evaluation shall explicitly state the linkages of each CCE with the Course Outcomes and define the targeted attainment levels for each CO. Each CCE item shall be of minimum 25 marks.

   For a 3 Credit Course there shall be a MINIMUM of three CCE items. The final scores shall be converted to 50, For 2 Credit Course there shall be a MINIMUM of two CCE items and for a 1 Credit Course there shall be a MINIMUM of one CCE item.

   CCE shall be spread through the duration of course and shall be conceptualized, executed, assessed and documented by the course teacher along with student-wise and class-wise attainment levels of the COs and the attainment levels of the course

6. BLOOM'S TAXONOMY.

Benjamin Bloom was working along with a group of measurement specialists in early 1950s on the development of a taxonomy of learning.

A. Bloom's Taxonomy: Learning Domains

- Any given task tends to be generally dominant in one of the three psychological domains: cognitive, affective, or psychomotor.
- The cognitive domain deals with a person's ability to process and utilize information in a meaningful way.
- The affective domain relates to the attitudes and feelings that result from or influence the learning process.
- The psychomotor domain involves manipulative or physical skills.
- This classification is for focus and convenience; all the three dimensions are involved to varying degrees in all intended learning experiences and activities.

B. Blooms Level:

| |
|---|
| **Remember** – Recalling Relevant Terminology, Specific Facts, Or Different Procedures Related To Information And/Or Course Topics. At This Level, A Student Can Remember Something, But May Not Really Understand It. |
| **Understand** – The Ability To Grasp The Meaning Of Information (Facts, Definitions, Concepts, Etc.) That Has Been Presented. |
| **Apply** – Being Able To Use Previously Learned Information In Different Situations Or In Problem Solving. |
| **Analyze** – The Ability To Break Information Down Into Its Component Parts. Analysis Also Refers To The Process Of Examining Information In Order To Make Conclusions Regarding Cause And Effect, Interpreting Motives, Making Inferences, Or Finding Evidence To Support Statements/Arguments. |
| **Evaluate –** Being Able To Judge The Value Of Information And/Or Sources Of Information Based On Personal Values Or Opinions. |
| **Create –** The Ability To Creatively Or Uniquely Apply Prior Knowledge And/Or Skills To Produce New and Original Thoughts, Ideas, Processes, Etc. At This Level, Students Are Involved In Creating Their Own Thoughts And Ideas. |
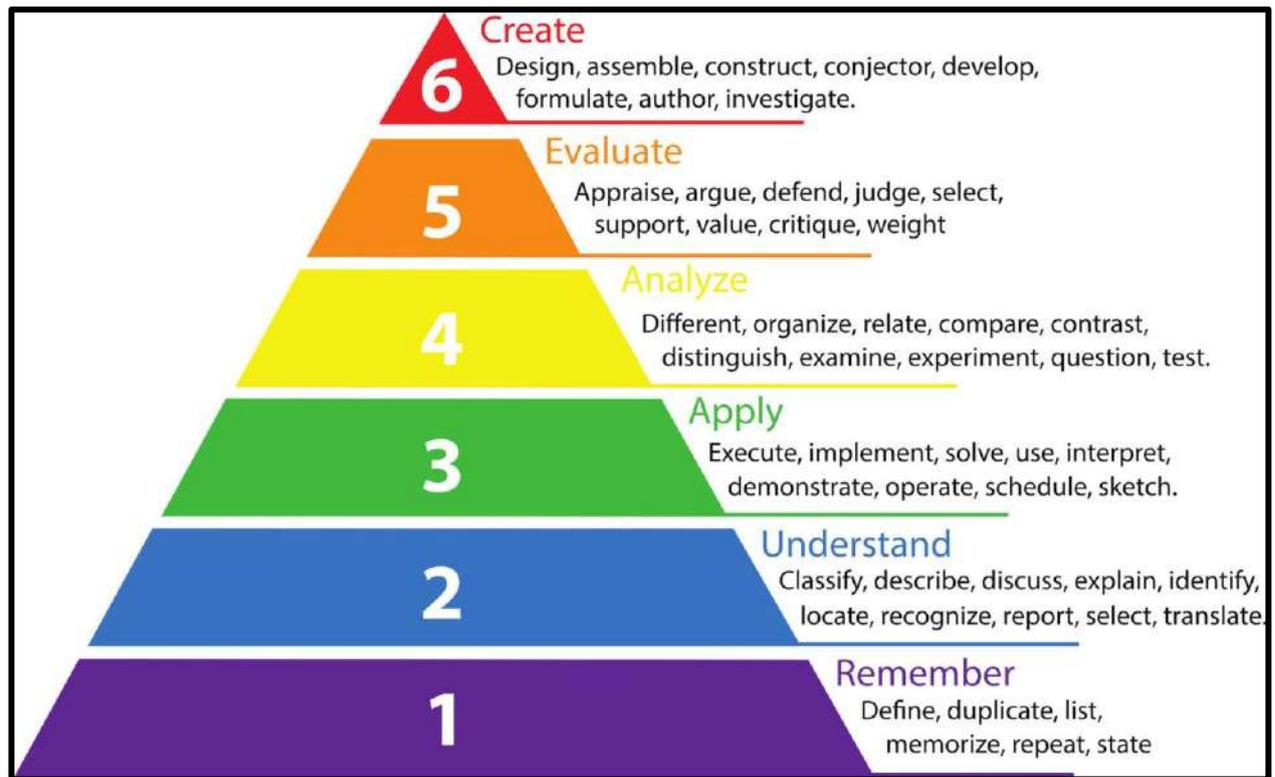
List of action words related to critical thinking skills

Remember	Understand	Apply	Analyze	Evaluate	Create
Describe	Classify	Choose	Categorize	Appraise	Combine
Define	Defend	Explain	Classify	Judge	Compose
Label,	Demonstrate	Generalize	Compare	Criticize	Construct
List	Distinguish	Judge	Differentiate	Compare	Design
Locate	Explain	Organize	Distinguish	Assess	Develop
Match	Express	Prepare	Identify	Conclude	Formulate
Name	Extend	Produce	Infer	Contrast	Hypothesize
Omit	Give Examples	Select	Select	Critique	Invent
Recite	Summarize	Show	Survey	Determine	
Select	Discuss	Solve	Arrange	Grade	
State	Estimate	Classify	Breakdown	Justify	
Count		Complete	Combine	Measure	
Draw		Compute	Detect	Rank	
Outline		Discover	Diagram	Rate	
			Discriminate	Support	
			Illustrate	Test	

7. OUTCOME BASED EDUCATION (OBE) APPROACH:

OBE focusses on student competency; it concentrates on the outcomes or goals instead of just marks or scores. Therefore, the goals which could be a certain number of skills and knowledge that the learner should have at the end of the course.

The assessment methods are defined to measure the achievement of these goals. The teachers take the role of being facilitators and mentors. Constructive feedback from the students also helps in reshaping the additional Value-added Programs and activities to be given to the students as shown in below Figure.
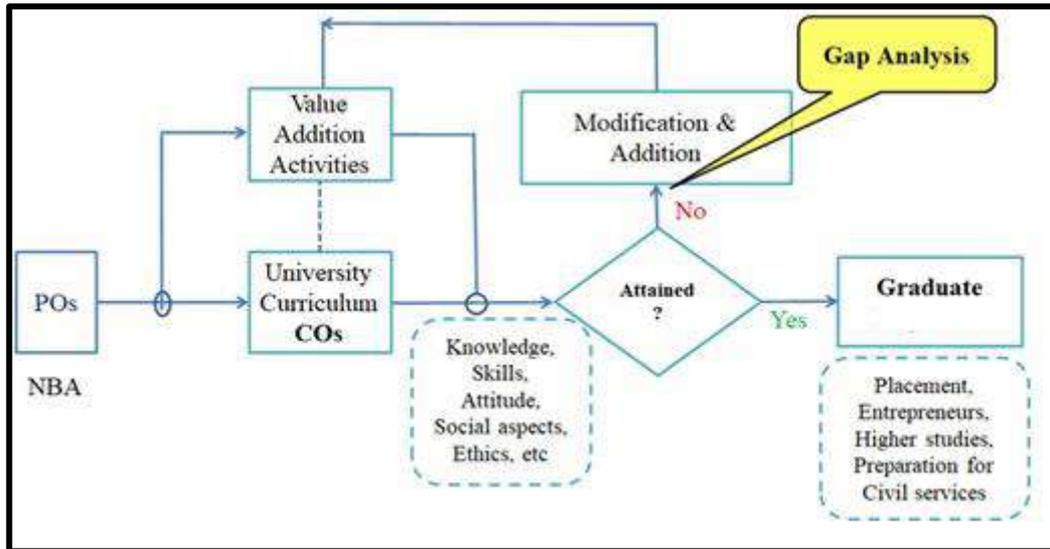

Attainment of Outcomes

- The Program Outcomes (POs) and Program Specific Outcomes (PSOs) are accomplished through curriculum
- Course Outcomes (COs) are defined for each course and they are mapped to POs and PSOs.
- A set of performance evaluation criteria is used for quantitative assessment of COs
- Thus, the attainment of COs provides evidence of attainment of POs and PSOs.

101	101 – Managerial Accounting								
Co	**Cognitive domain**	**Course outcome**	**Po1**	**Po2**	**Po3**	**Po4**	**Po5**	**Pso1**	**Pso2**
Co101.1	Remembering	Describe the basic concepts related to accounting, financial statements, cost accounting, marginal costing, budgetary control and standard costing							
Co101.2	Understanding	Explain in detail, all the theoretical concepts taught through the syllabus.							
Co101.3	Applying	Perform all the necessary calculations through the relevant numerical problems.							
Co101.4	Analysing	Analyse the situation and decide the key financial as well as non-financial elements involved in the situation.							
Co101.5	Evaluating	Evaluate the financial impact of the decision.							

CO-PO Mapping   CO-PSO Mapping
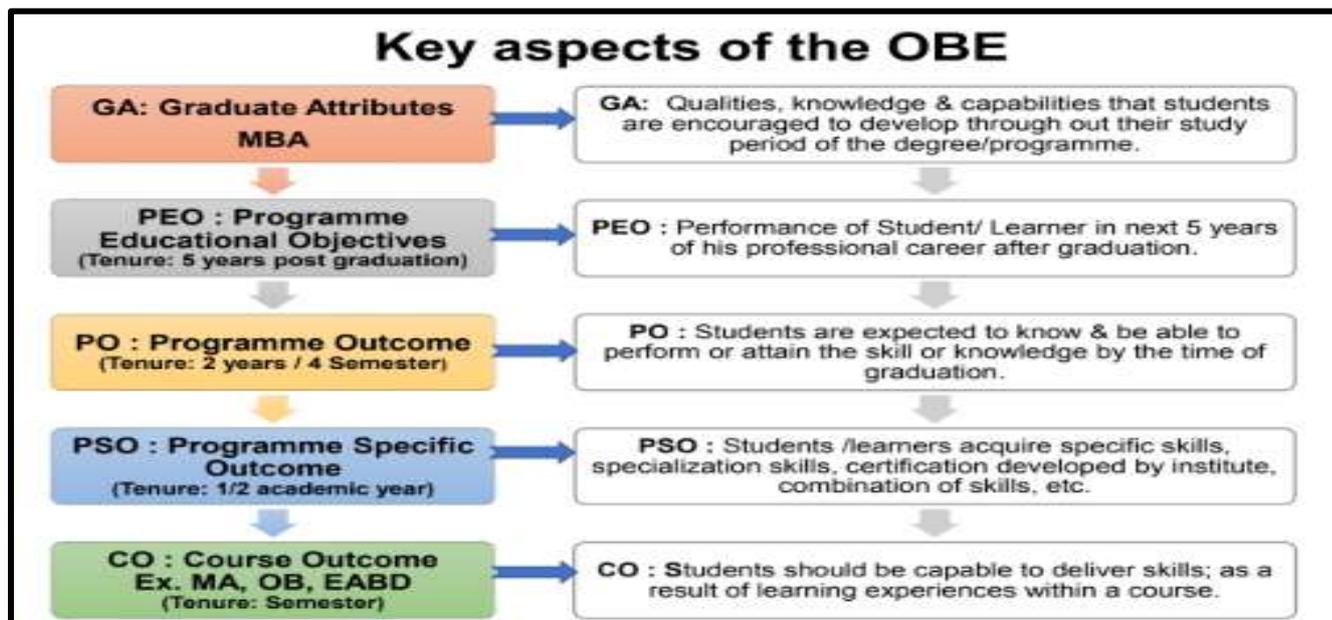
8. LEVEL OF CORRELATION AND ATTAINMENT

Level of Correlation / Mapping Factor

It indicates to what extent a certain component mapped with the other. The correlation between CO - PO describes the level at which a particular PO is addressed through a CO.

3	Indicates **Substantial/High** mapping *(high correlation towards attainment)*
2	Indicates **Moderate** mapping *(moderate correlation towards attainment)*
1	Indicates **Low** mapping *(low correlation towards attainment)*

CO Attainment Targets

Targets are typically quantized into specific levels, with three levels being the most commonly used. CO attainment targets are determined by the course teacher prior to the commencement of course delivery in each semester.

For Example, we can set a target as below:

| Level 3: X% (40/50/60etc.) Students scoring >= P% (50/60/70 etc.) of max marks allocated to CO |
| Level 2: Y% (40/50/60etc.) Students scoring >= P% (50/60/70 etc.) of max marks allocated to CO |
| Level 1: Z% (40/50/60etc.) Students scoring >= P% (50/60/70 etc.) of max marks allocated to CO |

P is called **Threshold** is a target or minimum level of attainment for a course outcome (CO) to be considered achieved or is a benchmark or cut-off value, usually set as a **percentage** (e.g., 50%, 60%)
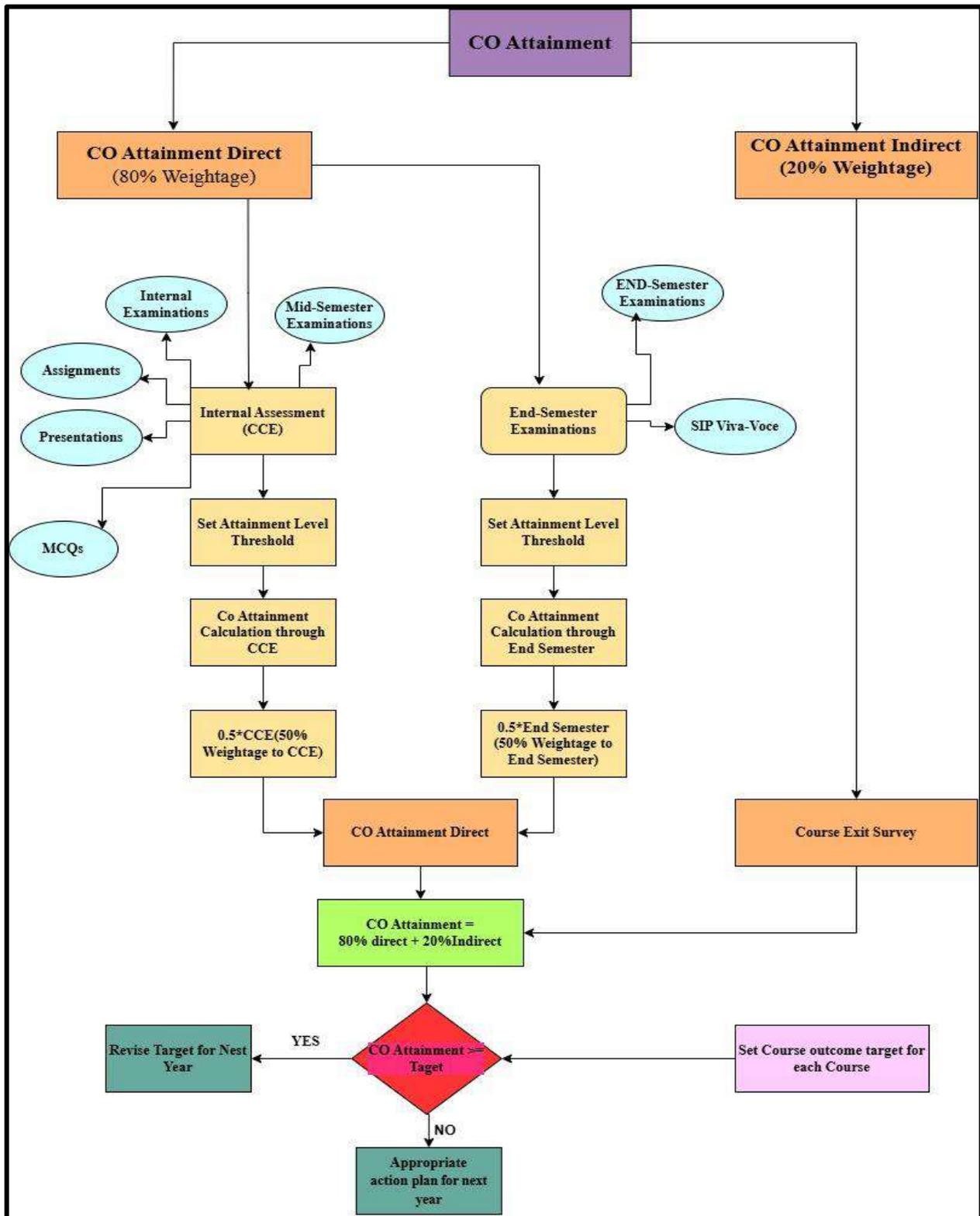
P% ☐ The expected Proficiency % to attain a CO. For ex. It can be 50%
X% ☐ The High expected Attainment %. For ex., it can be set as 70%
Y% ☐ The moderate expected attainment %. For ex., it can be set as 60%
Z% ☐ The low expected attainment %. For ex., it can be set as 50%

ATTAINMENT OF COs

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                                    CO Attainment
                    ┌───────────────────┴───────────────────┐
        CO Attainment Direct                        CO Attainment Indirect
          (80% Weightage)                               (20% Weightage)

   Internal          Mid-Semester           END-Semester
   Examinations      Examinations           Examinations

 Assignments                                End-Semester
                   Internal Assessment      Examinations  →  SIP Viva-Voce
 Presentations         (CCE)

 MCQs            Set Attainment Level      Set Attainment Level
                    Threshold                  Threshold

                 Co Attainment            Co Attainment
                 Calculation through      Calculation through
                     CCE                    End Semester

                 0.5*CCE(50%              0.5*End Semester
                 Weightage to CCE)        (50% Weightage to
                                          End Semester)

                        CO Attainment Direct                    Course Exit Survey

                              CO Attainment =
                            80% direct + 20%Indirect

   Revise Target for Nest      CO Attainment >=       Set Course outcome target for
         Year          ← YES ──    Taget                      each Course
                                    │ NO
                              Appropriate
                            action plan for next
                                  year
```

- **Attainment of COs** can be measured **Directly** and **Indirectly**
- Direct attainment of COs can be determined from the performance of students in all relevant assessment instruments.

Fig. CO Attainment Calculation Process

Direct CO attainment

- Direct attainment of COs is determined from the performances of students in Comprehensive Concurrent Evaluations (CCE) and End Semester Examination.

- The proportional weightages of CCE: ESE will be 0.5:0.5.

- Direct attainment of a specific COs is determined from the performances of students in all the assessment items related to that particular CO. hence, every assessment item needs to be tagged with the relevant CO. Also, we need data about performance of students' assessment item – wise.

- Comprehensive Concurrent Evaluations (CCE) is conducted and evaluated by the relevant department itself. Thus, institution have access to question-wise marks in all assessment instruments

- For the End Semester Examinations, the direct attainment is calculated from the final mark for all COs.

Indirect CO attainment

- Indirect attainment of COs can be determined from the course exit survey.

- The exit survey form should be designed to get feedback from students on all the COs.

Gap Analysis

- If targets are achieved for that year, higher targets can be set (increase the target by 5% to 10%) for the following academic year as a part of continuous improvement.

- If targets are not achieved, an appropriate action plan should be performed to attain the target in the next years.

9. CALCULATION OF CO ATTAINMENT

Step 1: For every course, 4-6 course outcomes (CO) are defined and mapped to Program outcomes (PO) on a scale of 0 to 3. The average of each POs are calculated. CO attainment targets are finalized by the course coordinators before commencement of the course delivery.

		Academic Year	Program Id	Subject Id	CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
☐	1	2023-2024	6836	UL310	CO1	3	2	2	2	2	2	2
☐	2	2023-2024	6836	UL310	CO2	2	2	2	3	2	2	2
☐	3	2023-2024	6836	UL310	CO3	2	3	1	3	2	3	2
☐	4	2023-2024	6836	UL310	CO4	2	1	2	3	2	2	3
☐	5	2023-2024	6836	UL310	CO5	2	2	2	2	2	2	2
☐	6	2023-2024	6836	UL310	CO6	2	3	1	2	2	1	2

Step 2: For every CCE, Enter maximum marks for each question and its corresponding CO in the relevant columns.

Step 3: Enter mark for each student question-wise. Mark zero (0) if the student failed to answer for mandatory questions. Leave blank only for choice questions. We find the total mark of the students in last column.

☐	Application Id	Roll No	Name	Q1	Q2	Q3
☐	MB23120274	SY-AB-24101	SHAHARE SONALI MANOHAR	5	6	7
☐	MB23116850	SY-AB-24102	KUMAWAT RUSHIKESH SANTOSH	5	6	7

Question Wise Total Marks For Each CO In Each Assessment			
	Assignment		
Question	Q2	Q3	Q1
CO	CO2	CO3	CO1
MARKS	10	10	10

Total Marks In Each CO And Threshold			
CO	CO1	CO2	CO3
Total CO Marks	10	10	10
Threshold %	50	50	50

Threshold Marks In Each CO		
CO1	CO2	CO3
5.0	5.0	5.0

Step 4: Compute the "Number of students attempted" the questions for each question.

Attainment Score			
CO Attainment %	CO1	CO2	CO3
No of students achieved CO (n)	130	130	130
No of students in class (N)	130	130	130
CO Attainment (n/N)%	100	100	100
CO Attainment Level	3	3	3

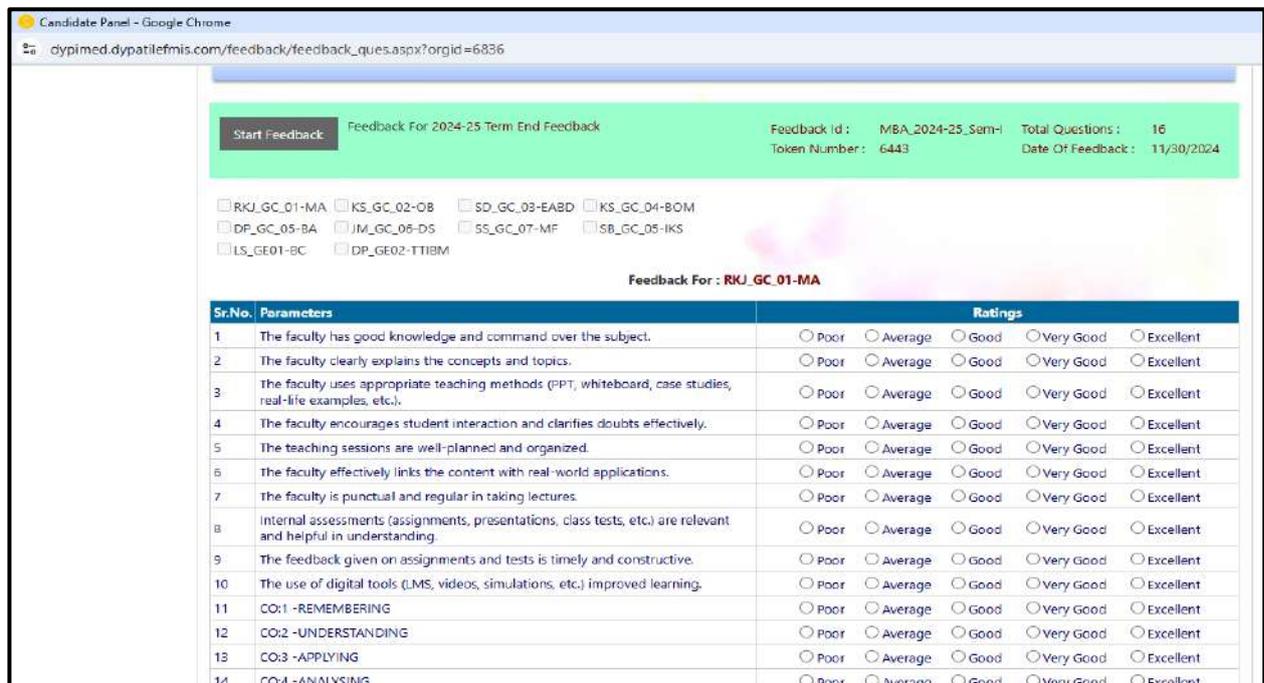**Step 5:** Compute the CO attainment for each CIA using the following formula.

CO Attainment Level

= 3, if (the avg. % of students who got >=P% for each CO) >=X

= 2, if (the avg. % of students who got >=P% for each CO) >=Y

= 1, if (the avg. % of students who got >=P% for each CO) >=Z

Step 6: Course Exit Survey will be conducted among students for Indirect CO attainment. The exit survey feedback must include questionnaire for all COs.

Direct CO Attainment score is calculated as follows:

Direct Attainment Score = 50% of CCEA + 50% of ESE

Direct Attainment Level is calculated from Direct Attainment Score as follows:

Direct attainment level = 3, if direct Attainment Score >= x%
             = 2 if y% <= direct Attainment Score < x%
             = 1 if z% <= direct Attainment Score < y%

Step 7: Indirect Attainment Score is the "% of Exit survey responses" that we have calculated in above step

Step 8: Final Attainment score is calculated as follows:

> Final Attainment Score = 80% of Direct Attainment Score+ 20% of Indirect Attainment Score

Final Attainment Level is calculated from final attainment score as follows:

Final attainment level = 3, if final Attainment Score >= x%
             = 2 if y% <= final Attainment Score < x%
             = 1 if z% <= final Attainment Score < y%

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Overall CO Attainment

CO		Direct Tools (80%)			Indirect Tools (20%)
		END TERM	END TERM –University	ASSIGNEMNT	Course Exit Survey
CO4	Weightage	10%	40%	50%	100%
	Level	3	0		3
	Attainment			2.00	
CO5	Weightage	10%	40%	50%	100%
	Level	3	3		3
	Attainment			2.00	
CO6	Weightage	10%	40%	50%	100%
	Level	3			3
	Attainment			3.00	
CO1	Weightage	10%	40%	50%	100%
	Level		3	3	3
	Attainment			3.00	
CO2	Weightage	10%	40%	50%	100%
	Level		3	3	3
	Attainment			3.00	
CO3	Weightage	10%	40%	50%	100%
	Level		3	3	3
	Attainment			3.00	

Po Attainment for Course

CO PO Matrix

CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
CO4	2	1	2	3	2	2	3
CO5	2	2	2	2	2	2	2
CO6	2	3	1	2	2	1	2
CO1	3	2	2	2	2	2	2
CO2	2	2	2	3	2	2	2
CO3	2	3	1	3	2	3	2
Relative Sum	13	13	10	15	12	12	13
PO Attainment	2.85	2.92	2.8	2.8	2.83	2.83	2.77

10. PROGRAMME LEVEL PO/PSO ATTAINMENT

The PO attainments of all the core courses are listed and the average PO attainments are calculated. Then the average PO attainments are compared with the target PO to check whether the POs are attained at programme level or not.

B	Title	PO1	PO2	PO3	PO4	PO5	PSOED	PSORE
101	Managerial Accounting	2.6	2.1	1.9	2.1	1.1	2.1	1.6
102	Organizational Behaviour	1.8	0.8	2.1	1.3	1.3	1.3	0.8
103	Economic Analysis for Business Decisions	1.8	0.8	1.6	1.3	1.3	1.3	1.3
104	Business Research Methods	2.8	2.5	2.8	2.5	1.5	2.5	3.0
105	Basics of Marketing	3.0	1.5	2.3	2.5	2.0	1.5	2.0
106	Digital Business	3.0	2.0	2.8	2.0	2.0	1.5	2.5
107	Management Fundamentals	2.0	1.5	2.3	1.5	1.5	1.5	1.0
111	Legal Aspects of Business	3.0	2.5	2.8	3.0	2.0	1.5	2.5
109	Entrepreneurship Development	2.0	1.0	1.8	1.5	1.0	2.0	1.5
113	Verbal Communication Lab I	2.0	1.5	2.8	2.5	2.0	2.0	2.0
114	Enterprise Analysis & Desk Research I	2.5	2.0	3.0	2.5	2.5	3.0	3.0
116	MS Excel	3.0	2.0	2.8	2.0	2.0	2.5	2.0
201	Marketing Management II	3.0	2.0	2.1	2.1	2.0	2.5	2.5
202	Financial Management II	3.0	2.5	2.3	2.5	2.5	2.5	2.5
203	Human Resources Management II	3.0	2.0	3.0	2.5	2.5	2.5	2.0
204	Operations & Supply Chain Management	3.0	2.0	2.3	2.5	2.0	2.5	2.5
207	Contemporary Frameworks in Management	3.0	2.0	3.0	3.0	2.5	2.5	2.5
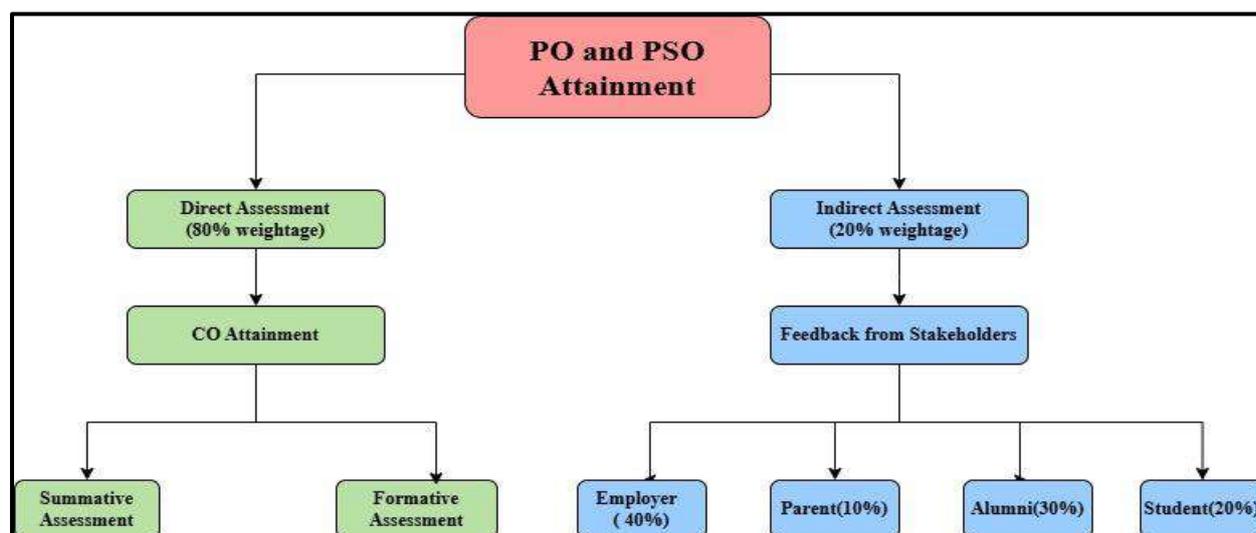
Direct Attainment

PO attainments of all the core courses are listed in the above table and its average is computed. So Direct attainment is the average PO attainment of all the courses of a programme.

Indirect Attainment

Employer feedback, Parent Feedback, Alumni Feedback and Programme exit survey by Student, will be conducted similar to course exit survey. These survey questionnaires will verify the attainment of all POs of a Programme.

Final Attainment

80% of direct attainment and 20% of indirect attainments are added to find the final PO attainment of a programme.

11. CONTINUOUS IMPROVEMENT IN PO/PSO ATTAINMENT

Based on the PO/PSO Attainment for a course, we take appropriate action to refine the course if target is not achieved. Also, we can suggest to refine the PO/PSO attainment target in future.
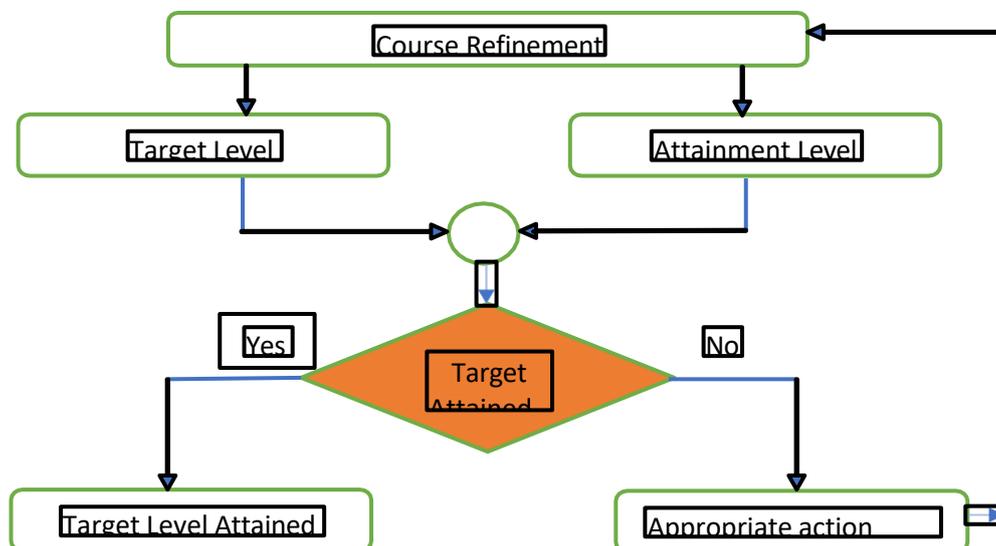
Every Faculty needs to compute two main attainment values as mentioned below. Based on that if target is not attained then appropriate actions should be taken.
- CO attainment
- PO attainment w.r.to CO

Course audit professor will analysis the PO/PSO attainment section-wise and recommends for further actions.