



## 2.6.2 ATTAINMENT OF POs AND COs ARE EVALUATED.

### PROCESS FOLLOWED FOR ASSESSING ATTAINMENT OF COURSE OUTCOMES AND PROGRAM OUTCOMES

#### STEP 1: ASSESSMENT OF ATTAINMENT OF COURSE OUTCOMES

The following protocol is followed during the assessment period for evaluation of attainment of CO:

1. **The course outcome attainment level for all the courses set by the institute is 60%.**
2. **Course Outcome attainment:** Calculation of CO attainment is based on:
  - a. **Internal assessment (30% weightage):** The question papers of the sessional exam are framed according to the weightage of the individual COs and the answer sheets also mapped with the same. Internal assessment includes assessing the attainment of course outcomes in the sessional exams and continuous internal examinations such as quiz, open book test and assignments etc. conducted as per the guidelines.
  - b. **End semester exam (70% weightage):** The answer sheets of the end semester exam are mapped for the individual COs and the actual percentage of students obtaining the set percentage of marks meticulously calculated.

Examinations (Continuous internal assessment, including sessional exams, quiz, assignments) are conducted in accordance with the directives of University of Mumbai.

3. The sum of 30% Internal Assessment score and 70% End semester assessment score is summed up to 100%.
4. **80%** of this sum is considered towards **direct assessment**.
5. **20%** weightage is based on the responses received for each course via the course end survey filled by the students. This constitutes the **indirect assessment**. The course end survey is conducted once, at the end of each semester.
6. The final sum obtained by adding the numerical values of 80% direct assessment and 20% indirect assessment is used for assessing the attainment of COs. This is done for all courses, including theory and practicals.
7. The calculations are done with the weightage as mentioned above. The attainment levels for the B. Pharm program are defined as:
  - a. Attainment level 1: 55% students scoring equal to/more than 60% marks out of the maximum marks.
  - b. Attainment level 2: 65% students scoring equal to/more than 60% marks out of the maximum marks.

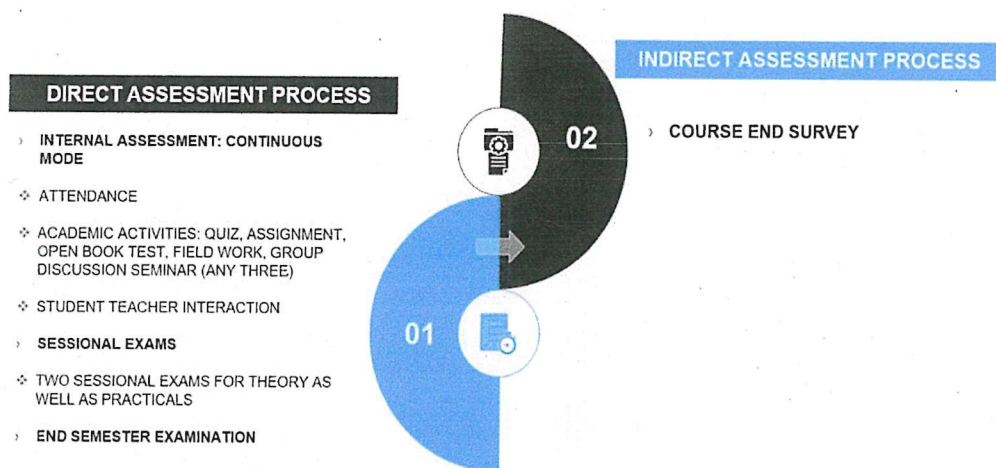


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- c. Attainment level 3: 75% students scoring equal to/more than 60% marks out of the maximum marks.
8. The attainment levels for the M. Pharm program are defined as:
- a. Attainment level 1: 50% students scoring equal to/more than 60% marks out of the maximum marks.
- b. Attainment level 2: 55% students scoring equal to/more than 60% marks out of the maximum marks.
- c. Attainment level 3: 60% students scoring equal to/more than 60% marks out of the maximum marks.

## COMPONENTS OF ASSESSMENT PROCESS TO EVALUATE THE COURSE OUTCOMES



**Fig 2.6.2.1 COMPONENTS OF ASSESSMENT PROCESS FOR EVALUATION OF COURSE OUTCOMES**



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## COMPONENTS OF DIRECT AND INDIRECT ASSESSMENT



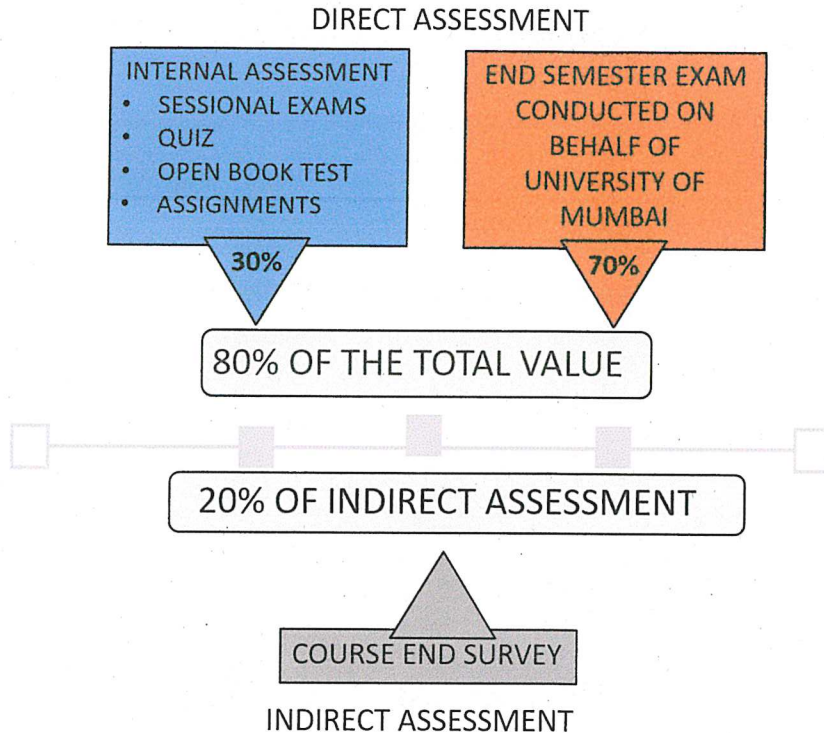
**Fig 2.6.2.2 COMPONENTS OF DIRECT AND INDIRECT ASSESSMENT**



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### EVALUATION PROCESS FOR ASSESSING COURSE OUTCOME ATTAINMENT



**Fig 2.6.2.3 PROCESS OF ASSESSMENT OF CO ATTAINMENT**

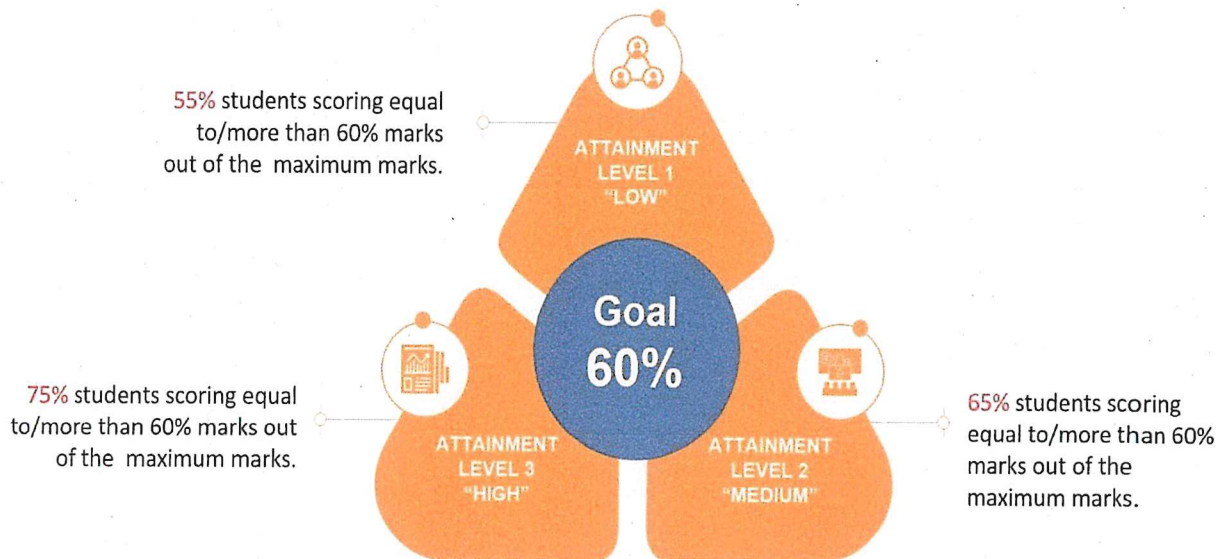
**Course end survey:** On completion of the semester, the students are individually provided with a questionnaire to rate the satisfaction of the learning of each course on a scale of 1-5 where 1= Least satisfactory and 5= most satisfactory. The course wise average values of this survey are used towards the indirect assessment component of the course outcomes.



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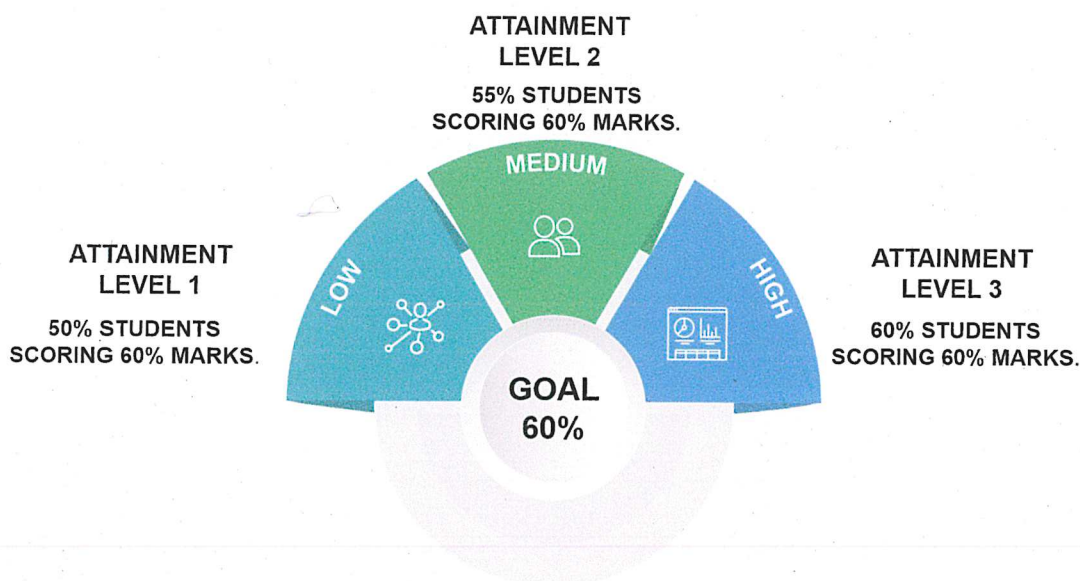


### CO: TARGET ATTAINMENT LEVELS



**Fig 2.6.2.4 TARGET ATTAINMENT LEVELS FOR COURSE OUTCOMES FOR THE B. PHARM PROGRAM**

### CO: TARGET ATTAINMENT LEVELS FOR M. PHARM



**Fig 2.6.2.5 TARGET ATTAINMENT LEVELS FOR COURSE OUTCOMES FOR THE M. PHARM PROGRAM**



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### STEP 2: CORRELATION OF COURSE OUTCOMES WITH PROGRAM OUTCOMES

The course outcomes are mapped with the relevant program outcomes. The level of their correlation (high/ medium/ low) is ascertained depending on the content and depth of information expected to be delivered from the course content. A sample matrix of a CO-PO correlation is provided here:

COURSE CODE	COURSE TITLE	COURSE OUTCOMES	CORRELATION TO PROGRAM OUTCOMES										
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BPH_C_401_T	Organic Chemistry II	CO1	H	H	H	-	-	M	L	L	-	-	H
		CO2	H	H	H	-	-	M	-	H	-	-	H
		CO3	H	H	H	-	-	M	M	H	-	-	H
		CO4	H	H	H	-	-	M	-	M	-	-	H
		CO5	H	-	M	M	-	-	M	L	L	-	H

### STEP 3: EVALUATION OF ATTAINMENT OF PROGRAM OUTCOMES

Calculation of PO attainment is based on the following components:

- Direct tools: Course Outcome attainment (80% Weightage)
- Indirect tools: (20% Weightage). The tools used for this study are the graduate exit survey.

The quantitative data of the CO attainment is used to evaluate the program outcomes (for the direct assessment component), in proportion to the relevance of the course outcome to a particular program outcome. Eg. If a CO is related to a PO at a level "High", the numerical value of the CO attainment is used in its calculation; if the correlation of a CO to a PO is "Medium", 66% of its attained value is used and if the correlation of a CO to a PO is "Low", 33% of its attained value is used for the contribution towards the PO.

For eg: A qualitative matrix for the CO-PO correlation for the subject of Human Anatomy and Physiology I – Theory (BP101T) is as follows:

COURSE CODE	COURSE TITLE	COURSE OUTCOMES	CORRELATION TO PROGRAM OUTCOMES										
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP101T	Human Anatomy and Physiology I – Theory	CO1	H	-	M	H	-	-	M	H	H	-	H
		CO2	H	-	M	L	-	-	-	L	L	-	H
		CO3	H	-	L	M	-	-	M	L	L	-	H
		CO4	H	-	M	M	-	-	M	L	L	-	H
		CO5	H	-	M	M	-	-	M	L	L	-	H



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This quantitatively correlates as:

COURSE CODE	COURSE TITLE	COURSE OUTCOMES	CORRELATION TO PROGRAM OUTCOMES										
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
BP101T	Human Anatomy and Physiology I – Theory	CO1	H	-	M	H	-	-	M	H	H	-	H
		CO2	H	-	M	L	-	-	-	L	L	-	H
		CO3	H	-	L	M	-	-	M	L	L	-	H
		CO4	H	-	M	M	-	-	M	L	L	-	H
		CO5	H	-	M	M	-	-	M	L	L	-	H
	VALUE		2.92	-	1.898	1.898	-	-	1.898	1.606	1.606	-	2.92

The average attainment of a program outcome is calculated by mapping together all the course outcomes of courses of the eight semesters of an academic year. This value is used to finally assess the attainment of a program outcome.

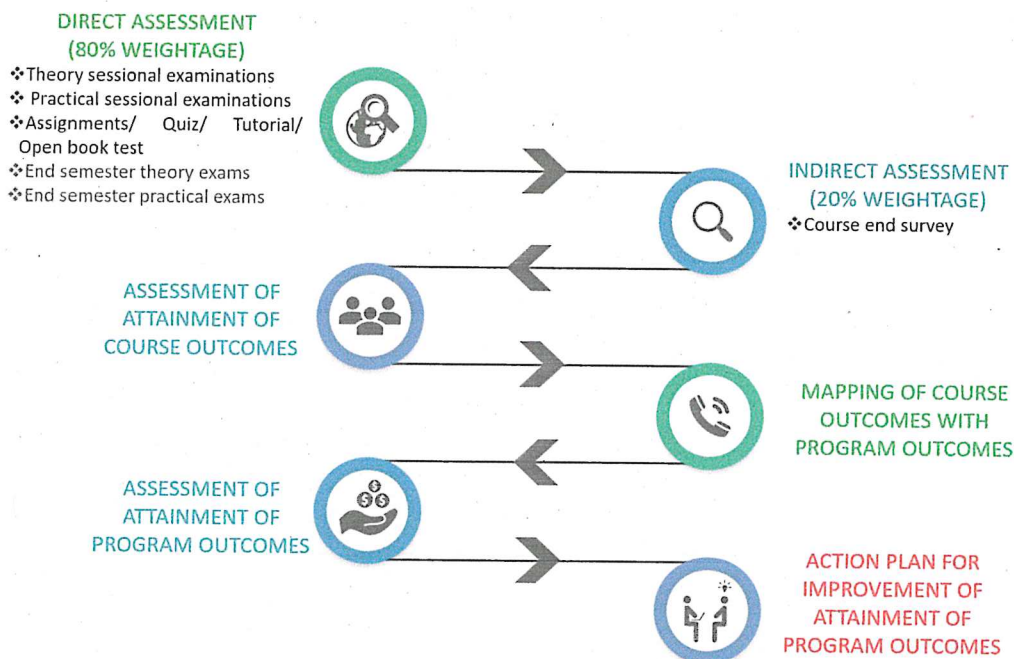
**Graduate exit survey:** On completion of the program, the students are individually provided with a questionnaire to rate the appropriate level of satisfaction of their learning experience through the courses studied in the four years of the graduate program in the institute on a scale of 1-5 where 1= Least satisfactory and 5= most satisfactory. The average values of the individual criteria of this survey are used towards the indirect assessment component of the program outcomes.



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**ASSESSMENT TOOLS AND PROCESSES USED FOR ASSESSING THE  
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**Fig 2.6.2.5 ASSESSMENT TOOLS AND PROCESS USED FOR ASSESSING THE  
 ATTAINMENT FOR PROGRAM OUTCOMES**

**STEP 4: STEPS TO IMPROVE THE ATTAINMENT OF PROGRAM OUTCOMES**

After assessing the attainment of program outcomes and comparing the same against the set goals, remedial measures are proposed to strengthen the attainment levels further so as to improve the quality of teaching –learning for the learners.



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