

Describe the Assessment Tools and Processes used to gather the Data upon which the Evaluation of Course Outcome is based (10)

Describe different assessment tools (semester end examinations, mid-semester tests, laboratory examinations, student portfolios etc.) to measure the student learning and hence attainment of course outcomes. (*Student portfolio is a collection of artifacts that demonstrate skills, personal characteristics and accomplishments created by the student during study period.*)

The process adopted to map the assessment questions, parameters of assessment rubrics etc. to the course outcomes to be explained with examples. The process of data collection from different assessment tools and the analysis of collected data to arrive at CO attainment levels need to be explained with examples

1. Tools used in measuring CO

Table 3.2.a: Tools used in measuring CO

Assessment Tool Type	Assessment Tool Title	Tool Description
Direct Assessment	Assignment and Quiz	Attainment of Course Outcomes (COs) is measured through questions prepared by faculty to critically test the strength of students. This tool is useful to test the responsiveness of the student in identifying, formulating and solving problems given by the faculty. It also helps to guide written presentation skills and improve the thinking capability of the students.
	Internal Assessment Test(IAT)	This performance assessment tool is used to evaluate attainment of COs through direct questions related to the specific topics covered during a designated period. Three internal test are conducted for all the courses which are delivered through lectures and/or tutorials.
	Laboratory Examination	The performance in laboratory is evaluated through appropriate rubrics. The students are tested for their confidence in terms of design of a system and experimentation. Ability of the students to analyze and interpret the results of experiments is continuously evaluated by the faculty during lab classes. The

Tools	ons	strength of the students in using their skills and tools in the laboratory is also evaluated in external laboratory examinations.
	End Term Examination	This tool examines at all cognitive levels the ability & understanding of the students with respect to the concepts taught and their applicability in solving complex engineering problems. The ability of the students to understand and apply knowledge of mathematics, science and engineering concepts in solving engineering problems is keenly evaluated.
	Industrial Internship	The industrial internship offered at the end of the sixth semester is used to measure the PO. Appropriate rubrics are used for assessing the attainment of related POs.
Indirect Assessment Tools	Course End Survey	Towards the end of the course, a course-end survey on a 5-point scale is conducted by the faculty member offering the course to obtain student feedback about attainment of COs. Students are required to provide their views on the methods adopted by faculty member for delivering the course content and the assessment tools used for evaluating performance.

Table 3.2.b: Calculation of CO attainment

CO Attainment	Weightage	Assessment Tools	Overall Weightage	
Direct CO attainment	80 %	Internal Assessment		100%
		Theory:[I,II& III],Assignments, Quiz	40 %	
		Practice/Project: continuous assessment	50 %	
		End Term Examination [ETE]		
		Theory:	60%	
		Practice/Project:	50%	
Indirect CO Attainment	20 %	Course End Survey		
Overall CO Attainment	[Direct Attainment*0.8 +Indirect Attainment*0.2]			

The individual COs of the course is mapped with correlation level and are being evaluated by prescribed assessment tools. The direct attainment is calculated by assigning separate weightage to the continuous assessment tests, end term examination, assignments and quizzes. The attainment of COs is compared with the threshold level. The COs is said to be attained if its attainment value is greater than the target attainment level. In a similar way, attainment level for the all COs is being calculated.

A. Theory Course Evaluation

Assignments, tutorials, continuous assessment test, and end term examination are conducted for evaluating the performance of students. The distribution of marks for theory courses is given in the Table 3.2c.

Table 3.2c.: Theory Course Evaluation

Internal Examination	<i>Component</i>	<i>% of Marks</i>	<i>Method of Assessment</i>
	Internal Assessment Tests(I,II&III)	30	Written examination
	Assignments / Quizzes	10	Continuous assessment
External Examination	End Term Examination	60	Written examination
Total		<i>100</i>	

B. Practice Course Evaluation: Observation, individual report, laboratory examination and viva are conducted for evaluating the performance of students. The distribution of marks for laboratory courses is given in the Table 3.2d.

Table 3.2 d.: Laboratory Course Evaluation

Internal Examination	Component	% of Marks	Method of Assessment
	Internal Practice	50 (40+10)	Lab work + Learning Record
External Examination	External Practice	50	Lab work
Total		100	

C. (Theory + practice) Course Evaluation: Assignments, tutorials, continuous assessment test, and end term examination are conducted for evaluating the performance of students for the distribution of marks for theory part and Observation, individual report, laboratory examination and viva are conducted for evaluating the performance of students for practice part. The distribution of marks is given in the Table 3.2e.

Table 3.2e: Theory + practice Course Evaluation

Internal Examination	<i>Component</i>	<i>% of Marks</i>	<i>Method of Assessment</i>
	Internal Theory	20	Written examination
	Internal Practice	30(20+10)	Lab work + Learning Record
External Examination	External Theory	30	Written examination
	External Practice	20	Lab work
Total		<i>100</i>	

D. (Theory + practice + project) Course Evaluation:

Assignments, tutorials, continuous assessment test, and end term examination are conducted for theory part and Observation, individual report, laboratory examination and viva are conducted for practice part and continues evaluation as well as final evaluation conducted for evaluating the performance of students for project part. The distribution of marks is given in the Table 3.2f.

Table 3.2f: Theory + practice + Project Course Evaluation

Internal Examination	Component	% of Marks	Method of Assessment
	Internal Theory	40 (30+5+5)	Written examination
	Internal Practice	50 (40+10)	Lab work + Learning Record
	Internal Project	50	Project Work
External Examination	External Theory	60	Written examination
	External Practice	50	Lab work
	External Project	50	Project Work + Report
Total		<i>300 Scaled to 100</i>	

E. (Practice + project) Course Evaluation: Observation, individual report, laboratory examination and viva are conducted for practice part and continues evaluation as well as final evaluation conducted for evaluating the performance of students for project part. The distribution of marks is given in the Table 3.2g.

Table 3.2g: Theory + practice + Project Course Evaluation

Internal Examination	Component	% of Marks	Method of Assessment
	Internal Practice	50 (40+10)	Lab work + Learning Record
	Internal Project	50	Project Work
External Examination	External Practice	50	Lab work
	External Project	50	Project Work + Report
Total		<i>200 Scaled to 100</i>	

F. Internship Evaluation: Internship Evaluation: The distribution of marks for Internship Evaluation is given in the below mentioned Table 3.2h:

Table 3.2h: Internship Evaluation

Assessment Components	COs	Rubrics	Marks Allotted	Mapped POs	Mapped PSOs
Identification & Complexity of the Problem	CO1, CO2	IR-1	25	PO2, PO6, PO12	PSO1
Feedback by trainer on the analysis, proposed solution, Implementation and results.	CO2, CO3, CO4	IR-2	55	PO3, PO4, PO5, PO7, PO8, PO9, PO12, PO11	PSO1, PSO2
Presentation and Viva	CO5	IR-3	10	PO9, PO10	PSO1
Report	CO5	IR-4	10	PO9, PO10	PSO1

2. Internal Assessment

Attainment Level 1: Less than 50% students scoring more than 50% marks.

Attainment Level 2: 50% to less than 60% students scoring more than 50% marks.

Attainment Level 3: Greater than or equal to 60% students scoring more than 50% marks.

3. End Term Examination Assessment

Attainment Level 1: Less than 50% students scoring more than 50% marks.

Attainment Level 2: 50% to less than 60% students scoring more than 50% marks.

Attainment Level 3: Greater than or equal to 60% students scoring more than 50% marks.

1.1.1.1. Target Attainment Calculation

Direct Attainment (DA) = External Assessment * 0.8 + Internal Assessment * 0.2
 Indirect Attainment (IA) = Course Exit Survey

Total Attainment = DA * 0.8 + IA * 0.2
 Target Attainment Level = 2.4