

Attainment of Cos, Pos and PSO

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.

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 post graduation.

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 post graduation. PSOs are also a function of the various course combinations offered by the Institute.

Following are the different methods for Assessment, Evaluation and Measurement of POs/PSOs

- Direct Assessment methods
- Indirect Assessment methods

Direct Assessment methods :

- **Continuous Assessment:** COs are assessed through Sessional & Assignment Examinations, Home Assignments and Lab records. The COs are mapped against each question and CO analysis is carried out by faculty for each course and documented in Faculty Course Assessment Report (FCAR). The contribution of COs are assessed in high, moderate and low levels, towards the attainment of POs/PSOs.
- **Semester-end Theory Examinations:** The questions in semester-end examinations are tested pertaining to all COs, in varying Blooms Taxonomy Levels.
- **Laboratory Records:** Both continuous and semester-end examinations are conducted to test the COs attainment.

Indirect Assessment Methods:

- **Programme – Exit survey:** This survey taken from the final year students at the completion of their B.Tech programme, stands as the comprehensive feedback for the PO/PSO assessment
- **Alumni Survey :** This survey is conducted annually through Google link or mail with the Alumni to obtain the inputs and suggestions on PO attainment in the real time societal environment
- **Employer Survey:** This survey is taken from the employer to measure the PO attainments.

In addition, the institution takes the Placement record and higher education details of the students as supporting evidences for the assessment of POs.

Attainments of POs and COs:

Table 1 : Assessment of Course Outcomes

Course Outcomes	CO1		CO2		CO3		CO4	
	Q	Av%	Q	Av%	Q	Av%	Q	Av%
Measure	Q1a	100	Q3b	98	Q4b	100	Q7a	88
	Q1b	98	Q4a	93	Q5a	97	Q7b	76
	Q2a	88	Q6b	88	Q5b	89	Q8a	93
	Q2b	100			Q6a	80	Q8b	78
Total Average		96.5		93		91.5		84

Mechanism for the attainment of CO:

The student performance in continuous assessment exams is verified for each question.

$$CO \text{ Assessment (Direct)} = \frac{\text{Number of students reached in answering the question}}{\text{Number of students attempted the question}}$$

$$CO \text{ Assessment (Indirect)} = \frac{\text{Sum of Students response reached the expected level in answering the survey}}{\text{Number of students responded}}$$

In view of the threshold assumed for each course, individual course assessment is thus calculated.

Table 2 : Mapping of Course outcomes with Program Outcomes

Course Outcomes	CO1	CO2	CO3	CO4
Program Outcomes	PO1-3(H) PO3-3(H) PO8-1(L) PSO1-3(H)	PO3-3(H) PO8-1(L) PO10-1(L)	PO1-3(H) PO5-3(H) PO11-1(L) PSO1-3(H)	PO1-3(H) PO5-3(H) PO8-1(L) PSO1-3(H)

MEASURING CO ATTAINMENT THROUGH INTERNAL ASSESSMENT

DEPARTMENT OF COMPUTER SCIENCE

Q	SESSIONAL TEST-I																				To t Mk s
Q.No	Q1. ATTEMPT ALL MCQ's																				
CO	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO2	CO2	CO2	CO2	CO2	CO2	CO2	CO2	CO2	20
CO LEVEL																					
Marks	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11
6	1	0	1	0	1	1	0	0	1	1	0	0	1	1	0	1	0	1	1	0	
13	1	1	1	0	0	1	0	0	1	1	0	0	1	1	0	1	0	1	1	0	11
15	0	1	1	0	0	0	0	1	0	1	0	1	1	1	0	1	0	1	1	0	10
19	1	1	1	0	0	1	0	0	1	1	0	0	1	1	0	1	0	1	1	0	11
31	1	1	1	0	0	0	0	0	0	1	0	1	1	1	0	1	0	0	0	0	8
34	1	1	1	1	0	1	0	0	1	1	0	0	0	1	1	1	0	1	1	0	12
50	0	1	0	0	0	1	0	0	1	1	0	0	0	0	1	1	0	1	0	1	8
52	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	0
54	0	1	0	1	1	0	0	0	1	0	0	1	1	1	1	1	0	1	1	0	11
59	1	1	1	0	0	1	0	0	1	1	0	0	1	1	1	1	0	1	1	0	12
70	1	1	1	0	0	1	1	0	1	1	0	0	0	1	0	1	0	1	1	0	11
71	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	0
73	1	1	1	0	0	1	0	0	1	1	0	0	1	0	1	1	0	1	1	0	11
79	1	1	1	1	0	1	0	0	1	1	0	0	0	1	1	1	0	1	1	0	12
80	0	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	0	1	0	0	13
81	1	1	1	0	1	1	0	0	1	1	0	0	1	1	0	1	0	1	1	0	12
84	1	1	1	0	1	1	0	0	1	1	0	0	1	1	0	1	0	1	1	0	12
85	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	7
92	1	1	0	0	0	1	1	0	1	1	0	0	0	0	1	1	0	1	0	1	10
93	1	1	1	0	0	1	0	0	1	1	0	0	0	1	0	1	0	1	1	0	10
95	1	1	0	0	0	0	0	1	1	1	0	0	0	1	0	1	1	0	1	0	9
96	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	0	1	0	0	14
98	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	0	0	7
103	1	1	1	0	1	1	0	0	1	1	0	0	1	1	0	1	1	1	1	0	13
104	1	1	1	0	1	1	0	0	1	1	0	0	1	1	0	1	0	1	1	0	12
107	1	1	1	0	0	1	0	0	1	1	0	0	1	1	1	1	1	1	1	0	13
114	1	1	1	0	0	1	0	0	1	1	0	0	1	1	1	1	0	1	1	0	12
115	1	1	1	0	0	0	0	1	0	1	0	1	1	1	0	1	0	1	1	0	11
116	1	1	1	0	0	0	0	1	0	1	0	0	0	1	0	1	0	1	1	0	9
118	1	1	1	0	1	1	0	0	1	1	0	0	1	1	0	1	0	1	1	0	12
120	1	1	1	0	1	1	0	0	1	1	0	0	1	1	0	1	1	1	1	0	13
127	0	1	0	0	1	1	0	1	0	1	0	0	1	0	1	1	1	1	1	1	12
129	1	1	1	0	1	1	0	0	1	1	0	0	1	1	1	1	1	1	1	0	14
132	1	1	0	0	0	1	1	0	1	1	0	1	0	0	1	1	0	1	0	0	10
135	1	1	1	0	0	1	0	0	1	1	0	0	1	1	1	1	1	1	1	0	13
138	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	0
140	1	1	0	0	0	1	0	0	1	1	0	0	0	1	1	1	0	1	0	0	9
145	0	1	0	1	1	0	0	0	1	1	0	1	1	1	1	1	0	1	1	0	12
152	1	1	0	0	0	1	1	0	1	1	0	1	0	0	0	1	0	1	0	1	10
155	1	1	1	0	1	1	0	0	1	1	0	0	1	1	0	1	0	1	1	0	12
161	0	1	0	0	0	1	1	0	1	1	0	1	0	0	1	1	0	1	0	1	10
166	1	1	1	0	0	1	0	0	1	1	0	0	1	1	1	1	1	1	1	0	13
999	1	1	1	0	1	1	0	0	1	1	0	0	1	1	1	1	1	1	1	0	14
Count	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	43
QUESTION	Q1. ATTEMPT ALL MCQ's																				
CO	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO2	CO2	CO2	CO2	CO2	CO2	CO2	CO2	CO2	
CO LEVEL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MARKS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Q. Attempted Count	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	
Count > 0 marks	33	39	30	6	15	29	5	7	33	37	2	12	28	33	18	40	9	36	29	5	
% attainment	82.5	97.5	75.0	15.00	37.50	72.50	12.50	17.50	82.50	92.50	5.00	30.00	70.00	82.50	45.00	100.00	22.50	90.00	72.50	12.50	

	Level	Attainment Level
Attainment of DSE-24E-CO1 in Python-I	58.50	3 Level-1 0-to20
Attainment of DSE-24E-CO2 in Python-I	53.00	3 Level-2 21 to 40
		Level-3 41 to 60
		Level-4 61 to 80
		Level-5 81 to 100

Using CO-PO mapping, the mapped POs are considered for assessment by :

$$\text{PO Direct Assessment} = \frac{\sum(\text{level of mapping of PO with CO} \times \text{Average of CO attainment})}{\sum(\text{level of Mapping of PO with CO})}$$

For example : Assessment of PO1: An ability to apply knowledge of Mathematics, Science and Engineering.

Table3: Course Outcome Mapping with Program Outcome PO1

PO1		Level of mapping
CO1	96.5	3(H)
CO3	91.5	3(H)
CO4	84	3(H)

$$\begin{aligned} \text{PO1 Direct Assessment} &= \frac{\sum(\text{level of mapping of PO with CO} \times \text{Average of CO attainment})}{\sum(\text{level of Mapping of PO with CO})} \\ &= \frac{(3 \times 96.5 + 3 \times 91.5 + 3 \times 84)}{(3+3+3)} = 90.67 \end{aligned}$$

Set the target level of attainment for PO1 say 70%, then it is concluded that PO1 has attained.

Accordingly, PSO attainments are calculated directly and indirectly.

$$\text{PSO1 Direct Assessment} = \frac{\sum(\text{level of mapping of PSO with CO} \times \text{Average of CO attainment})}{\sum(\text{level of Mapping of PSO with CO})}$$