



2. Course Outcomes (for all courses):

The course outcomes are the statement that describes the knowledge & abilities developed in the student by the end of course (subject) teaching. The focus is on development of abilities rather than mere content. There can be 5 to 7 course outcomes of any course. These are to be written in the specific terms and not in general. The list of Course Outcomes is the part of **Annexure-C** attached herewith.

3. Set Target levels for Attainment of Course Outcomes:

The course outcome attainment is assessed in order to track the graduates' performance w.r.t target level of performance. The CO-PO attainment is the tool used for continuous improvement in the graduates' abilities through appropriate learning & teaching strategies. In order to assess students' performance with respect to abilities (at the end of course teaching/by the end of program) the course outcome attainment are measured/calculated. In order to calculate the program outcome attainment, the course outcome attainment is calculated. Prior to that, the course-program outcome mapping is done.

4. Set Target level for Attainment of Program Outcomes:

The program outcome attainment is assessed in order to track the graduates' performance w.r.t target level of performance. The CO-PO attainment is the tool used for continuous improvement in the graduates' abilities through appropriate learning & teaching strategies. In order to assess student's performance with respect to abilities (at the end of course teaching/by the end of program) the course outcome attainment and program outcome attainment is measured/calculated. The program outcome attainment is governed by curricular, co-curricular and extra-curricular activities including the stakeholders' participation. The direct method and indirect method is adopted to calculate the PO attainment. **The direct method implies the attainment by course outcomes contributing to respective program outcomes. And indirect method is the satisfaction/feed-back survey of stakeholders.** In order to calculate the program outcome attainment, the course outcome attainment is calculated. Prior to that, the course-program outcome mapping is done. The set target level is the set benchmark to ensure continuous improvements in the learners/ graduates' performance.

5. Course Attainment Levels:

- a. CO attainment is defined/set at three levels;
- b. The CO attainment is based on end term examination assessment and internal assessment;
- c. The Co attainment is defined at three levels in ascending order



i. e.g. For end term and internal examination;

Sr. No	Level	CO Attainments
	Level-1:	30% students scored more than class average
	Level-2:	40% students score more than class average
	Level-3	50% students score more than class average

. The target level is set (e.g. Level-2). It indicates that, **the current target is level-2; 40% of students score more than class average.** The CO attainment is measured and the results are obtained. Based on the results of attainment, the corrective measures/remedial action are taken.

e. CO Attainment= 80% (Attainment level in end term examination) + 20% (Attainment level in internal examination)

6. Program attainment Level:

a. PO attainment is defined at five levels in ascending order;

b. **The PO attainment is based on the average attainment level of corresponding courses (Direct Method) and feed-back survey (Indirect method);**

c. The PO attainment levels are defined/set as stated below;

Sr. No	Level	PO Attainments
	Level-1:	Poor: Greater than 0.5 and less than 1.0 (0.5>1
	Level-2:	Average: 1.0 to 1.5
	Level-3	Good: 3: 1.5 to 2.0
	Level-4	Very Good: 2.0 to 2.5
	Level-5	Excellent: 2.5 to 3.0

d. The PO attainment target level is set/defined (say, Level-3). It implies that, the department is aiming at minimum level-3 (good) in the performance of abilities by the graduates. Based upon the results of attainment, the remedial measures are taken;

e. PO Attainment= 80% (Average attainment level by direct method) + 20% (Average attainment level by indirect method).

7. The Results of CO Attainment: The Results of CO Attainment is provided in Annexure-B

FOR EXAMPLE COURSE CODE/TITLE: **Paper IX: DSE-E9 Mathematical Analysis**

e.g. For end-term and internal examination;



- i. Level-1: 30% students scored more than class average
- ii. Level-2: 40% students score more than class average;
- iii. Level-3: 50% students score more than class average

Paper IX: Real Analysis		
Average Marks in External examination:	19.222	
% Students score more than 19.2222 is =6	67%	Level: 3
Average Marks in Internal examination	9.3333	
% Students score more than 9.3333 is =4	44%	Level: 2
A(CO) Paper No. Paper IX: Real Analysis	=	80% (3) +20% (2)
	=	2.4+0.4
	=	2.8

Paper X : Modern Algebra		
Average Marks in External examination:	25.667	
% Students score more than 25.6666 is= 5	56%	Level: 3
Average Marks in Internal examination	9.3333	
% Students score more than 9.3333 is = 4	44%	Level: 2
A(CO) Paper No. Paper X : Modern Algebra	=	80% (3) +20 %(2)
	=	2.4+0.4
	=	2.8

Paper XI : Partial Diferential Equation		
Average Marks in External examination:	22	
% Students score more than 22 is =4	44%	Level: 2
Average Marks in Internal examination	9.5555	
% Students score more than 9.5555 is =6	67%	Level: 3
A(CO) Paper No. Paper XI : Partial Diferential Equation	=	80% (3) +20 %(2)
	=	2.4+0.4
	=	2.8

Paper XII : Numerical Method -I		
Average Marks in External examination:	19	
% Students score more than 19 is= 3	33%	Level: 1
Average Marks in Internal examination	9.4444	
% Students score more than 9.4444 is = 6	67%	Level: 3
A(CO) Paper No. Paper XII : Numerical Method -I		



	=	80% (1) +20% (3)
	=	0.8+0.6
	=	1.4

Paper XIII: Metric Spaces		
Average Marks in External examination:	23.778	
% Students score more than 23.7777 is =4	44%	Level: 2
Average Marks in Internal examination	9.3333	
% Students score more than 9.3333 is =4	44%	Level: 2
A(CO) Paper XIII: Metric Spaces		
	=	80% (2) +20 % (2)
	=	1.6+0.4
	=	2

Paper XIV: Linear Algebra		
Average Marks in External examination:	24.778	
% Students score more than 24.7777 is 5	56%	Level: 3
Average Marks in Internal examination	9.4444	
% Students score more than 9 is 5	56%	Level: 3
A(CO) Paper XIV: Linear Algebra		
	=	80% (3) +20 % (3)
	=	2.4+0.6
	=	3

Paper XV: Complex Analysis		
Average Marks in External examination:	25.444	
% Students score more than 25.4444 is =4	44%	Level: 2
Average Marks in Internal examination	9.5555	
% Students score more than 9.5555 is =5	56%	Level: 3
A(CO) Paper No. Paper XV: Complex Analysis		
	=	80% (2) +20% (3)
	=	1.6+0.6
	=	2.2

Paper XVI: Numerical Method -II		
Average Marks in External examination:	24.556	
% Students score more than 24.5555 is 5	56%	Level: 3



Average Marks in Internal examination	9.5555	
% Students score more than 9.5555 is 5	56%	Level: 3
A(CO) Paper No. Paper XVI: Numerical Method -II		
	=	80% (3) +20% (3)
	=	2.4+0.6
	=	3

Mathematics Practical		
Average Marks in External examination:	186.77	
% Students score more than 186.77 is =5	56%	Level: 3
Average Marks in Internal examination	NA	
% Students score more than is	NA	
A(CO) Paper No. Paper IX: Real Analysis		
	=	100% (3)
	=	3
	=	3

Table No. 1.0: CO Attainment Level

Course Title	Course Attainment Value	Attainment Level	Target Attainment Level	Fully Attained/ Not Attained	Remedial Measures
Real Analysis	2.8	3	2	Fully Attained	
Modern Algebra	2.8	3	2	Fully Attained	
Partial Diferential Equation	2.8	3	2	Fully Attained	
Numerical Method -I	1.4	1	2	Not Attained	Remedial coaching
Metric Spaces	2	2	2	Fully Attained	
Linear Algebra	3	3	2	Fully Attained	
Complex Analysis	2.2	2	2	Fully Attained	



Numerical Method -II	3	3	2	Fully Attained	
Mathematics Practical	3	3	2	Fully Attained	

8.The Results of PO Attainment:

The Results of PO attainment are provided in Annexure-B

FOR EXAMPLE: PO NO.: a (Note: Refer to point No. 11 above which describes the attainment level and set target attainment level).

PO Attainment= 80% (Average attainment level by direct method) + 20% (Average attainment level by indirect method).

(PSO-A) = $80\% (3+3+3+3+3+3+3+3+3)/09 + 20\% (3) = 80\% (3) + 20\% (2.72) = 2.86$
i.e. Level-5. The Target Level is Level-3.

Hence, PSO is attained

(PSO-B) = $80\% (3+3+3+3+3+3+3+3+3)/09 + 20\% (3) = 80\% (3) + 20\% (2.72) = 2.86$
i.e. Level-5. The Target Level is Level-3.

(PSO-C) = $80\% (3+3+3+3+3+3+3+3+3)/09 + 20\% (3) = 80\% (3) + 20\% (2.72) = 2.86$
i.e. Level-5. The Target Level is Level-3.

(PSO-D) = $80\% (3+3+3+3+3+3+3+3+3)/09 + 20\% (3) = 80\% (3) + 20\% (2.72) = 2.86$
i.e. Level-5. The Target Level is Level-3.


(PSO-E) = $80\% (3+3+3+3+3+3+3+3+3)/09 + 20\% (3) = 80\% (3) + 20\% (2.72) = 2.86$
i.e. Level-5. The Target Level is Level-3.

(PSO-F) = $80\% (3+3+3+3+3+3+3+3+3)/09 + 20\% (3) = 80\% (3) + 20\% (2.72) = 2.86$
i.e. Level-5. The Target Level is Level-3.

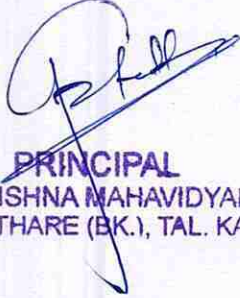
(PSO-G) = $80\% (3+3+3+3+3+3+3+3+3)/09 + 20\% (3) = 80\% (3) + 20\% (2.72) = 2.86$
i.e. Level-5. The Target Level is Level-3.

(PSO-H) = $80\% (3+3+3+3+3+3+3+3+3)/09 + 20\% (3) = 80\% (3) + 20\% (2.72) = 2.86$
i.e. Level-5. The Target Level is Level-3.

Numerical Method -I	2.86	2.86	2.86	2.86	2.86	2.86		2.86
Metric Spaces	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86
Linear Algebra	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86
Complex Analysis	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86
Numerical Method -II	2.86	2.86	2.86	2.86	2.86	2.86		2.86
Mathematics Practical	2.86	2.86	2.86	2.86	2.86	2.86		2.86
Average	2.86	2.86	2.86	2.86	2.86	2.86	2.86	2.86


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