





## 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
	<b>Level-2:</b>	<b>40% students score more than class average</b>
	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
	<b>Level-3</b>	<b>Good: 3: 1.5 to 2.0</b>
	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-4). It implies that, the department is aiming at minimum level-4 (very 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**



<b>Paper IX: DSE-E9 Mathematical Analysis</b>		
Average Marks in External examination:	19	
% Students score more than 19 is =1	50%	Level: 3
Average Marks in Internal examination	5.5	
% Students score more than 5.5 is =1	50%	Level: 3
<b>A(CO) Paper No.Paper IX: DSE-E9 Mathematical Analysis</b>		
	80% (3) +20%	
=	(3)	
=	2.4+0.6	
=	3	

<b>Paper X: DSE-E10 Abstract Algebra</b>		
Average Marks in External examination:	32	
% Students score more than 32 is =1	100%	Level: 3
Average Marks in Internal examination	6	
% Students score more than 6 is = 2	100%	Level: 3
<b>A(CO) Paper No.Paper IX: DSE-E10 Abstract Algebra</b>		
	80% (3) +20%	
=	(3)	
=	2.4+0.6	
=	3	

<b>Paper XI: DSE-E11 Optimization Techniques</b>		
Average Marks in External examination:	18	
% Students score more than 18 is =2	100%	Level: 3
Average Marks in Internal examination	7	
% Students score more than 7 is =2	100%	Level: 3
<b>A(CO) Paper No.Paper IX: DSE-E11 Optimization Techniques</b>		
	80% (3) +20%	
=	(3)	
=	2.4+0.6	
=	3	

<b>Paper XII : DSE-E12 Integral Transforms</b>		
Average Marks in External examination:	10	
% Students score more than 10 is= 1	50%	Level: 3
Average Marks in Internal examination	8	
% Students score more than 8 is = 1	50%	Level: 3
<b>A(CO) Paper No.Paper IX: DSE-E12 Integral Transforms</b>		
	80% (3) +20%	
=	(3)	





	=	2.4+0.6
	=	3

Hence, the attainment level is Level-3 and the set target level is Level-2 and therefore the CO is fully attained.

**Table No. 1.0: CO Attainment Level**

Course Title	Course Attainment Value	Attainment Level	Target Attainment Level	Fully Attained/ Not Attained	Remedial Measures
DSE-E9 Mathematical Analysis	3	3	2	Fully Attained	
DSE-E10 Abstract Algebra	3	3	2	Fully Attained	
DSE-E11 Optimization Techniques	3	3	2	Fully Attained	
DSE-E12 Integral transforms	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) =  $80\% (3+3+3+3)/04 + 20\% (3+3+3+3)/4 = 80\% (3) + 20\% (3) = 3$  i.e. Level-5. The Target Level is Level-2.

Hence, PSO is attained

(PSO-B) =  $80\% (3+3+3+3)/04 + 20\% (3+3+3+3)/4 = 80\% (3) + 20\% (3) = 3$  i.e. Level-5. The Target Level is Level-2.

(PSO-C) =  $80\% (3+3+3+3)/04 + 20\% (3+3+3+3)/4 = 80\% (3) + 20\% (3) = 3$  i.e. Level-5. The Target Level is Level-2.



(PSO-D) =  $80\% (3+3+3+3)/04 + 20\% (3+3+3+3)/4 = 80\% (3) + 20\% (3) = 3$  i.e. Level-5. The Target Level is Level-2.

(PSO-E) =  $80\% (3+3+3+3)/04 + 20\% (3+3+3+3)/4 = 80\% (3) + 20\% (3) = 3$  i.e. Level-5. The Target Level is Level-2.

(PSO-F) =  $80\% (3+3+3+3)/04 + 20\% (3+3+3+3)/4 = 80\% (3) + 20\% (3) = 3$  i.e. Level-5. The Target Level is Level-2.

(PSO-G)  $80\% (3+3+3+3)/04 + 20\% (3+3+3+3)/4 = 80\% (3) + 20\% (3) = 3$  i.e. Level-5. The Target Level is Level-2.

(PSO-H) =  $80\% (3+3+3+3)/04 + 20\% (3+3+3+3)/4 = 80\% (3) + 20\% (3) = 3$  i.e. Level-5. The Target Level is Level-2.

Table No. 2.0 PO Attainment Level

PO/PSO Number	PO/PSOs Attainment Value	Attainment Level	Target Attainment Level	Fully Attained/ Not Attained	Remedial Measures
PSO-A	3	5	3	Fully Attained	
PSO-B	3	5	3	Fully Attained	
PSO-C	3	5	3	Fully Attained	
PSO-D	3	5	3	Fully Attained	
PSO-E	3	5	3	Fully Attained	
PSO-F	3	5	3	Fully Attained	
PSO-G	3	5	3	Fully Attained	
PSO-H	3	5	3	Fully Attained	

#### 9. Planned Actions for Course Attainment:

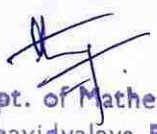
The courses for which the level attained is less than Level-2, the remedial measures will be taken in plan way that includes, tutorial, assignments, field work and remedial coaching.

#### 10. Planned Actions for Program Outcome Attainment:

**Not Applicable.**

**ANNEXURE-B RESULTS OF CO-PO ATTAINMENT**

Sr. No	Course Title	PSO-A	PSO-B	PSO-C	PSO-D	PSO-E	PSO-F	PSO-G	PSO-H
	<b>DSE-E9 Mathematical Analysis</b>	3	3	3	3	3	3	3	3
	<b>DSE-E10 Abstract Algebra</b>	3	3	3	3	3	3	3	3
	<b>DSE-E11 Optimization Techniques</b>	3	3	3	3	3	3		3
	<b>DSE-E12 Integral transforms</b>	3	3	3	3	3	3		3
	<b>Average</b>	3	3	3	3	3	3	3	3

  
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