



Serial Number: EXTC/SOP/2023/03

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### Standard Operating Procedure (SOP) for Attainment of COs-POs-PSOs

#### Step 1: Define Assessment Tools and Target Values

Assessment tools include Class Tests, Assignments, Laboratory Evaluations, University Examinations, and Projects/Seminars.

Each course has predefined target levels based on student performance benchmarks. Progressive targets are set based on prior attainment and complexity of the course.

#### Step 2: Collect Performance Data and Calculate CO attainment Level

##### CO Attainment Levels and Target

Subject Type	Assessment Tools & weightage	Target	Attainment levels	
Theory Course	Class Test 1(30M)	Average marks or marks $\geq 40\%$ of maximum Marks	3	70 % students scoring $\geq$ target value
	Class Test 2(30M)		2	60 % students scoring $\geq$ target value
	Assignment (30M)		1	50 % students scoring $\geq$ target value
	University Exam (80M)			
Laboratory Courses	Continuous Internal Evaluation(25M)	Average marks or marks $\geq 50\%$ of maximum Marks	3	70 % students scoring $\geq$ target value
	University exam(25M)		2	60 % students scoring $\geq$ target value
			1	50 % students scoring $\geq$ target value



Shri Gajanan Shikshan Sanstha's  
**SHRI SANT GAJANAN MAHARAJ COLLEGE OF ENGINEERING  
SHEGAON - 444203, DIST. BULDANA (MAHARASHTRA STATE), INDIA**

"Recognized by A.I.C.T.E., New Delhi" Affiliated to Sant Gadge Baba Amravati University, Amravati  
"Approved by the D.T.E., M.S. Mumbai"

Ph : +918669638081/82  
Fax : 091-7265-252346

Email: [principal@ssgmce.ac.in](mailto:principal@ssgmce.ac.in), [registrar@ssgmce.ac.in](mailto:registrar@ssgmce.ac.in)  
Website- [www.ssgmce.ac.in](http://www.ssgmce.ac.in)

Project	Continuous Internal Evaluation(100M)	Average marks or marks $\geq$ 60% of maximum Marks	3	70 % students scoring $\geq$ target value
	University exam(100M)		2	60 % students scoring $\geq$ target value
			1	50 % students scoring $\geq$ target value
Seminar	Internal Evaluation(100M)	Average marks or marks $\geq$ 60% of maximum Marks	3	70 % students scoring $\geq$ target value
			2	60 % students scoring $\geq$ target value
			1	50 % students scoring $\geq$ target value

### Step 3: CO Attainment Calculation from Indirect Tools

- Indirect attainment is gathered through Course Exit Surveys.
- Students rate their perception of CO attainment on a 1–5 Likert scale.
- Normalized and converted to a 3-level attainment scale.

### Step 4: Final CO Attainment Calculation

The final CO attainment is computed as:

$$\text{Final CO Attainment} = 90\% (\text{Direct}) + 10\% (\text{Indirect})$$

### Step 5: Perform Gap Analysis

If the CO attainment is below the target level, the course coordinator must:

- Suggest and implement corrective actions such as remedial classes, extra tutorials, content delivery improvements.

### Step 6: Review and Dissemination

- Attainment reports are discussed in DCC (Department Coordination Committee) meetings.
- Necessary academic process changes are recommended.



### Step 7: Establish Assessment Tools for PO/PSO Attainment

POs and PSOs are assessed using a mix of direct and indirect assessment tools:

- Direct Assessment Tools:
  - Internal Tests (Class Test 1 and 2)
  - Assignments
  - Laboratory Evaluations
  - University Theory and Practical Examinations
  - Seminars
  - Final Year Projects
- Indirect Assessment Tools:
  - Course Exit Survey
  - Program Exit Survey
  - Alumni Feedback

### Step 8: Map COs to POs/PSOs

Each CO is mapped to relevant POs and PSOs using a correlation scale as per SOP for CO-PO-PSO mapping (Serial Number: EXTC/SOP/2023/02)

### Step 9: Calculate PO/PSO Attainment from Individual Courses

For each course:

$$\text{PO/PSO Attainment Level} = (\text{CO Attainment} \times \text{Mapping Level}) / 3$$

This calculation is repeated for all POs and PSOs mapped to the course.

### Step 10: Aggregate PO/PSO Attainment Across All Courses

The total PO/PSO attainment across the program is calculated as:

$$\text{PO/PSO Attainment from All Courses} = (\text{Sum of PO/PSO Attainment from all relevant courses}) / (\text{Total No. of Courses})$$

Seminar and Project contributions are included in this aggregation.

### Step 11: Include Indirect Attainment via Surveys

To ensure holistic evaluation, indirect attainment is computed from:

- Program Exit Surveys
- Alumni Feedback

Indirect attainment provides insight into graduate perceptions of program effectiveness.



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Ph : +918669638081/82  
Fax: 091-7265-252346

Email: principal@ssgmce.ac.in, registrar@ssgmce.ac.in  
Website- www.ssgmce.ac.in

### Step 12: Calculate Total PO/PSO Attainment

The final PO/PSO attainment is computed as:

Total PO/PSO Attainment = 80% (Direct PO/PSO from all courses) + 20% (Indirect PO/PSO from surveys)

### Step 13: Set Target Values for PO/PSO Attainment

Targets are set based on historical performance, curriculum complexity, and institutional benchmarks. Typically, a PO/PSO attainment level are set progressively and revised timely.

### Step 14: Continuous Improvement Process

If the PO/PSO attainment level falls below the set target:

- Gap Analysis is performed to identify shortcomings.
- Corrective Actions may include:
  - Improved delivery methods
  - Additional training/workshops
- Action Taken Reports (ATR) are documented and reviewed

Approved By		
Dr. M. N. Tibdewal	Chairman (Head,EXTC)	
Dr. D. D. Nawgaje	Member	
Mr. A. N. Dolas	Member	
Mrs. K. S. Vyas	Member	
Dr. D. P Tulaskar	Member Secretary	

