

CO-PO-PSO attainment calculations




PRINCIPAL
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S
COLLEGE OF ENGINEERING
KENNEDY ROAD, PUNE-411 001

Strength of Materials: Course Outcomes

On completion of the course, students will be able to

CO1: Compute different type of stresses in determinate, indeterminate, homogeneous and composite structure

CO2: Draw bending and shear stress diagram

CO3: Determine the torsional stresses and stresses due to strain energy for different loading conditions

CO4: Explain the concept of principal stresses and able to compare the values of analytical and graphical method.

CO5: Plot loading diagram, Shear Force Diagram (SFD) and Bending Moment Diagram (BMD).

CO6: Analyze axially and eccentrically loaded column.



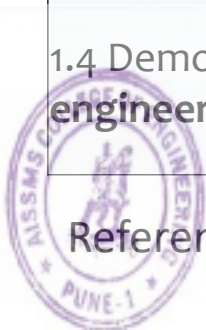
PRINCIPAL
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S
COLLEGE OF ENGINEERING
KENNEDY ROAD, PUNE-411 001

Course Articulation Matrix: The Process

PO 1: Engineering knowledge: Apply the knowledge of **mathematics, science, engineering fundamentals, and an engineering specialization** for the solution of complex engineering problems.

Competency	Performance Indicators	CO	Level	Assessment tool used
1.1 Demonstrate competence in mathematical modelling	1.1.1 Apply mathematical techniques such as calculus, linear algebra, and statistics to solve problems	CO1,CO2, CO3,CO5, CO6	1	Test and Assignment
	1.1.2 Apply advanced mathematical techniques to model and solve mechanical engineering problems			
1.2 Demonstrate competence in basic sciences	1.2.1 Apply laws of natural science to an engineering problem. (<i>Physics/Chemistry</i>)	CO3,CO4, CO5, CO6	3	Test and Assignment
1.3 Demonstrate competence in engineering fundamentals	1.3.1 Apply fundamental engineering concepts to solve engineering problems	CO1,CO2, CO3, CO6	3	Test and Assignment
1.4 Demonstrate competence in specialized engineering knowledge to the program	1.4.1 Apply Civil engineering concepts to solve engineering problems.	CO1,CO2, CO3,CO4,	2	Test and Practical

Reference: Examination Reform Policy by AICTE, New Delhi



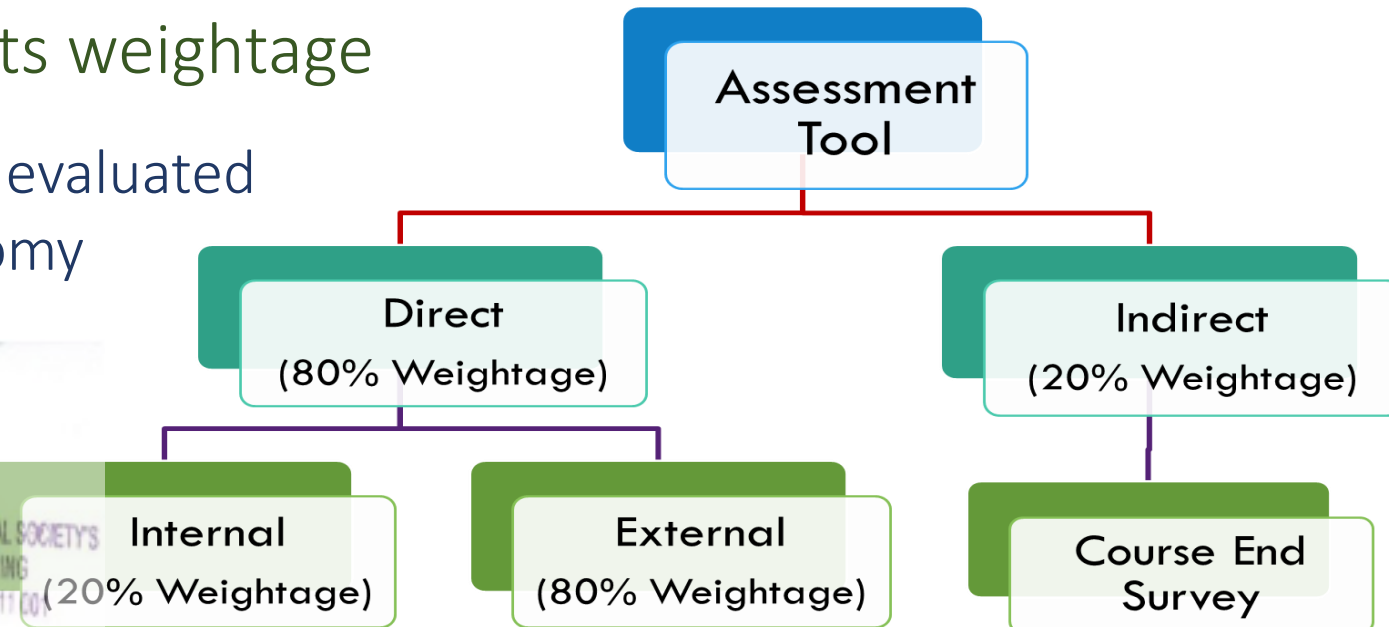
PRINCIPAL
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S
COLLEGE OF ENGINEERING
KENNEDY ROAD, PUNE-411 001


Course Articulation Matrix

Course Outcomes	Program Outcomes												Program Specific Outcomes			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2		Class:
CO.1	3	2	1					1	1				1		1	
CO.2	3	2							1				1			
CO.3	3	2	1					1	1				1			
CO.4	3	2	1					1	1				1			
CO.5	3	2							1				1			
CO.6	3	2	1						1				1			
Average Values	3.00	2.00	1.00					1.00	1.00				1.00		1.00	

Assessment Tools and its weightage

- Aligned with CO to be evaluated
- Use of Bloom's Taxonomy




PRINCIPAL
 ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S
 COLLEGE OF ENGINEERING
 KENNEDY ROAD, PUNE-411 001

CO Attainment Process

Attainment Levels

Level 1: 20% to less than 60% students scoring more than 60% marks

Level 2: 60% to less than 70% students scoring more than 60% marks

Level 3: More than 70% students scoring more than 60% marks

CO Targets

CO Target			
CO1	1.55	CO4	1.55
CO2	1.55	CO5	1.55
CO3	1.55	CO6	1.55



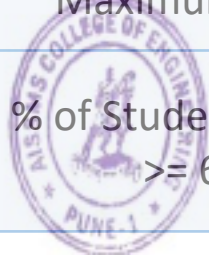

PRINCIPAL
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S
COLLEGE OF ENGINEERING
KENNEDY ROAD, PUNE-411 001

Step – 1: Mapping of CO and Assessment Tools

CO	UT1	UT2	UT3	UT4	UT5	UT6	Ass 1	Ass 2	Ass 3	NPTEL		OE		OR		End Sem	Marks
CO.1	Yes						Yes			Yes		Yes		Yes		Yes	6
CO.2		Yes					Yes			Yes		Yes		Yes		Yes	7
CO.3			Yes					Yes		Yes		Yes		Yes		Yes	6
CO.4				Yes				Yes		Yes		Yes		Yes		Yes	6
CO.5					Yes				Yes	Yes				Yes		Yes	12
CO.6						Yes			Yes	Yes				Yes		Yes	13
																Total	50

Step – 2: Tool Attainment

Assessment Tools	Internal Assessment Tools											External Assessment Tools		
	Test- 1	Test- 2	Test- 3	Test- 4	Test- 5	Test- 6	Assi.-1	Assi.2	Assi.-3	NPTEL	In-Sem	OR	End-Sem	
Maximum Marks	15	15	15	15	15	15	24	24	24	10	50	50	50	
% of Students Scoring ≥ 60%	20%	11%	20%	39%	33%	43%	95%	98%	98%	29%	30%	69%	37%	

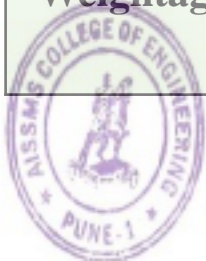


Step – 3: Marks distribution to CO.1

Tools	Internal Assessment Tools				External Assessment Tools			
	Test – 1	Assi. -1	NPTEL	Total	In-Sem	OR	End Sem	Total
Marks for CO.1	15	$24/2=12$	$10/6=1.67$	28.67	$50/4 = 12.5$	$50 / 6 = 8.33$	6	26.83

Step – 4: Weightage for Tools

Tool	Internal Assessment Tools				External Assessment Tools			
	Test – 1	Assi. -1	NPTEL	Total	Insem	OR	End Sem	Total
Weightage	$15/28.67$	$12/28.67$	$1.67/28.67$	$28.67/28.67$	$12.5/26.83$	$8.33/26.83$	$6/26.83$	$26.83/26.83$
	0.52	0.42	0.06	1	0.47	0.31	0.22	1



ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY'S
COLLEGE OF ENGINEERING
KENNEDY ROAD, PUNE-411 001

Step 5: CO Attainment for CO.1

CO.1	Internal Assessment Tools			External Assessment Tools		
Tool	Test – 1	Assi. - 1	NPTEL	Insem	TW	End Sem
Weightage	0.52	0.42	0.06	0.47	0.31	0.22
Tool Attainment	1	3	1	1	2	1
CO Attainment	0.52×1	0.42×3	0.06×1	0.47×1	0.31×2	0.22×1
	$0.52 \times 1 + 0.42 \times 3 + 0.06 \times 1 = 1.84$			$0.47 \times 1 + 0.20 \times 2 + 0.33 \times 1 = 1.31$		
	20 % weightage			80 % weightage		
	1.84×0.2			1.31×0.8		
$2.4 \times 0.2 + 1.40 \times 0.8 = 1.416$						



PRINCIPAL
ALL INDIA SHRI SHIVAJI MEMORIAL SOCIETY
COLLEGE OF ENGINEERING
KENNEDY ROAD, PUNE-411 001

Step 6: Indirect Assessment Tool

Course End Survey						
Course Outcomes	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
Course End Survey Average (Attainment) On the scale of 0 to 3	2.61	2.54	2.5	2.45	2.5	2.45

Step 7: Overall CO Attainment for CO.1

Tools	Assessment Tools	
	Direct	Indirect
CO Attainment	1.416	2.61
Weightage	80 %	20 %
Overall CO Attainment	$1.416 \times 0.8 + 2.61 \times 0.2 = \mathbf{1.65}$	

