LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(An Autonomous Institution since 2010)
Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada
L.B. Reddy Nagar, Mylavaram, NTR District, Andhra Pradesh - 521230

Department of Mechanical Engineering
Regulation (R23)

Cumulative Internal Evaluation (CIE) **A.Y: 2023-24**

Computation of COs target level;	**Attainment Level**
10-40% of Students got more than 60% of Marks	1
40-60% of Students got more than 60% of Marks	2
>60% of Students got more than 60% of Marks	3

COs are computed based on the performance of students in a Cumulative Internal Examinations (CIE) and Semester End Examinations (SEE).

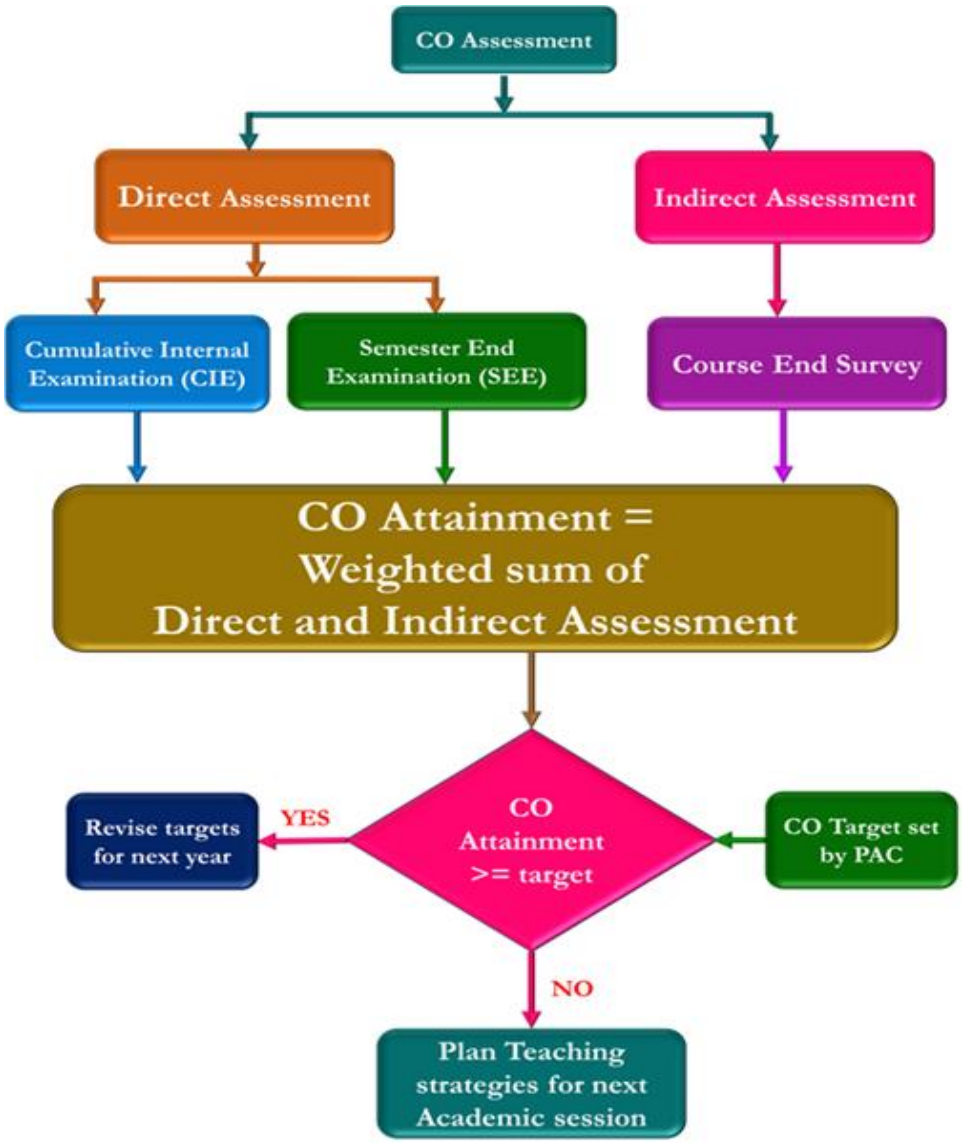

Figure1. Assessment tools and processes

Theory course:

I) Assessment Process:

The process of course outcome assessment is based on performance of the students in CIE, SEE. Each question in mid/semester end/assignment are mapped to the corresponding CO and the overall attainment of that CO is based on percentage of students scored more than 60% of marks. CIE consist of

Mid Examinations-This type of performance assessment is carried out during the examination sessions which are held twice a semester. Every exam is focused in attaining the course outcomes.

Assignment-Each and every student is assigned with course related tasks during every course work and assessment will be done based on their performance. Grades/Marks are assigned depending on their innovation in solving/deriving the problems.

Semester End Examination-Semester End examination is a metric for assessing whether all the COs are attained or not. Examination is more focused on attainment of course outcomes and program outcomes using a descriptive exam.

A) Direct Assessment

a) Mid-Examinations: Performance assessment is carried out during the examination sessions which are held twice in a semester. Each exam is focused on attaining the COs.

b) Quiz examination: Performance assessment is carried out during the examination sessions which are held twice in a semester. Each exam is focused on attaining the course outcomes.

c) Assignment: Each student is assigned with course related tasks during every course work and assessment will be done based on their performance. Marks are assigned depending on their in solving skills /deriving the problems.

d) Semester End Examination (SEE): Semester End examination is a metric for assessing whether the entire COs are attained or not. Examination is more focused on attainment of course outcomes and program outcomes using a descriptive exam.

B) Indirect Assessment: Course End Survey is taken at the end of every semester for each course

Assessment tools for CIE and SEE

A. Direct Assessment tools

i) Cumulative Internal Examinations (CIE) (40%)

a) Mid exams (25 %)
b) Assignments (5 %)
c) Quizzes (10 %)
ii) Semester End Examinations (SEE) (60 %)

COs Direct Attainment:

25 % of a) + 5 % of b) +10 % of c) +60 % of SEE

B. Indirect Assessment tools

- **Course end survey (10 %)**

COs Attainment = 90 % of Direct Attainment +10 % of Indirect Attainment

R23ME (ENGINEERING MECHANICS - 23ME02)
CO ATTAINMENT SHEET
(I YEAR -II SEM)

CIE Attainment					**Question-CO correlation**				
Descriptive Test	**Question No.**	**% Students Attempted**	**% CO Attainment**	**Attainment Level**	**CO 1**	**CO 2**	**CO 3**	**CO 4**	**CO 5**
MID-I	Q1a	58.06	25.00	**1**	1				
	Q1b	54.84	44.12	**2**	1				
	Q1c	38.71	20.83	**1**	1				
	Q1d	35.48	4.55	**0**	1				
	Q2a	56.45	42.86	**2**		1			
	Q2b	45.16	3.57	**0**		1			
	Q2c	33.87	14.29	**1**		1			
	Q2d	37.10	52.17	**2**		1			
	Q3a	25.81	43.75	**2**	1				
	Q3b	64.52	50.00	**2**	1				
	Q3c	46.77	6.90	**0**		1			
	Q3d	46.77	10.34	**1**		1			
MID-II	Q1a	17.74	81.82	**3**			1		
	Q1b	30.65	94.74	**3**			1		
	1	83.87	88.46	**3**			1		
	Q2a	43.55	92.59	**3**				1	
	Q2b	38.71	87.50	**3**				1	
	2	27.42	94.12	**3**				1	
	3	29.03	72.22	**3**					1
	Q3c	59.68	78.38	**3**					1
	Q3d	33.87	71.43	**3**					1
Descriptive Test Attainment					**1.34**	**1.00**	**3.00**	**3.00**	**3.00**
Assignment	A1	100	100.00	3	1	1			
	A2	100	100.00	3			1	1	1
Assignment Attainment					**3.00**	**3.00**	**3.00**	**3.00**	**3.00**
Quiz	Q1	100.00	22.58	1	1	1			
	Q2	100.00	80.65	3			1	1	1
Quiz Attainment					**1.00**	**1.00**	**3.00**	**3.00**	**3.00**

SEE Attainment			Question-CO Correlation						
SEE	**Question No.**	**% Students Attempted**	**% CO Attainment**	**Attainment Level**	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
PART A	**1 (a) & 1 (b)**	77.42	29.17	1	1				
	1 (c) & 1 (d)	85.48	45.28	2		1			
	1 (e) & 1 (f)	61.29	15.79	1			1		
	1 (g) & 1 (h)	67.74	35.71	1				1	
	1 (i) & 1 (j)	69.35	16.28	1					1
PART B	Q2a	38.71	20.83	1	1				
	Q2b	43.55	14.81	1	1				
	3	59.68	70.27	3	1				
	Q4a	67.74	30.95	1		1			
	Q4b	61.29	13.16	1		1			
	Q5a	33.87	9.52	0		1			
	Q5b	37.10	47.83	2		1			
	Q6a	46.77	17.24	1			1		
	Q6b	69.35	93.02	3			1		
	7	41.94	61.54	3			1		
	Q8a	46.77	48.28	2				1	
	Q8b	43.55	37.04	1				1	
	Q9a	35.48	27.27	1				1	
	Q9b	51.61	40.63	2				1	
	Q10a	48.39	26.67	1					1
	Q10b	41.94	19.23	1					1
	11	19.35	0.00	0					1
	Attainment in SEE				**1.50**	**1.20**	**2.00**	**1.40**	**0.75**

Final COs Attainment =
(60% of SEE + 25% of Descriptive + 10% of Quiz + 5% of Assignment) *0.90 + 0.1 of CES as indirect attainment)

Assessment Tool	CO1	CO2	CO3	CO4	CO5
MID Attainment Level	**1.34**	**1.00**	**3.00**	**3.00**	**3.00**
Assignment Attainment Level	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**
Quiz Attainment Level	**1.00**	**1.00**	**3.00**	**3.00**	**3.00**
SEE Attainment Level	**1.50**	**1.20**	**2.00**	**1.40**	**0.75**
Course End Survey Attainment Level	**2.48**	**2.70**	**2.31**	**2.55**	**2.53**
COs Attainment	**1.58**	**1.37**	**2.39**	**2.09**	**1.74**
CO Target	**1.80**	**1.80**	**1.80**	**1.80**	**1.80**

Action plan for the next academic year

Course Code	Course	COs	CO Statement	Target	Attained	Attained /Not Attained (A/NA)	Action plan
23ME02	**Engineering Mechanics**	CO1	Determine the resultant of coplanar concurrent and non-concurrent force systems	2.1	1.58	**NA**	To improve the attainment of the target (2.1) for determining the resultant of coplanar concurrent and non-concurrent force systems, additional practice problems and focused teaching sessions on vector resolution and equilibrium concepts will be conducted.
		CO2	Apply static equilibrium conditions to determine unknown planar force systems and determine the frictional forces for bodies in contact.	2.5	1.37	**NA**	To enhance the attainment of the target (2.5) for applying static equilibrium conditions and determining frictional forces, remedial sessions focusing on free-body diagram construction and frictional force analysis will be organized, along with supplementary assignments.
		CO3	Calculate the centroids, center of gravity and moment of inertia of different geometrical shapes.	2.1	2.39	**A**	**Attained**
		CO4	Apply the principles of work-energy and impulse-momentum to solve the problems of rectilinear and curvilinear motion of a particle	1.8	2.09	**A**	**Attained**
		CO5	Solve the problems involving the translational and rotational motion of rigid bodies.	2.4	1.74	**NA**	To improve the attainment of the target (2.4) for solving problems involving translational and rotational motion of rigid bodies, additional tutorials emphasizing problem-solving techniques and real-life applications will be provided, along with interactive quizzes.

Course Coordinator **Module Coordinator** **Program Coordinator**

LABORATORY ASSESSMENT

I) Assessment Process:

Rubrics are formulated for the assessment of Laboratory courses

A) Direct Assessment

a) Day to Day (Weekly Performance):

Performance assessment is carried out during the Day-to-day work in the laboratory shall be evaluated for 10 marks.

b) Record: Student performance is assessed through the record work in the laboratory for 5 marks.

c) Internal Examination: Performance assessment is carried out during the internal examination in the laboratory shall be evaluated for 15 marks.

d) Semester End Examination (SEE): Student performance is assessed in semester end examination in the laboratory for 70 marks.

B) Indirect Assessment: Course End survey (CES) is taken at the end of semester

II) Computation of COs-Laboratory (Practical) courses

Target value	Attainment level
>10% to <50% of Students got more than 60% of Marks	**1**
50 to <80% of Students got more than 60% of Marks	**2**
>=80% of Students got more than 60% of Marks	**3**

II) Relevance of Assessment Tool

A) Direct Assessment tools

i) **CIE**

a) Day to Day Evaluation (10 %)

b) Record (10 %)

c) Internal Examination (20 %)

ii) **SEE (60%)**

Attainment of COs (Direct) = 10 % of a) + 10 % of b) +20 % of c) +60 % of SEE

B) Indirect Assessment tools

Course end survey (10 %)

CO Attainment = 90 % of Direct Attainment +10 % of Indirect Attainment

Cumulative Internal Examination (CIE) **A.Y: 2023-24**

CIE Attainment -Experiment to CO Correlation							
		% students attempted	CO Attainment level	CO1	CO2	CO3	CO4
D-D Performance	Exp.1	100.00	3	1			
	Exp.2	85.48	3	1			
	Exp.3	82.26	3		1		
	Exp.4	100.00	3		1		
	Exp.5	100.00	3			1	
	Exp.6	90.32	3			1	
	Exp.7	88.71	3			1	
	Exp.8	87.10	3				1
	Exp.9	77.42	2				1
	Exp.10	98.39	3				1
	CO Attainment			3.00	3.00	3.00	2.67
Record	Exp.1	88.71	3	1			
	Exp.2	88.71	3	1			
	Exp.3	88.71	3		1		
	Exp.4	88.71	3		1		
	Exp.5	83.87	3			1	
	Exp.6	83.87	3			1	
	Exp.7	83.87	3			1	
	Exp.8	82.26	3				1
	Exp.9	82.26	3				1
	Exp.10	80.65	3				1
	CO Attainment			3.00	3.00	3.00	3.00
Internal Exam	Exp.1	100.00	3	1			
	Exp.2	100.00	3	1			
	Exp.3	85.71	3		1		
	Exp.4	100.00	3		1		
	Exp.5	100.00	3			1	
	Exp.6	100.00	3			1	
	Exp.7	100.00	3			1	
	Exp.8	100.00	3				1
	Exp.9	100.00	3				1
	Exp.10	83.33	3				1
	CO Attainment			3.00	3.00	3.00	3.00

Semester End Examination (SEE) Attainment						
	% students attempted	**CO Attainment level**	**CO1**	**CO2**	**CO3**	**CO4**
Exp.1	**100**	**3**	**1**			
Exp.2	**100**	**3**	**1**			
Exp.3	**100**	**3**		**1**		
Exp.4	**100**	**3**		**1**		
Exp.5	**100**	**3**			**1**	
Exp.6	**100**	**3**			**1**	
Exp.7	**100**	**3**			**1**	
Exp.8	**100**	**3**				**1**
Exp.9	**100**	**3**				**1**
Exp.10	**100**	**3**				**1**
CO Attainment			**3.00**	**3.00**	**3.00**	**3.00**
Assessment Tools			**CO1**	**CO2**	**CO3**	**CO4**
Day to Day (10%)			3.00	3.00	3.00	2.67
Record (10%)			3.00	3.00	3.00	3.00
Internal Exam (20%)			3.00	3.00	3.00	3.00
SEE (60%)			3.00	3.00	3.00	3.00
Course End Survey (10%)			2.62	2.61	2.55	2.58
CO Attainment			**2.96**	**2.96**	**2.95**	**2.93**
CO Target			**2.70**	**2.40**	**2.10**	**2.10**