FACULTY COURSE ASSESSEMENT REPORT (FCAR)

Course Coordinator:	**Dr. S. N. Topannavar**	**Class Strength:33**
Semester: IV B	**Subject: Fluid Mechanics**	**Code: 17ME44**

I. Program Outcomes (POs): Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

II. Program Specific Outcomes (PSOs):

PSO1:	Able to apply the basic principles of Mechanical Engineering in various practical fields to solve societal problems by engaging themselves in many state/national level projects.
PSO2:	Able to analyze and design basic mechanical system using relevant tools and techniques.
PSO3:	Able to resolve contemporary issues of industries through industry institute interaction and alumni social networks.

III. Course outcomes (COs): The student, after successful completion of the course, will be able to:

CO	Description
C216.1	Define and formulate the properties of fluids, fluid statics and buoyancy of floating and submerged bodies.
C216.2	Understand and apply of basic principles of fluid kinematics and dynamics to solve engineering problems
C216.3	Formulate the correlations for velocity and shear stress distribution and pressure drop for fluid flow problems and to study various losses in the pipe network.
C216.4	Study and formulate aerodynamics for flow over bodies and to group variables to non-dimensional terms for model and prototype
C216.5	Understand CFD and basic equations for compressible flows and their applications

IV. Mapping of Course Outcomes (COs) to Program Outcomes (POs):

POs→ / COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216.1	3	3	2	1	1	2	NA	1	1	NA	NA	1
C216.2	3	3	2	1	1	NA	NA	NA	1	NA	NA	1
C216.3	3	3	2	1	1	NA	1	NA	1	NA	NA	1
C216.4	3	3	2	2	2	1	NA	1	NA	NA	NA	1
C216.5	3	3	2	2	2	1	1	1	NA	NA	NA	3
Average	3	3	2	1.4	1.4	0.8	0.4	1	1	0	0	1.4

V. Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs):

PSOs / COs	PSO 1	PSO 2	PSO 3
C216.1	3	3	3
C216.2	3	3	3
C216.3	3	3	3
C216.4	3	3	3
C216.5	3	3	3
Average	3	3	3

VI. Justification of CO-PO Mapping:

Mapping	Justification
PO1 & CO: C216.1-C216.5	All 5 COs ensures the fluid mechanics fundamentals & engineering knowledge and required applied mathematics. Hence all COs C216.1-C216.5 have strongly relation with PO1. To attain PO1, the relevant knowledge of fluid properties and formulations are required to resolve complex engineering problems.
PO2 & CO:C216.1-C216.5	Analysis of complex engineering problems and to reach sustainable solutions & conclusions, the understanding & formulating of fluid properties, statics and dynamics for compressible and incompressible flows are necessary. Hence all 5 CO: C216.1-C216.4 are strongly correlate with the PO2.
PO3 & CO:C216.1-C216.5	Design of engineering systems & processes, which consider the public health, safety and society and environment, requires the understanding and formulating of fluid properties, aerodynamics, and pressure and velocity distribution and losses in viscous flow structures. Hence all 5 CO: C216.1-C216.5 are moderately correlate with the PO3.
PO4 & CO:C216.1-C216.5	The valid conclusions require research-based knowledge and research methods including design of experiments related to fluid properties, statics and dynamics. Also, the information generated from the above investigations requires data analysis, interpretation and synthesis. As CO: C216.1-C216.3 are emphasis on fundamentals of fluid mechanics, hence, CO: C216.1-C216.3 are low level correlation with the PO4. However, C216.4 & C216.5 emphasis on aerodynamics and compressible flows, hence these correlate moderately with the PO4.
PO5 & CO:C216.1-C216.5	Modeling of complex engineering activities with an understanding of the limitations requires creation, selection and applies of appropriate techniques, resources, and modern engineering and CFD tools including prediction. As CO: C216.1-C216.3 are emphasis on fundamentals of fluid mechanics, hence, CO: C216.1-C216.3 are low level correlation with the PO5. However, C216.4 & C216.5 emphasis on aerodynamics and compressible flows, hence these correlate moderately with the PO5.
PO6 & CO:C216.1, C216.4 & C216.5	The contextual knowledge of fluid properties, statics and buoyancy requires assessing societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. Hence the CO: C216.1 moderately correlated with the PO6. Whereas the study of importance of aerodynamics and properties and formulation of compressible fluid and their flows are also required for above said purpose, hence C216.4 & C216.5 have low level correlation with the PO6.
PO7 & CO: C216.3 & C216.5	Understanding of aerodynamics and estimation of major and minor losses in flow through pipes and accounting the viscous effects requires for professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. Hence the CO: C216.3 & C216.5 have low level correlation with the PO7.
PO8 & CO:C216.1, C216.4 & C216.5	Understanding of fluid properties and aerodynamics and estimation of losses in pipe flow and practice them with ethics and responsibility is requires. Hence the CO: C216.1, C216.4 & C216.5 have low level correlation with the PO7.

PO9 & CO:C216.1-C216.3	Understanding, formulation and analysis of fluid properties, statics and kinematics and dynamics is required to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. Hence the CO: C216.1-C216.3 have low level correlation with the PO9.
PO10 & PO11	The PO10 & PO11 emphasis on communication and managerial skills such as presentation, documentation, reporting, demonstration, leadership and coordination of the engineering knowledge and practices. Hence these are not assessed during the interaction of the all 5 COs, therefore these are not mapped with said POs.
PO12 & CO:C216.1-C216.5	The clear elementary knowledge of fluid properties, statics and kinematics and dynamics is required to engage in independent and life-long learning in the broadest context of technological change. Hence the CO: C216.1-C216.4 have low level mapping with the PO12. The learning and applying of modern CFD tool is required to resolve relevant issues of the emerging trends and to excel and sustain in the career. Hence CO216.5 has strong correlation with the PO12.

VII. Justification of CO-PSO Mapping (FLUID MECHANICS-10ME46B):

Mapping	Justification
PSO1 & CO:C216.1-C216.5	The design of complex engineering systems comprising the public health, safety and society and environment, requires the knowledge of fluid properties, aerodynamics, and pressure and velocity distribution and losses in viscous flow structures. Hence all 5 CO: C216.1-C216.5 are strongly correlate with the PSO1. Also, the clear elementary knowledge of fluid properties, statics and kinematics and dynamics is important to engage in independent and life-long learning in the broadest context of technological change. Hence the CO: C216.1-C216.5 have strong relation with the PSO1.
PSO2 & CO:C216.1 & C216.2	The learning and applying of modern CFD tool is required to resolve relevant issues of the emerging trends and to excel and sustain in the career. Modeling of complex engineering activities with an understanding of the limitations requires creation, selection and applies of appropriate techniques, resources, and modern engineering and CFD tools including prediction. Understanding, formulation and analysis of fluid properties, statics and kinematics and dynamics is required to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. Hence the CO: C216.1-C216.5 have moderate relation with the PSO2.
PSO3 & CO:C216.1-C216.5	The solution of contemporary issues of industries requires clear elementary knowledge of fluid properties, statics and kinematics and dynamics and learning and applying of modern CFD tool. Hence the CO: C216.1-C216.5 have moderate relation with the PSO3.

VIII. Bench Mark Setting

Previous Target Attainment:

As per the decision, if the attained value is greater than or equal to initial target value (ITV), then the next bench mark for the subsequent year will be attained value (or whichever is higher). If the attained value is less than the set target (ITV) then the next bench mark will be ITV for the subsequent year attainment.

Set Target Value (ITV)	1.776
Attained Value	1.18
New Target Level for the next Exam	1.776

Here attained value is less than the ITV, hence the benchmark for the current year attainment is ITV itself i.e 1.776

Now ITV=1.776 is the set benchmark for the COs attainment through the CIE & SEE for the current students.

MEASUREMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

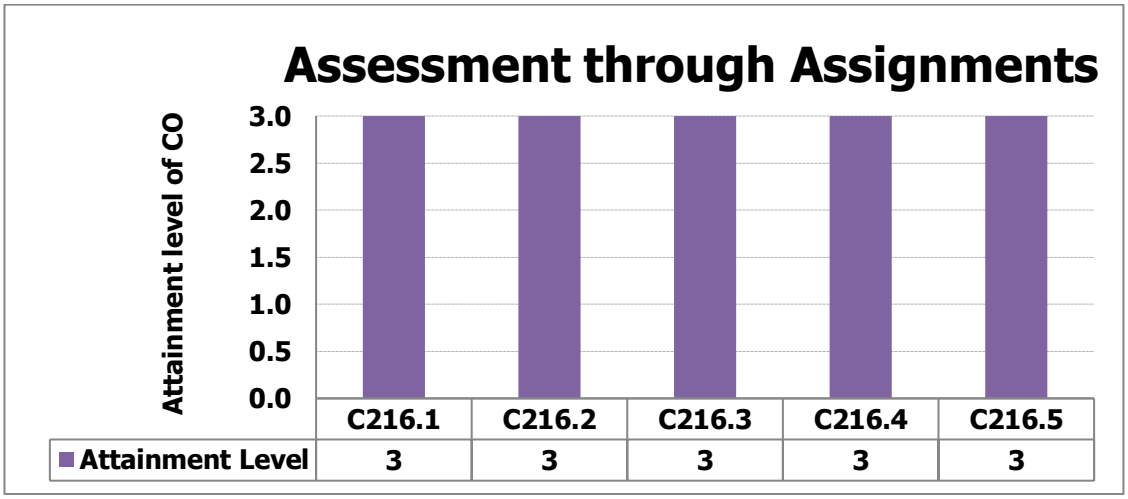
- Lecture by Teacher
- PPT or Online demo etc.

Assessment Tools:

- Continuous assessment
- End semester exam

I. Assessment through Assignment:

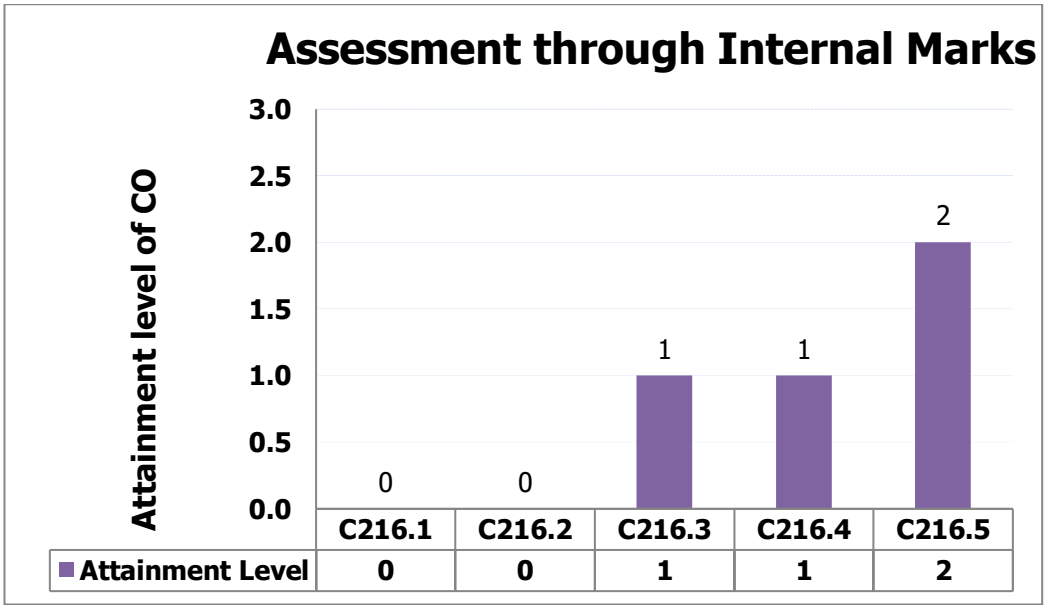
COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO
	A	R	A	R	A	R	A	R	A	R			
C216.1	32	32									100.00	3	PO1-PO9 & PO12
C216.2			32	32							100.00	3	PO1-PO9 & PO12
C216.3					32	32					100.00	3	PO1-PO9 & PO12
C216.4							32	32			100.00	3	PO1-PO9 & PO12
C216.5									32	32	100.00	3	PO1-PO9 & PO12



II. Assessment through Internal Marks:

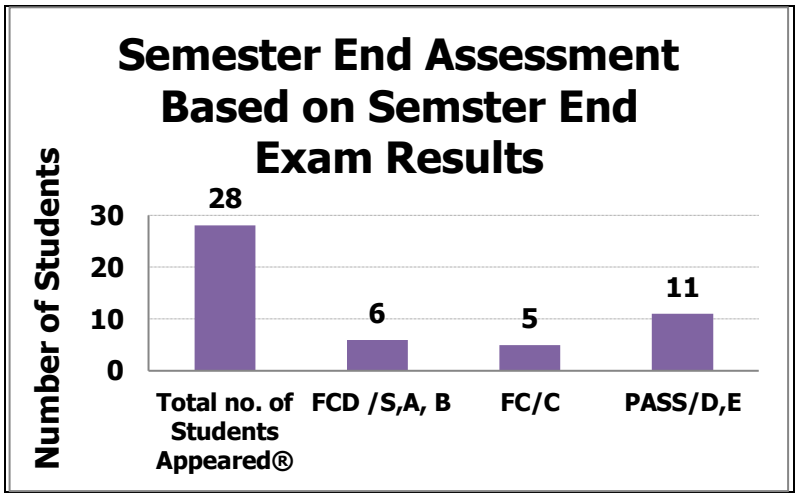
A: Appeared R: Reached Low =1 (50-60 %) Medium =2 (61-70 %) High =3 (above 70 %)

COs	IA Test-1				IA Test -2				IA Test -3				Attainment level of CO	Mapped PO
	Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4			
	A	R	A	R	A	R	A	R	A	R	A	R		
C216.1	32	10											0	PO1-PO9 & PO12
C216.2			32	7			32	17					0	PO1-PO9 & PO12
C216.3					32	18							1	PO1-PO9 & PO12
C216.4									32	15			1	PO1-PO9 & PO12
C216.5											32	22	2	PO1-PO9 & PO12



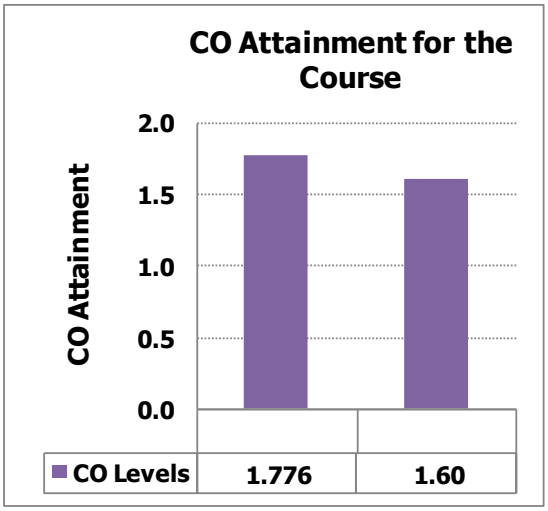
III. Semester End Exam Assessment Based on VTU Exam Results:

Total no. of Students Appeared→	28	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semester End Exams
FCD /S,A, B	6	18
FC/C	5	10
PASS/D,E	11	11
Total Percentage of Passing	78.57%	1.39



IV. CO Attainment:

CO Attainment for the Course	
Target CO Level	1.776
Attained CO Level	1.60

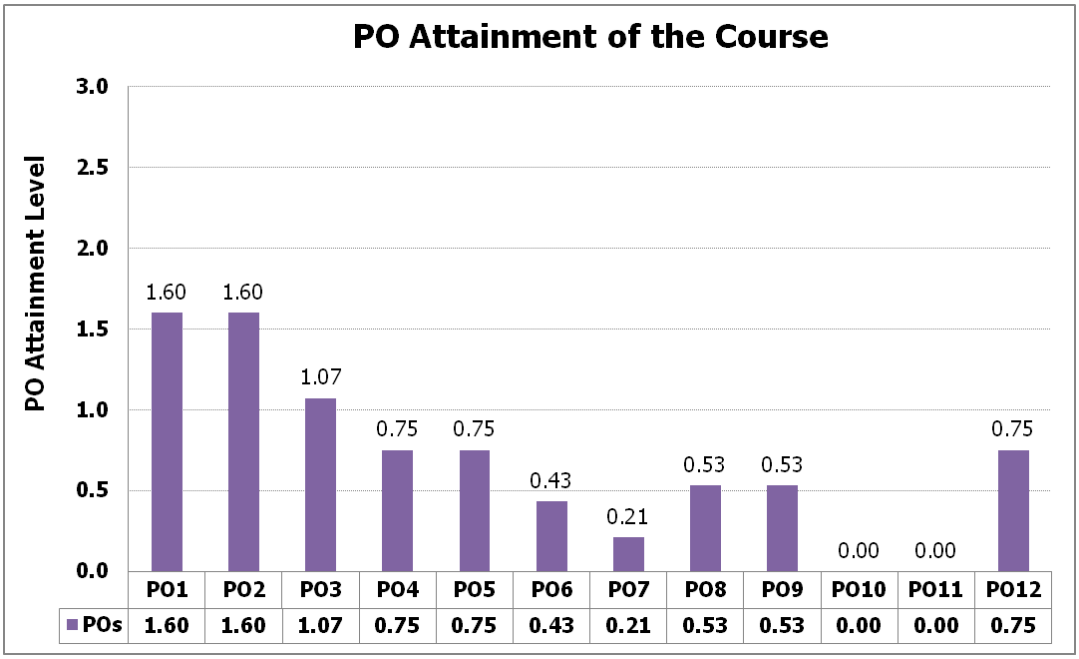


V. PO Attainment for the Entire Course:

POs attainment value for the present course = (Mapped value * CO attainment average)/3

Note: Mapped value is available in section 4.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216	1.60	1.60	1.07	0.75	0.75	0.43	0.21	0.53	0.53	0.00	0.00	0.75

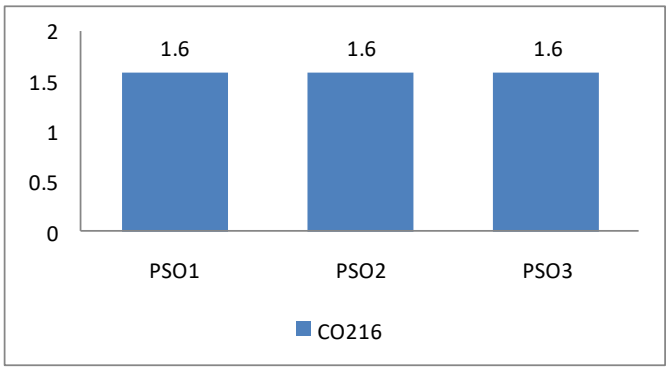


VI. PSO Attainment:

COs	ATTAINMENT THROUGH RELEVANT COURSES MAPPED	ATTAINMENT THROUGH RELEVANT ACTIVITIES MAPPED	ANY OTHER ACTIVITIES	Attainment Level of CO	Mapped PSOs
C216.1				1.44	PSO1-PSO3
C216.2				1.44	PSO1-PSO3
C216.3				1.64	PSO1-PSO3
C216.4				1.64	PSO1-PSO3
C216.5				1.84	PSO1-PSO3
			Average	**1.60**	

VII. PSO Attainment for the Entire Course:

CO	PSO1	PSO2	PSO3
CO216	1.6	1.6	1.6



PSOs attainment value for the present course = **(Mapped value * CO attainment average)/3**

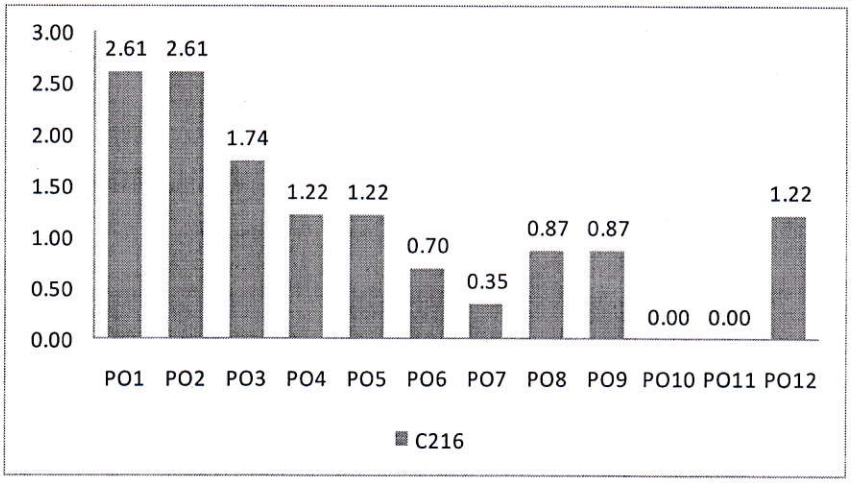
Note: Mapped value is available in section 5 given above.

IX. Indirect Attainment of PO & PSO Through Course Exit Survey (CES)

PO Attainment = (CO-PO Mapped value * CES attainment value)/3

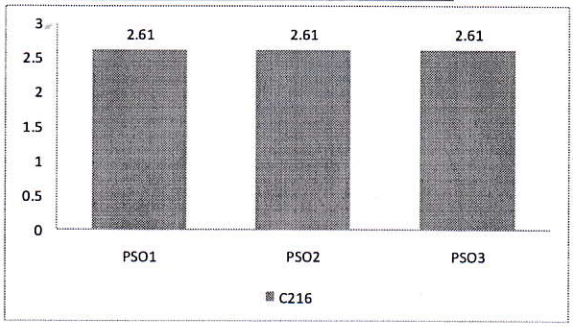
CO Attainment Value through Course Exit Survey:	2.61

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C216	2.61	2.61	1.74	1.22	1.22	0.70	0.35	0.87	0.87	0.00	0.00	1.22



PSO Attainment through CES:

CO	PSO1	PSO2	PSO3
C216	2.61	2.61	2.61



X. Course Coordinator Remarks:

S. No.	Observations	Comments
1	Impact of Delivery Methods	Followed methods are satisfactory, however using any innovative pedagogy may improve the attainment
2	Course Outcome Attainment	All CO s have been reached satisfactorily
3	Scope for Improvement	Pedagogical method of delivering the lecturer is more convenient to understand
4	Additional Comments (if any)	Followed methods are satisfactory, however using any innovative pedagogy may improve the attainment

Name & Signature of Course Coordinator	Name & Signature of Module Coordinator	HOD

Hirasugar Institute of Technology NIDASOSHI PIN-591236 Dist:Belgaum.

Head of the Dept.
Mechanical Engg.
HSIT Nidasoshi

Attainment of POs through Direct and Indirect Method for the Batch 2020-21

S.N.	Attainment Methods	Assessment Tools	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	**Direct Attainment (A)**	Continuous Internal Evaluation+ Semester End Exam	1.89	1.66	1.50	1.70	1.77	1.23	1.33	1.27	1.59	1.73	1.56	1.62
2	**Indirect Attainment (B)**	Senior Exit Survey	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.64	2.74	2.77
		Alumni Survey	2.8	2.7	2.8	2.8	1.8	2.4	2.4	2.8	2.1	2.87	2.13	1.8
		Employer Survey	2.5	2.75	2.5	2.5	2.75	3.00	2.75	2.75	2.5	2	2.75	2.5
		Activity Feedback	2.00	2.00	2.00	2.00	2.00	1.83	1.00	2.20	2.17	1.60	1.00	1.57
		Course Exit Survey(CES)	2.01	1.90	1.67	1.56	1.50	1.26	1.19	1.43	1.31	1.65	1.54	1.82
		Placement Higher Studies(PHE)	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34
Average Indirect Attainment (B)			2.24	2.23	2.17	2.15	2.02	2.09	1.90	2.20	2.04	2.02	1.92	1.97
Average PO Attainment through (0.8A+0.2B)			1.96	1.77	1.63	1.79	1.82	1.40	1.44	1.46	1.68	1.79	1.63	1.69

Attainment of PSOs through Direct and Indirect Method for the Batch 2020-21

S. N.	Attainment Methods	Assessment Tools	PSO1	PSO2	PSO3
1	**Direct Attainment (A)**	Continuous Internal Evaluation + Semester End Exam	1.91	1.67	1.79
2	**Indirect Attainment (B)**	Senior Exit Survey	2.79	2.72	2.75
		Alumni Survey	2.93	2.93	2.53
		Activity Feedback	1.33	1.33	1.43
		Course Exit Survey(CES)	2.20	1.73	2.08
		Placement Higher Studies(PHE)	1.34	1.34	1.34
Average Indirect Attainment (B)			2.08	1.95	1.99
Average PO Attainment through (0.8A+0.2B)			1.94	1.73	1.83

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Attainment of POs & PSOs through Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) for the Passed Out Batch 2020-21

The POs and PSOs attainments of all courses for the **Passed out Batch 2020-21** are as below

S.N.	Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1.	C101	1.8	1.2	0.6	-	-	-	-	-	-	-	-	0.6
2.	C102	1.8	-	1.2	-	0.6	-	-	0.6	-	0.59	-	0.59
3.	C103	1.3	1.3	0.9	0.9	-	0.4	-	0.4	-	-	0.43	0.87
4.	C104	1.8	1.2	-	-	-	-	0.6	-	-	-	-	-
5.	C105	1.6	1.1	1.1	-	-	-	-	0.5	-	-	0.53	-
6.	C106	2.6	1.6	3	1.3	-	3	-	3	1.97	1.97	2.95	2.46
7.	C107	2.7	-	-	-	0.9	-	-	0.9	1.83	1.83	-	0.91
8.	C108	1.3	0.9	0.4	-	-	-	-	-	-	-	-	0.44
9.	C109	1.3	1.1	0.9	0.4	-	0.8	-	-	0.88	0.88	-	0.44
10.	C110	1.3	1.1	1.2	-	-	-	-	-	-	-	-	0.45
11.	C111	0.7	-	-	-	1.5	-	-	0.7	-	2.22	-	-
12.	C112	1.3	1.3	1.3	0.4	-	-	-	-	-	-	-	0.44
13.	C113	2.7	2.7	1.8	1.8	-	0.9	-	0.9	-	-	0.9	1.79
14.	C114	2.9	2.9	2.9	-	-	1.9	-	-	1.92	1.92	-	0.96
15.	C115	2.7	1.8	1.8	-	-	1.8	1.8	0.9	-	-	0.91	0.91
16.	C116	1.50	1.00	0.50	-	-	-	-	-	-	-	-	0.50
17.	C202	2.20	1.47	-	0.73	0.73	-	1.47	-	-	-	-	2.20
18.	C203	1.03	0.43	0.83	0.78	-	0.73	-	0.43	-	-	-	1.03
19.	C204	1.10	0.73	-	-	-	0.73	-	0.37	-	-	-	0.73
20.	C205	2.36	1.58	-	-	1.58	0.79	-	-	-	-	-	1.58
21.	C206	1.58	1.58	-	0.79	0.75	-	0.75	-	-	-	-	2.37
22.	C207	2.16	-	1.44	-	2.16	-	-	0.72	-	2.16	0.00	1.44
23.	C208	1.17	0.59	0.59	-	-	0.59	0.59	-	-	-	-	1.75
24.	C209	2.93	2.93	-	2.93	2.93	1.95	-	-	-	-	-	2.93
25.	C210	2.87	2.87	-	2.93	2.93	1.95	-	-	-	-	-	2.87
26.	C211	1.52	1.52	1.33	1.71	0.76	0.76	-	0.76	-	-	-	1.52
27.	C212	2.69	1.00	0.90	-	-	1.79	-	-	-	-	-	2.69
28.	C215	1.72	1.14	0.58	-	-	-	-	-	-	-	-	0.54
29.	C216	1.42	1.42	-	-	-	0.47	-	0.47	-	-	-	0.47
30.	C217	0.70	0.70	-	0.35	-	0.35	0.35	-	-	-	-	0.70
31.	C218	1.35	1.35	0.90	0.63	0.63	0.36	0.18	0.45	0.45	-	-	0.63
32.	C301	1.09	0.55	0.55	-	-	-	-	-	1.09	1.09	-	1.09

33.	C302	1.84	1.84	1.23	-	-	1.23	-	1.23	-	-	1.23	1.23
34.	C303	1.02	0.51	0.51	-	-	-	-	-	-	-	-	0.51
35.	C304	1.19	0.50	1.19	-	-	0.80	-	0.80	-	-	0.80	0.80
36.	C308	2.70	1.34	-	-	1.63	0.45	1.19	-	-	-	-	2.23
37.	C310	2.05	2.05	2.05	1.37	-	2.05	2.05	2.05	0.69	-	-	0.69
38.	C313	0.96	0.96	-	-	-	-	-	-	-	-	-	0.96
39.	C314	-	0.78	-	-	-	-	0.78	-	-	-	-	0.78
40.	C315	2.91	2.91	2.91	-	-	1.94	-	1.94	-	-	1.94	1.94
41.	C316	2.32	2.32	1.07	-	0.77	0.77	-	1.07	-	-	0.72	2.32
42.	C317	1.23	1.23	0.92	0.61	0.31	0.61	-	-	-	-	-	1.23
43.	C318	2.30	2.30	2.30	-	-	1.54	-	1.54	-	-	-	1.54
44.	C323	0.70	0.70	-	-	-	-	1.40	-	-	-	-	1.40
45.	C327	1.46	-	-	-	1.46	0.73	-	2.19	-	-	1.46	1.46
46.	C328	1.92	1.92	-	-	1.92	-	-	-	1.92	-	-	0.96
47.	C329	3.00	3.00	1.00	-	3.00	2.00	-	3.00	-	-	2.00	3.00
48.	C401	2.66	2.66	2.66	1.77	-	2.66	2.66	0.89	0.89	1.77	1.77	2.66
49.	C402	2.46	2.46	2.46	1.64	0.82	0.82	0.82	-	-	0.82	1.64	1.64
50.	C403	2.45	2.45	-	-	-	0.82	0.82	-	-	-	-	2.45
51.	C405	1.69	1.69	-	-	-	0.84	-	1.69	-	-	-	1.69
52.	C412	1.74	-	-	-	1.74	0.87	0.87	-	-	-	-	1.74
53.	C414	3.00	3.00	-	-	-	2.00	-	2.00	-	-	-	2.00
54.	C415	2.00	2.00	2.00	3.00	3.00	1.00	-	1.00	2.00	1.00	-	2.00
55.	C416	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	2.00
56.	C417	-	1.59	2.38	2.38	-	-	-	-	-	-	1.59	1.59
57.	C418	1.97	-	-	1.97	2.95	-	0.98	-	-	0.98	-	1.97
58.	C423	1.41	-	-	-	2.12	0.71	2.12	0.71	1.41	2.12	1.50	2.12
59.	C424	1.63	2.00	1.67	1.67	1.50	1.39	1.23	1.00	2.07	2.08	1.78	1.40
60.	C425	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	2.00
61.	C426	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Average		**1.89**	**1.66**	**1.50**	**1.70**	**1.77**	**1.23**	**1.33**	**1.27**	**1.59**	**1.73**	**1.56**	**1.62**

S.N.	Course Code	PSO1	PSO2	PSO3
1.	C202	2.20	-	2.20
2.	C203	1.28	0.86	0.82
3.	C204	1.10	0.37	-
4.	C205	2.47	-	2.47
5.	C206	2.24	-	2.24
6.	C207	1.44	2.16	0.72

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7.	C208	1.05	-	1.05
8.	C209	1.04	-	1.04
9.	C210	2.93	-	2.93
10.	C211	2.28	-	1.52
11.	C212	1.58	-	1.58
12.	C216	1.60	1.10	-
13.	C217	1.06	0.70	0.70
14.	C218	1.35	1.35	1.35
15.	C301	0.99	-	0.99
16.	C302	1.84	1.23	-
17.	C303	-	0.50	-
18.	C304	1.26	1.26	1.26
19.	C308	2.22	-	2.22
20.	C310	2.05	0.73	2.05
21.	C313	-	-	0.96
22.	C314	1.56	-	-
23.	C315	2.91	2.91	2.91
24.	C316	2.19	2.14	2.19
25.	C317	1.23	1.23	1.23
26.	C318	2.30	2.30	2.30
27.	C323	1.40	1.40	-
28.	C327	1.41	-	0.70
29.	C328	0.96	1.91	-
30.	C329	3.00	3.00	3.00
31.	C401	2.66	0.89	2.66
32.	C402	3.00	2.00	0.84
33.	C403	2.45	-	2.45
34.	C405	1.69	1.69	-
35.	C412	2.68	-	2.68
36.	C414	2.00	2.00	-
37.	C415	3.00	3.00	3.00
38.	C416	2.00	2.00	2.00
39.	C417	1.59	1.59	
40.	C418	1.97	-	1.97
41.	C423	1.12	1.50	-
42.	C424	2.00	2.00	2.00
43.	C425	2.00	2.00	2.00
44.	C426	3.00	3.00	3.00
Average		**1.91**	**1.67**	**1.79**

Prof. S. A. Goudadi
Dept. NBA Coordinator

Hirasugar Institute of Technology NIDASOSHI. PIN-591236. Dist:Belgaum.

Dr. S. N. Topannavar
Head of the Dept.
Mechanical Engg.
HSIT Nidasoshi

FACULTY COURSE ASSESSEMENT REPORT (FCAR)

Course Coordinator: **Prof: D N Inamdar** **Class Strength:61**

Semester:VI B **Subject: DOME II** **Code: 15ME64**

I. Program Outcomes (POs): Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

II. Program Specific Outcomes (PSOs):

The graduates of the program will be able to;

PSO1:	Implement the basic Mechanical Engineering knowledge to solve societal and industrial problems.
PSO2:	Design and Analyze basic Mechanical systems using relevant tools and techniques.
PSO3:	Understand and address current issues of industries through industry institute interaction and alumni social networks.

III. Course Outcomes (COs): The student, after successful completion of the course, will be able to:

CO	Description	Mapped POs	Mapped PSOs	RBTL
C318.1	Design and analyze behavior of stresses in curved beams and compound cylinders.	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1-PSO3	L3
C318.2	Design belts, wire ropes and chain drives & springs for Mechanical systems	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1-PSO3	L3
C318.3	Design different types of gears and simple gear boxes for different applications.	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1-PSO3	L3
C318.4	Design brakes and clutches	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1-PSO3	L3
C318.5	Select suitable lubricants and analyze performance of hydrodynamic, hydrostatic and antifriction bearings.	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1-PSO3	L3

IV. Mapping of Course Outcomes (COs) to Program Outcomes (POs):

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C318.1	3	3	3	--	--	2	--	2	--	--	2	2
C318.2	3	3	3	--	--	2	--	2	--	--	2	2
C318.3	3	3	3	--	--	2	--	2	--	--	2	2
C318.4	3	3	3	--	--	2	--	2	--	--	2	2
C318.5	3	3	3	--	--	2	--	2	--	--	2	2
Average	3	3	3			2		2			2	2

V. Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs):

PSOs / COs	PSO1	PSO2	PSO3
C318.1	3	3	3
C318.2	3	3	3
C318.3	3	3	3
C318.4	3	3	3
C318.5	3	3	3
Average	3	3	3

VI. Justification of CO-PO Mapping:

Mapping	Justification
C318.1,C318.2,	A strong correlation since explaining the concept requires application of

C318.3,C318.4, C318.5 - PO1	mathematics and engineering fundamentals to solve complex engineering problems.
C318.1,C318.2, C318.3,C318.4,C 318.5 - PO2	A strong correlation since explaining the concept requires a certain level of problem analysis skills for formulation of engineering problems using engineering science and principle of mathematics.
C318.1,C318.2, C318.3,C318.4, C318.5 - PO3	A strong correlation since explaining the concept requires a certain level of design system components that meet specified needs with consideration of safety.
C318.1,C318.2, C318.3,C318.4, C318.5 - PO6	A medium correlation since explaining the concept requires a certain level of problem analysis skills for apply reasoning informed by safety to the professional engineering practice.
C318.1,C318.2, C318.3,C318.4, C318.5 - PO8	A medium correlation since designing members requires a certain level of problem analysis skills for apply ethical principles and norms of engineering practice.
C318.1,C318.2, C318.3,C318.4, C318.5 - PO11	A medium correlation since it requires demonstrating the knowledge of engineering, management principles and applying these to manage the projects.
C318.1,C318.2, C318.3,C318.4, C318.5 - PO12	A medium correlation since designing members requires a certain level of problem analysis skill for lifelong learning in context of technological change.

VII. Justification of CO-PSO Mapping :

Mapping	Justification
C318.1,C318.2, C318.3,C318.4, C318.5 - PSO1	A Strong correlation since the students able to apply basic knowledge of mechanical engineering in the study of system parameters and working principles of equipment to solve industrial problems.
C318.1,C318.2, C318.3,C318.4, C318.5 - PSO2	A medium correlation since the students able to analyze basic mechanical systems using relevant tools.
C318.1,C318.2, C318.3,C318.4, C318.5 – PSO3	A Strong correlation since the students able to identify current issues of industries

VIII. Bench Mark Setting

VTU Result(CIE+SEE)		
July/August 2015	**July/August 2016**	**July/August 2017**

Max. Marks:125		Max. Marks: 125		Max. Marks: 125	
USN	Marks Obtained	USN	Marks Obtained	USN	MARKS Obtained
2HN13ME408	12	2HN13ME045	15	2HN15ME404	17
2HN13ME413	15	2HN13ME084	15	2HN14ME024	26
2HN12ME031	16	2HN14ME407	32	2HN14ME040	34
2HN12ME105	17	2HN13ME061	37	2HN14ME048	34
2HN12ME082	22	2HN14ME400	38	2HN15ME416	35
2HN12ME022	26	2HN13ME074	40	2HN15ME406	36
2HN12ME005	27	2HN13ME098	40	2HN14ME084	37
2HN13ME417	30	2HN14ME405	40	2HN14ME030	38
2HN13ME423	30	2HN14ME420	40	2HN14ME045	38
2HN12ME018	31	2HN13ME031	41	2HN14ME047	38
2HN12ME024	31	2HN13ME052	42	2HN14ME068	38
2HN12ME048	31	2HN13ME075	42	2HN14ME117	38
2HN12ME014	32	2HN14ME415	42	2HN14ME120	38
2HN13ME402	33	2HN13ME007	43	2HN14ME081	39
2HN12ME041	34	2HN13ME038	43	2HN14ME021	41
2HN12ME071	34	2HN14ME408	43	2HN15ME410	41
2HN13ME422	34	2HN13ME064	44	2HN14ME082	42
2HN12ME056	36	2HN13ME088	44	2HN14ME089	43
2HN12ME063	36	2HN13ME004	45	2HN14ME111	43
2HN13ME410	36	2HN13ME087	45	2HN15ME409	43
2HN12ME078	37	2HN13ME110	45	2HN14ME032	44
2HN13ME400	37	2HN13ME032	46	2HN15ME403	44
2HN12ME034	38	2HN13ME083	46	2HN14ME043	45
2HN13ME418	39	2HN14ME404	48	2HN14ME085	46
2HN12ME047	41	2HN13ME014	49	2HN15ME417	47
2HN12ME102	41	2HN13ME051	49	2HN15ME420	48
2HN12ME065	42	2HN13ME002	50	2HN14ME001	50
2HN12ME075	42	2HN13ME072	50	2HN14ME028	50
2HN12ME115	42	2HN13ME078	50	2HN14ME055	50
2HN13ME427	43	2HN13ME086	50	2HN14ME076	50
2HN13ME401	44	2HN13ME113	50	2HN14ME115	50
2HN12ME036	45	2HN13ME114	50	2HN14ME016	51
2HN13ME416	45	2HN13ME016	51	2HN14ME065	51
2HN12ME057	47	2HN13ME066	51	2HN14ME110	51
2HN12ME069	47	2HN13ME067	51	2HN14ME033	52
2HN12ME055	48	2HN13ME073	51	2HN14ME019	53
2HN12ME028	50	2HN13ME081	51	2HN14ME041	54
2HN12ME043	50	2HN13ME120	51	2HN14ME072	54
2HN12ME079	50	2HN13ME123	51	2HN14ME099	54
2HN12ME106	50	2HN14ME403	51	2HN14ME056	56
2HN13ME406	50	2HN14ME413	51	2HN14ME077	56

2HN13ME411	50	2HN14ME423	51	2HN15ME401	57
2HN13ME426	50	2HN13ME042	52	2HN15ME407	57
2HN12ME023	51	2HN13ME065	52	2HN15ME402	58
2HN12ME081	51	2HN13ME070	52	2HN14ME012	59
2HN12ME086	51	2HN13ME082	52	2HN14ME060	59
2HN13ME425	51	2HN13ME111	52	2HN14ME119	59
2HN12ME042	52	2HN13ME119	52	2HN15ME426	60
2HN12ME077	52	2HN14ME402	52	2HN14ME102	61
2HN13ME409	52	2HN14ME406	52	2HN15ME422	61
2HN13ME412	52	2HN14ME418	52	2HN15ME425	61
2HN12ME011	53	2HN13ME090	53	2HN14ME002	63
2HN12ME026	53	2HN13ME097	53	2HN15ME413	63
2HN12ME050	53	2HN13ME116	53	2HN15ME415	63
2HN12ME073	53	2HN13ME062	54	2HN14ME036	64
2HN12ME084	53	2HN13ME068	54	2HN14ME058	64
2HN12ME067	54	2HN13ME069	54	2HN14ME096	64
2HN12ME070	54	2HN13ME085	54	2HN14ME034	65
2HN13ME404	54	2HN13ME096	54	2HN14ME066	65
2HN12ME044	55	2HN13ME108	54	2HN14ME087	65
2HN12ME120	55	2HN13ME109	54	2HN14ME108	65
2HN13ME415	55	2HN13ME027	56	2HN14ME113	65
2HN12ME012	56	2HN13ME059	56	2HN15ME412	65
2HN12ME062	56	2HN14ME424	56	2HN14ME061	66
2HN12ME112	57	2HN13ME024	57	2HN14ME086	66
2HN13ME407	57	2HN13ME037	57	2HN15ME418	66
2HN12ME045	58	2HN13ME055	57	2HN14ME037	67
2HN12ME052	58	2HN13ME095	57	2HN14ME067	67
2HN13ME403	58	2HN13ME013	58	2HN14ME029	68
2HN12ME083	59	2HN13ME015	58	2HN14ME053	68
2HN12ME104	59	2HN13ME054	58	2HN14ME078	68
2HN13ME421	59	2HN13ME063	58	2HN14ME097	68
2HN12ME064	60	2HN13ME093	58	2HN15ME400	68
2HN12ME098	61	2HN14ME409	58	2HN14ME116	69
2HN12ME037	62	2HN14ME417	58	2HN15ME423	69
2HN12ME051	62	2HN14ME421	58	2HN14ME049	70
2HN13ME414	62	2HN13ME012	59	2HN14ME052	70
2HN12ME030	63	2HN13ME025	59	2HN14ME106	71
2HN12ME080	63	2HN13ME056	59	2HN14ME004	72
2HN12ME027	64	2HN14ME401	59	2HN14ME020	72
2HN12ME121	64	2HN13ME005	60	2HN14ME031	72
2HN12ME017	65	2HN13ME011	60	2HN14ME054	72
2HN12ME059	65	2HN13ME023	60	2HN14ME079	72
2HN12ME101	65	2HN13ME030	60	2HN14ME090	73
2HN12ME085	66	2HN13ME033	60	2HN14ME091	73
2HN12ME039	67	2HN13ME046	60	2HN14ME105	73

2HN13ME420	67	2HN13ME049	60	2HN15ME408	74
2HN12ME004	68	2HN13ME076	60	2HN14ME118	75
2HN12ME006	68	2HN13ME080	60	2HN14ME063	77
2HN12ME095	68	2HN13ME103	60	2HN14ME101	77
2HN12ME054	69	2HN13ME117	60	2HN14ME026	78
2HN12ME087	69	2HN14ME416	60	2HN15ME424	78
2HN12ME001	70	2HN13ME017	61	2HN14ME074	80
2HN13ME424	70	2HN13ME020	61	2HN15ME414	81
2HN12ME021	71	2HN13ME050	61	2HN14ME008	84
2HN12ME020	72	2HN13ME118	61	2HN14ME064	84
2HN12ME091	72	2HN14ME414	61	2HN14ME003	85
2HN12ME013	73	2HN14ME422	61	2HN14ME069	85
2HN12ME053	73	2HN14ME412	62	2HN14ME114	85
2HN12ME072	73	2HN13ME019	63	2HN14ME013	86
2HN12ME108	74	2HN13ME107	63	2HN14ME070	86
2HN12ME119	74	2HN13ME022	65	2HN14ME039	87
2HN12ME019	75	2HN13ME091	65	2HN14ME083	88
2HN12ME114	76	2HN13ME105	65	2HN15ME421	91
2HN13ME419	76	2HN13ME026	66	2HN14ME121	103
2HN12ME096	77	2HN13ME040	66		
2HN12ME040	78	2HN13ME106	66		
2HN12ME103	78	2HN13ME009	68		
2HN12ME110	79	2HN13ME029	68		
2HN12ME003	81	2HN13ME008	69		
2HN12ME097	81	2HN13ME035	69		
2HN12ME118	81	2HN13ME043	69		
2HN12ME002	82	2HN13ME071	69		
2HN12ME032	82	2HN13ME092	69		
2HN12ME066	82	2HN13ME053	71		
2HN12ME088	82	2HN13ME089	71		
2HN12ME109	82	2HN13ME099	73		
2HN12ME100	83	2HN13ME010	74		
2HN12ME116	84	2HN13ME079	74		
2HN12ME010	86	2HN13ME036	77		
2HN12ME035	86	2HN13ME104	77		
2HN12ME094	86	2HN13ME021	78		
2HN12ME113	86	2HN13ME041	79		
2HN12ME099	87	2HN13ME044	79		
2HN12ME046	89	2HN14ME411	82		
2HN12ME008	90	2HN13ME047	83		
2HN12ME111	90	2HN13ME034	85		
2HN12ME015	93				
2HN13ME428	93				
2HN12ME007	94				
2HN12ME117	94				

2HN12ME016	95				
2HN12ME089	95				
2HN12ME038	96				
MEDIAN	57				
MEDIAN	**57**		**56**		**63**

Year	Median	Median of Medians	Initial Target Value **ITV= (Median of Medians)*3/100**
2014-15	57	57	1.368
2015-16	56		
2016-17	63		

IX. DIRECT ASSESSMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

Assessment Tools:

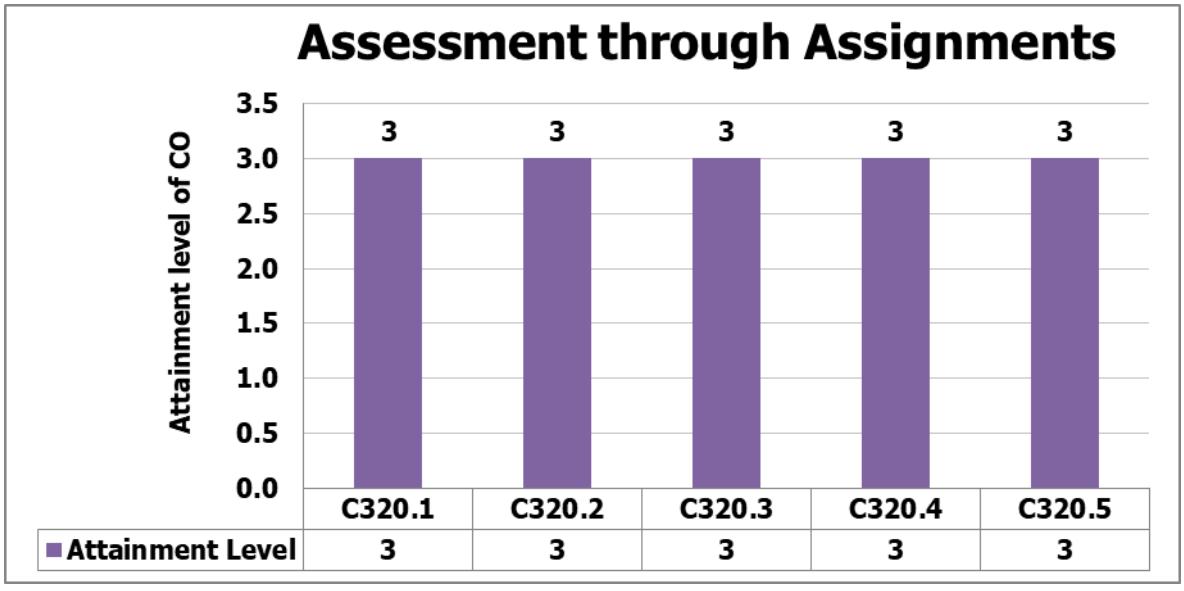
- Continuous assessment
- Laboratory experiments
- End semester exam

1. CO Attainment through Assignment:

A: Appeared R: Reached Low =1 (50-59 %) Medium =2 (60-69 %) High =3 (above 70 %)

COs	Assignment-1	Assignment-2	Assignment-3	Assignment-4	Assignment-5	Attainment level	Attainment level	Mapped PO	Mapped PSO

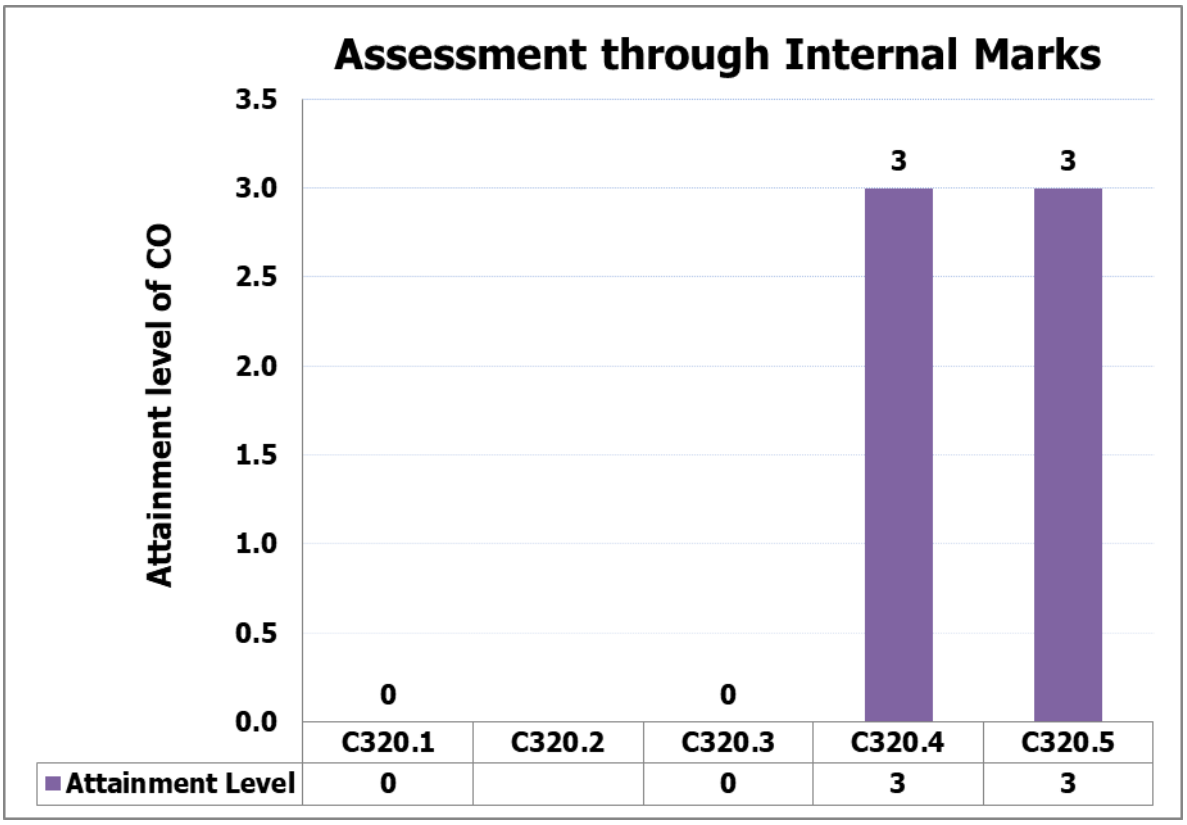
	A	R	A	R	A	R	A	R	A	R	of CO in Percentage	of CO		
C318.1	60	60									100.00	3	PO1,PO2,PO3, PO6,PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.2			60	60							100.00	3	PO1,PO2,PO3, PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.3					60	60					100.00	3	PO1,PO2,PO3, PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.4							60	60			100.00	3	PO1,PO2,PO3, PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.5									60	60	100.00	3	PO1,PO2,PO3, PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3



2. CO Attainment through Internal Tests:

A: Appeared R: Reached Low =1 (50-59 %) Medium =2 (60-69 %) High =3 (above 70 %)

COs	IA Test-1				IA Test -2				IA Test -3				Attainment level of CO	Mapped PO	Mapped PSO
	Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4				
	A	R	A	R	A	R	A	R	A	R	A	R			
C318.1	**54**	**22**											**0**	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.2														PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.3			**54**	**10**	**49**	**13**	**19**	**19**					**0**	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.4									**57**	**52**			**3**	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.5											**55**	**42**	**3**	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3

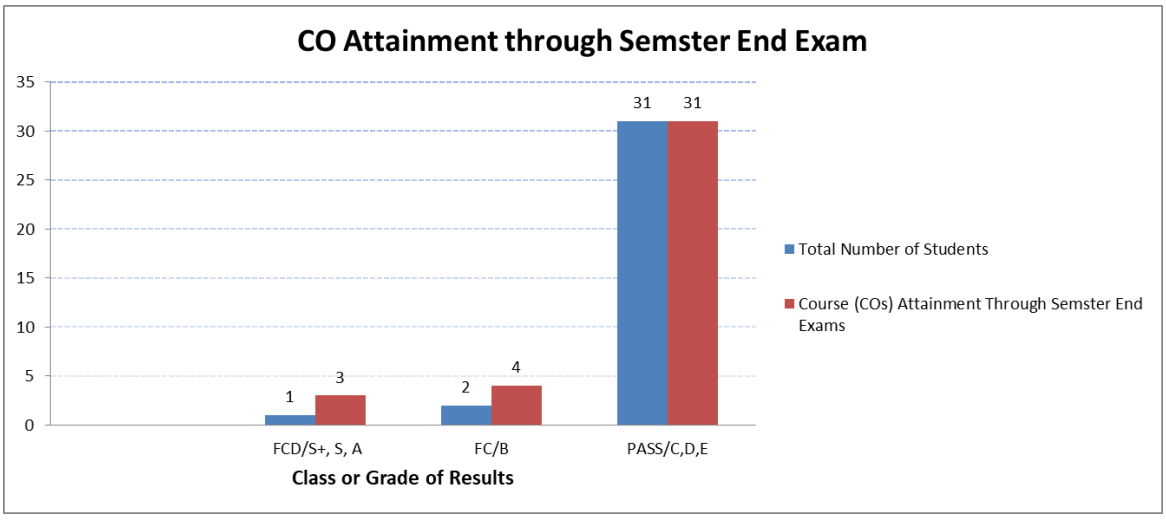


3. CO Attainment through Semester End Exam:

COs Attainment Levels:

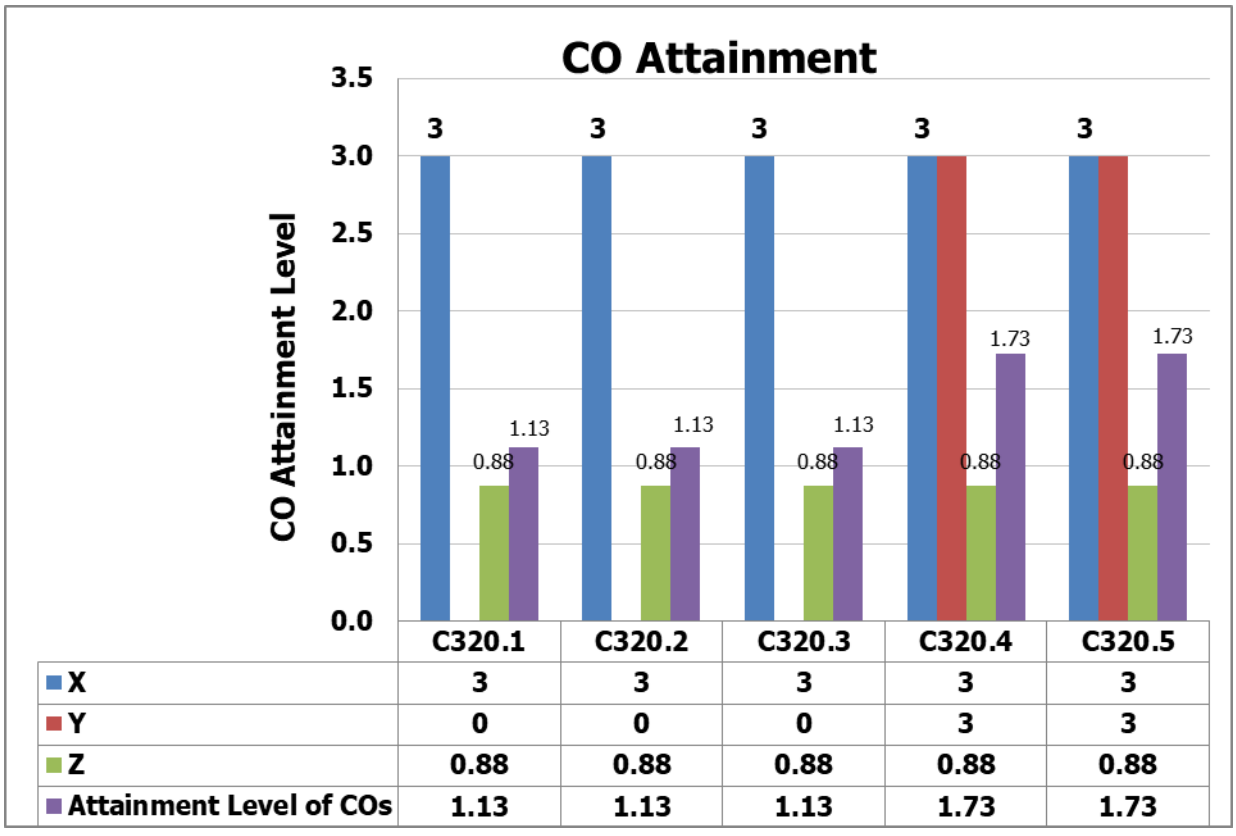
FCD: S+, S, & A = 3; FC (B) = 2; Pass: C, D, & E = 1; Fail = 0

Total no. of Students Appeared	61	
Class/Grade	Total Number of Students	Course (COs) Attainment Through Semester End Exams
FCD/S+, S, A	**3**	**9**
FC/B	**10**	**20**
PASS/C,D,E	**21**	**21**
Total Percentage of Passing	**59.65%**	**0.88**



4. CO Attainment through Direct Assessment:

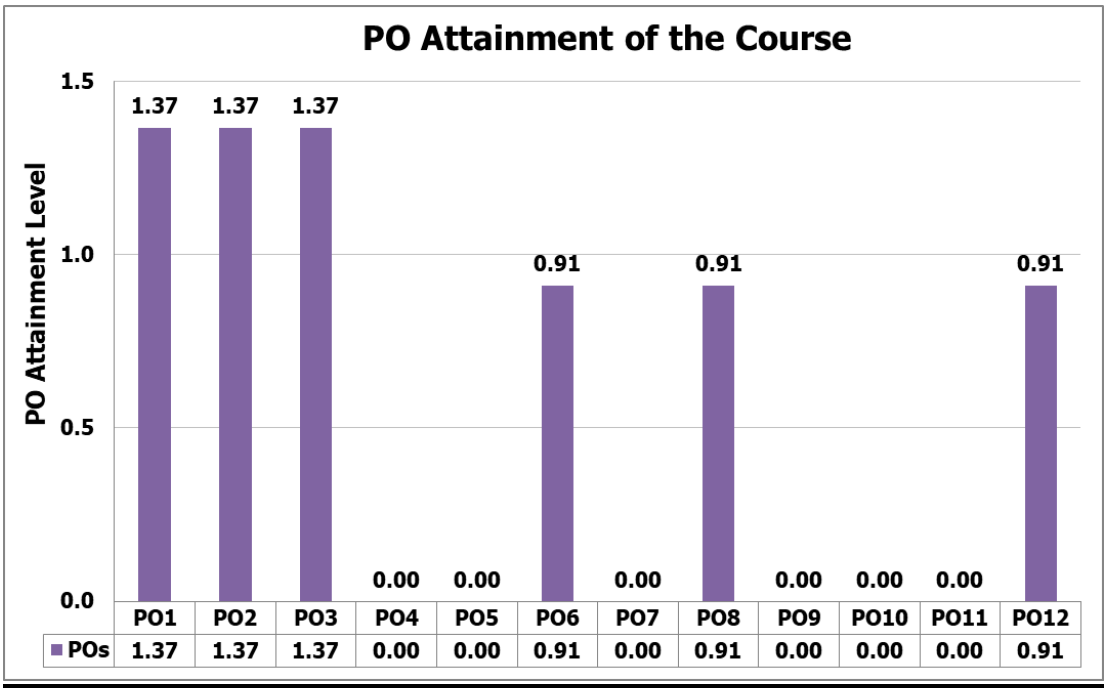
COs	Attainment Through Assignment (X)	Attainment Through IA Test(Y)	Attainment Through Semester End Exam(Z)	Attainment level of CO [0.2(X+Y)/2]+0.8Z	Mapped POs	Mapped PSOs
C318.1	3	0	0.88	1.13	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.2	3	0	0.88	1.13	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.3	3	0	0.88	1.13	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.4	3	3	0.88	1.73	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.5	3	3	0.88	1.73	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
Average				1.37		



5. PO Attainment through Direct Assessment:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C318	1.37	1.37	1.37	0.00	0.00	0.91	0.00	0.91	0.00	0.00	0.00	0.91

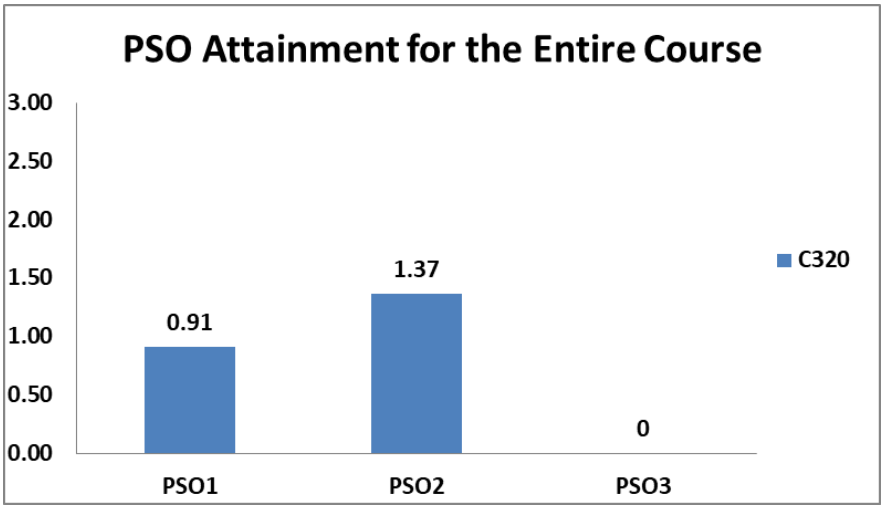
POs attainment value for the present course = (Mapped value * CO attainment average)/3



6. PSO Attainment for the Entire Course:

CO	PSO1	PSO2	PSO3
Attainment Level	0.91	1.37	0

PSOs attainment value for the present course = **(Mapped value * CO attainment average)/3**

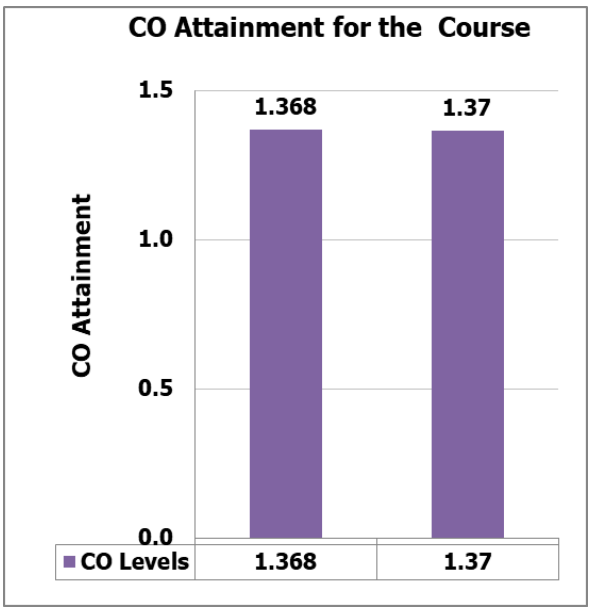


7. Target Attainment:

Median of median of previous three years university results of SEE has been taken to set bench mark. If the attained value is greater than or equal to initial target value, then for next subsequent years (2018-19) attained value is taken as the set target. If the attained value is less than set target then the same set target is continued for the next subsequent years.

Set Target Value (ITV)	1.368
Attained Value	1.37
New Target Level for the next Exam	1.368

CO Attainment for the Set Target	
Set Target CO Value	**Attained CO Value**
1.368	1.37

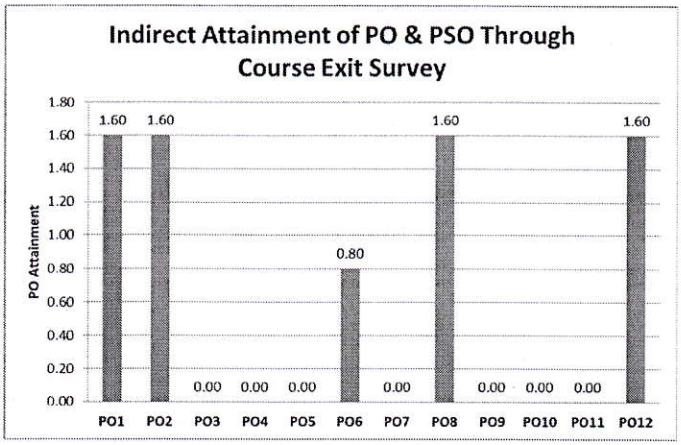


8. Indirect Attainment of PO & PSO Through Course Exit Survey (CES)

PO Attainment = (CO-PO Mapped value * CES attainment value)/3

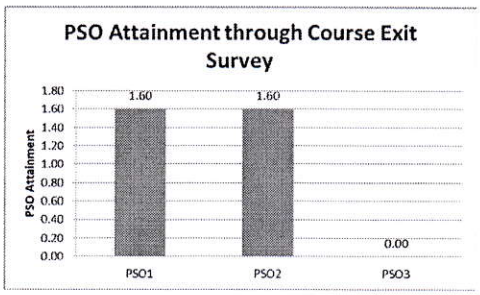
CO Attainment Value through Course Exit Survey:	2.52

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C318	1.60	1.60	0.00	0.00	0.00	0.80	0.00	1.60	0.00	0.00	0.00	1.60



PSO Attainment = (CO-PSO Mapped value * CES attainment value)/3

PSO	PSO1	PSO2	PSO3
Attainment Level	0.85	0.85	0.85



9. Course Coordinator Remarks:

S. N.	Observations	Comments
1	Impact of Delivery Methods	Delivery methods are satisfactory. Pedagogy used to deliver lectures is quite satisfactory. But overall attainment of all course outcomes is moderate as it is observed in CO attainment table. More practice problems shall be given as home work on previous question paper problems and some Remedial classes are required to clarify ambiguities of students.
2	Course Outcome Attainment	Overall Attainment of all course outcomes (CIE+SEE) is less than 50% on 1 -3 performance scale as observed CO attainment table. But attainment level of COs 1, 2&5 is less than 1 as compared to other remaining COs. To improve attainment level course outcomes C318.1, C318.2&C318.5 following activates are to be implemented. Tutorial/Remedial classes are to be conducted to explain concepts in simpler way by one to one interaction to weaker/slow learners.
3	Scope for Improvement	As this subject is prerequisite for sequel of subjects like design of machine elements for a design engineer, below mentioned activities can be suggested. Animated videos to clarify concepts of stress strain analysis done using modern analysis soft tools. Videos of advanced application oriented problems with solution Application based problems of design; thermal area shall be solved to have hands on experience for better understanding concepts of use finite element methods.
4	Additional Comments (if any)	Real world small problems can be given as assignment work on machine parts design and detailed drawings of part details with dimensions and assembly drawing using mechanical modeling software.

Name & Signature of Course Coordinator	Name & Signature of Module Coordinator	Head of the Dept.
C.D.N. Iranda	C.D.N. Iranda	Mechanical Engg. HSIT Nidasoshi

Attainment of POs through Direct and Indirect Method for the Batch 2019-20

S. N.	Attainment Methods	Assessment Tools	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	Direct Attainment (A)	Continuous Internal Evaluation Semester End Exam	1.71	1.59	1.28	1.59	1.75	1.17	1.24	1.22	1.60	1.75	1.51	1.47
2	Indirect Attainment (B)	Senior Exit Survey	2.7	2.6	2.7	2.6	2.6	2.7	2.8	2.7	2.8	2.66	2.72	2.68
		Alumni Survey	2.8	2.7	2.8	2.8	1.8	2.4	2.4	2.8	2.1	2.87	2.13	1.8
		Employer Survey	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
		Activity Feedback	3.00	3.00	3.0	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
		Course Exit Survey(CES)	2.03	1.91	1.68	1.44	1.72	1.27	1.28	1.36	1.41	2.08	1.49	1.80
		Placement Higher Studies(PHE)	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24
Average Indirect Attainment (B)			2.46	2.41	2.40	2.35	2.23	2.27	2.29	2.35	2.26	2.48	2.26	2.25
Average PO Attainment through (0.8A+0.2B)			1.86	1.75	1.50	1.74	1.85	1.39	1.45	1.45	1.73	1.90	1.66	1.63

Attainment of PSOs through Direct and Indirect Method for the Batch 2019-20

Sl. No.	Attainment Methods	Assessment Tools	PSO1	PSO2	PSO3
1	Direct Attainment (A)	Continuous Internal Evaluation + Semester End Exam	1.76	1.52	1.69
2	Indirect Attainment (B)	Senior Exit Survey	2.78	2.78	2.66
		Alumni Survey	2.93	2.93	2.53
		Activity Feedback	3.00	3.00	3.00
		Course Exit Survey(CES)	1.98	1.68	1.92
		Placement Higher Studies(PHE)	1.24	1.24	1.24
Average Indirect Attainment (B)			2.39	2.33	2.27
Average PO Attainment through (0.8A+0.2B)			1.89	1.68	1.81

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Attainment of POs & PSOs through Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) for the Passed Out Batch 2019-20

The POs and PSOs attainments of all courses for the **Passed out Batch 2019-20** are as below

S.N.	Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1.	C101	1.8	1.22	-	-	-	-	-	-	-	-	-	0.61
2.	C102	1.9	-	1.3	-	0.6	-	-	0.6	-	-	-	0.64
3.	C103	1.3	1.31	0.9	0.9	-	0.4	-	0.4	-	-	0.44	0.87
4.	C104	1.6	1.6	-	-	-	0.8	-	-	-	-	-	2.4
5.	C105	1	0.98	-	-	-	-	-	-	-	-	-	-
6.	C106	2.5	1.55	2.8	1.2	-	2.8	-	2.8	1.9	1.87	2.8	2.34
7.	C107	2.7	-	-	0.9	-	-	-	0.9	1.8	1.79	-	0.89
8.	C108	-	-	-	-	-	1.1	-	0.7	-	-	-	-
9.	C109	1.2	0.82	-	-	-	-	-	-	-	-	-	0.41
10.	C110	1.4	1.13	0.9	-	-	0.9	-	-	-	-	-	0.47
11.	C111	1.5	1.22	1.3	-	-	-	-	0.5	-	0.51	-	0.51
12.	C112	0.8	-	-	-	1.6	-	-	0.3	-	2.44	-	-
13.	C113	1.6	1.64	1.6	1.1	-	0.6	-	-	-	-	-	1.35
14.	C114	2.6	2.61	2.6	-	-	-	-	0.9	1.7	1.74	-	0.87
15.	C115	2.7	2.72	2.7	-	-	1.8	-	-	-	-	-	0.91
16.	C116	2.3	1.51	1.5	-	-	1.5	1.5	0.8	-	-	0.75	0.75
17.	C201	1.42	0.95	0.47	-	-	-	-	-	-	-	-	0.47
18.	C202	1.45	0.97	-	0.48	0.48	-	0.97	-	-	-	-	1.45
19.	C203	0.86	0.86	0.86	0.35	-	0.86	-	0.86	-	-	-	0.86
20.	C204	1.23	1.23	0.83	0.83	-	0.41	-	0.41	-	-	0.41	0.83
21.	C205	2.27	1.51	-	-	1.51	0.76	-	-	-	-	-	1.51
22.	C206	1.55	1.55	-	0.78	0.78	-	0.78	-	-	-	-	2.32
23.	C207	2.25	-	1.50	-	2.25	-	-	0.75	-	2.25	-	1.50
24.	C208	0.93	0.47	0.47	-	-	0.47	0.47	-	-	-	-	1.39
25.	C209	2.93	2.93	-	2.93	2.93	1.95	-	-	-	-	-	2.93
26.	C210	2.85	2.85	-	2.85	2.85	1.90	-	-	-	-	-	2.85
27.	C211	1.76	1.76	1.54	1.98	0.88	0.88	-	0.88	-	-	-	1.76
28.	C212	2.26	1.50	0.75	-	-	1.50	-	-	-	-	-	2.26
29.	C213	1.45	0.97	0.48	-	-	-	-	-	-	-	-	0.48
30.	C214	1.57	1.57	-	-	-	0.53	-	0.53	-	-	-	0.76
31.	C215	0.58	0.58	-	0.29	-	0.29	0.29	-	-	-	-	0.58
32.	C216	1.16	1.16	0.77	0.54	0.54	0.31	0.16	0.39	0.39	-	-	0.54
33.	C301	1.07	0.54	0.54	-	-	-	-	-	1.07	1.07	-	1.07
34.	C302	1.75	1.75	1.17	-	-	1.17	-	1.17	-	-	1.17	1.17
35.	C303	0.90	0.45	0.45	-	-	-	-	-	-	-	-	0.45
36.	C304	1.14	1.14	1.14	-	-	0.76	-	0.76	-	-	0.76	0.76

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37.	C308	1.78	-	-	-	1.77	0.59	1.18	-	-	-	-	1.77
38.	C310	2.05	2.05	2.05	1.37	-	2.05	2.05	2.05	0.69	-	-	0.69
39.	C313	1.90	1.90	-	-	1.90	-	-	-	1.90	-	-	0.95
40.	C314	0.89	0.89	-	-	-	-	0.89	-	-	-	-	0.89
41.	C315	1.82	1.82	1.82	-	-	1.21	-	1.21	-	-	1.21	1.21
42.	C316	1.93	1.93	0.82	-	0.64	0.64	-	0.82	-	-	0.55	1.93
43.	C317	1.11	1.11	0.83	0.56	0.42	0.56	-	-	-	-	-	1.11
44.	C318	1.30	1.30	0.82	-	-	0.79	-	1.02	-	-	-	1.02
45.	C323	0.67	0.67	-	-	-	-	1.34	-	-	-	-	1.34
46.	C327	1.49	-	-	-	1.49	0.75	-	2.23	-	-	1.49	1.49
47.	C328	1.91	1.91	-	-	1.91	-	-	-	1.80	-	-	0.95
48.	C329	2.53	2.53	0.84	-	2.53	1.69	-	2.53	-	-	1.69	2.53
49.	C401	2.16	2.16	2.16	1.44	-	2.16	2.16	0.72	0.72	1.44	1.44	2.16
50.	C402	1.24	1.24	1.24	-	-	-	-	-	-	-	-	0.62
51.	C403	2.51	2.51	-	-	-	0.84	0.84	-	-	-	-	2.51
52.	C405	1.65	1.65	-	-	-	0.83	-	1.65	-	-	-	1.65
53.	C411	1.58	-	-	-	1.58	0.79	0.79	-	-	-	-	1.58
54.	C413	3.00	3.00	-	-	-	2.00	-	2.00	-	-	-	2.00
55.	C414	1.95	1.95	1.95	2.92	2.92	0.98	-	0.98	1.95	0.98	-	1.95
56.	C415	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	2.00
57.	C416	-	1.57	2.35	2.35	-	-	-	-	-	-	1.57	1.57
58.	C417	1.97	-	-	1.97	2.95	-	0.98	-	-	0.98	-	1.97
59.	C422	1.41	1.41	-	-	1.41	1.41					2.12	1.41
60.	C423	1.63	2.00	1.67	1.67	1.50	1.39	1.23	1.00	2.07	2.08	1.78	1.40
61.	C424	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	2.00	2.00	2.00	2.00
62.	C425	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Average		**1.71**	**1.59**	**1.28**	**1.59**	**1.75**	**1.17**	**1.24**	**1.22**	**1.60**	**1.75**	**1.51**	**1.47**

S.N.	Course Code	PSO1	PSO2	PSO3
1.	C202	1.45	-	1.45
2.	C203	1.30	0.87	1.30
3.	C204	1.13	1.13	1.13
4.	C205	2.47	-	2.47
5.	C206	2.26	-	2.26
6.	C207	0.99	1.48	0.49
7.	C208	1.21	1.56	1.19
8.	C209	2.93	-	1.95
9.	C210	2.93	-	2.44
10.	C211	2.64	-	1.76
11.	C212	2.23	-	2.23
12.	C214	1.27	1.02	-

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13.	C215	0.88	0.58	0.58
14.	C216	1.18	1.18	1.18
15.	C301	0.99	-	0.99
16.	C302	1.75	1.17	-
17.	C303	-	0.45	-
18.	C304	1.14	1.44	1.14
19.	C308	2.02	-	2.02
20.	C310	2.05	0.73	2.05
21.	C313	1.90	-	-
22.	C314	1.78	-	-
23.	C315	1.82	1.82	1.82
24.	C316	1.97	-	1.97
25.	C317	1.11	1.11	0.98
26.	C318	1.30	1.53	0.84
27.	C323	1.34	1.34	-
28.	C327	1.49	-	0.75
29.	C328	0.95	1.91	-
30.	C329	2.53	2.53	2.53
31.	C401	1.26	0.42	1.26
32.	C402	1.57	1.57	-
33.	C403	2.51	-	2.51
34.	C405	1.47	1.47	1.40
35.	C411	2.03	-	2.03
36.	C413	2.00	2.00	-
37.	C414	2.92	2.92	2.92
38.	C415	2.00	2.00	2.00
39.	C416	1.57	1.57	-
40.	C417	1.97	-	1.97
41.	C422	0.70	-	1.39
42.	C423	1.62	2.30	1.62
43.	C424	2.00	2.00	2.00
44.	C425	3.00	3.00	3.00
Average		**1.76**	**1.52**	**1.69**

Prof. S. A. Goudadi
Dept. NBA Coordinator

Hirasugar Institute of Technology NIDASOSHI. PIN-591236. Dist:Belgaum.

Dr. S. N. Topannavar
Head of the Dept.
Mechanical Engg.
HSIT Nidasoshi

FACULTY COURSE ASSESSEMENT REPORT (FCAR)

Course Coordinator: **Prof: S A Goudadi** **Class Strength:62**

Semester: VI A **Subject: Finite Element Methods** **Code: 15ME61**

I. Program Outcomes (POs): Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

II. Program Specific Outcomes (PSOs):

The graduates of the program will be able to;

PSO1:	Implement the basic Mechanical Engineering knowledge to solve societal and industrial problems.
PSO2:	Design and Analyze basic Mechanical systems using relevant tools and techniques.
PSO3:	Understand and address current issues of industries through industry institute interaction and alumni social networks.

III. Course Outcomes (COs): The student, after successful completion of the course, will be able to:

CO	Description	Mapped POs	RBTL
C315.1	Understand the concepts behind formulation methods in FEM and Choose interpolation polynomial equation for simplex elements	PO1,PO2,PO3,PO6, PO8,PO11,PO12	L2
C315.2	Develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses.	PO1,PO2,PO3,PO6, PO8,PO11,PO12	L3
C315.3	Develop element characteristic equation and solve the global equation of FEA for beams and circular shafts	PO1,PO2,PO3,PO6, PO8,PO11,PO12	L3
C315.4	Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow	PO1,PO2,PO3,PO6, PO8,PO11,PO12	L3
C315.5	Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems	PO1,PO2,PO3,PO6, PO8,PO11,PO12	L3

IV. Mapping of Course Outcomes (COs) to Program Outcomes (POs):

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C315.1	3	3	3	--	--	2	--	2	--	--	2	2
C315.2	3	3	3	--	--	2	--	2	--	--	2	2
C315.3	3	3	3	--	--	2	--	2	--	--	2	2
C315.4	3	3	3	--	--	2	--	2	--	--	2	2
C315.5	3	3	3	--	--	2	--	2	--	--	2	2
Average	3	3	3			2		2			2	2

V. Mapping of Course Outcomes (COs) to Program Specific Outcomes (PSOs):

PSOs / COs	PSO 1	PSO 2	PSO 3
C315.1	3	3	3
C315.2	3	3	3
C315.3	3	3	3
C315.4	3	3	3
C315.5	3	3	3
Average	3	3	3

VI. Justification of CO-PO Mapping:

Mapping	Justification
C315.1-PO1	A strong correlation is given, as to understand the concepts behind formulation methods in FEM and choose interpolation polynomial equation for simplex elements requires fundamentals of mathematics and engineering to solve problems of different structures.
C315.2-PO1	A strong correlation is given, as to develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses requires good knowledge of application of matrices in mathematics and engineering properties fundamentals to solve problems.
C315.3-PO1	A strong correlation is given, so as to develop element characteristic equation and solve the global equation of FEA for beams and a circular shaft requires good knowledge of application fundamentals of mathematics and engineering to solve problems on beams and shafts.
C315.4-PO1	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow requires application of fundamentals of matrices and thermal engineering to solve complex problems on fluid flow and heat transfer.
C315.5-PO1	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems requires knowledge of higher order mathematics and engineering fundamentals to solve dynamic and axisymmetric problems.
C315.1-PO2	A strong correlation is given so as to Understand the concepts behind formulation methods in FEM and choose interpolation polynomial equation for simplex elements requires a good knowledge of system components that meet the specified needs.
C315.2-PO2	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses requires a good knowledge of design of components with appropriate consideration for the safety and societal considerations.
C315.3-PO2	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for beams and circular shafts requires a good knowledge of design system components that meet the specified needs with appropriate consideration for the safety and societal considerations.
C315.4-PO2	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow requires a good knowledge of design system components with safety and societal considerations
C315.5-PO2	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems requires a good knowledge of design of axis symmetric and dynamic components that meet the specified needs of the society.
C315.1-PO3	A strong correlation is given so as to Understand the concepts behind formulation methods in FEM and Choose interpolation polynomial equation for simplex elements requires a good knowledge of design solutions for complex engineering problems to meet the specified needs with appropriate consideration for the public health and safety considerations.
C315.2-PO3	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses requires a good knowledge of design solutions for bars and trusses problems to meet the specified needs with appropriate consideration for the public health and safety considerations.

C315.3-PO3	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for beams and circular shafts involves design solutions for complex equipments to meet the specific applications considering the public health and safety considerations.
C315.4-PO3	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow involves design considerations and solutions for complex engineering problems to meet the specified needs.
C315.5-PO3	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems require the knowledge of design considerations which will help to the society.
C315.1-PO6	A medium correlation is given so as to Understand the concepts behind formulation methods in FEM and Choose interpolation polynomial equation for simplex elements require the moderate knowledge of professional engineering practice with safety standards..
C315.2-PO6	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses application in engineering practice with the assess to safety issue and the professional engineering solutions.
C315.3-PO6	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for beams and circular shafts require the application of reasoning informed by the contextual knowledge to assess safety issue and the consequent responsibilities relevant to the professional engineering practice.
C315.4-PO6	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow applies to the application of knowledge to assess safety issue and the responsibilities relevant to the professional engineering practice.
C315.5-PO6	A low correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems require the application of limited knowledge to assess safety issue and the consequent responsibilities relevant to the professional engineering practice.
C315.1-PO8	A medium correlation is given so as to Understand the concepts behind formulation methods in FEM and choose interpolation polynomial equation for simplex elements and related applications requires professional ethics and principles in developing the simplex elements.
C315.2-PO8	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses requires a ethical principles and commit to professional ethics and responsibilities in developing these elements.
C315.3-PO8	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for beams and circular shafts related applications requires a knowledge of engineering norms and standards in developing beams and shafts.
C315.4-PO8	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow requires a ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice
C315.5-PO8	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems requires a fundamentals of ethical principles and professional ethics and responsibilities and norms.
C315.1-PO11	A medium correlation is given so as to Understand the concepts behind formulation methods in FEM and Choose interpolation polynomial equation for simplex elements requires the knowledge of Demonstration of simplex elements in their particular work.

C315.2-PO11	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses requires the limited knowledge and understanding of the engineering principles in their needy work.
C315.3-PO11	A medium correlation is given as limited engineering and management principles knowledge is required in developing element characteristic equation and solve the global equation of FEA for beams and circular shafts.
C315.4-PO11	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow requires understanding of the engineering and management principles and apply these to one's own work
C315.5-PO11	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems requires to Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work
C315.1-PO12	A medium correlation is given so as to Understand the concepts behind formulation methods in FEM and choose interpolation polynomial equation for simplex elements requires ability to engage in learning in their independent work or in professional practice
C315.2-PO12	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA elements such as bars and a truss requires the knowledge to develop such equations in engineering practice.
C315.3-PO12	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for beams and circular shafts requires to learn similar type of applications in engineering practice.
C315.4-PO12	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow requires in independent and life-long learning in the broadest context of technological changes to their related work.
C315.5-PO12	A medium correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems requires ability to engage in independent and life-long learning in developing such type of equipments.

VII. Justification of CO-PSO Mapping :

Mapping	Justification
C315.1-PSO1	A strong correlation is given as to Understand the concepts behind formulation methods in FEM and Choose interpolation polynomial equation for simplex elements requires to apply basic knowledge of Mechanical Engineering in their work
C315.2-PSO1	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses requires to apply basic knowledge of Mechanical Engineering in various practical fields to solve societal problems by engaging themselves in various projects
C315.3-PSO1	A strong correlation is given so as to explain the Develop element characteristic equation and solve the global equation of FEA for beams and circular shafts requires knowledge of various practical fields to solve societal problems.
C315.4-PSO1	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow requires to apply basic knowledge of engineering in solving societal problems by engaging themselves in their work.
C315.5-PSO1	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems requires to apply

	basic knowledge of Mechanical Engineering in various practical fields to solve societal problems by engaging themselves in various projects
C315.1-PSO2	A strong correlation since to Understand the concepts behind formulation methods in FEM and Choose interpolation polynomial equation for simplex elements requires to analyze and design basic mechanical system using relevant tools and techniques.
C315.2-PSO2	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses requires analyzing and designing basic mechanical system using relevant tools and techniques.
C315.3-PSO2	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for beams and circular shafts requires the knowledge of analysis and design of basic mechanical system using modern tools and techniques.
C315.4-PSO2	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow requires analyzing and designing basic mechanical systems.
C315.5-PSO2	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for axis symmetric and a dynamic problem requires designing and analyzing mechanical systems using relevant tools and techniques.
C315.1-PSO3	A strong correlation since to Understand the concepts behind formulation methods in FEM and Choose interpolation polynomial equation for simplex elements requires to resolve contemporary issues of industries through industry institute interaction and alumni social networks
C315.2-PSO3	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA elements such as bars and trusses requires to resolve contemporary issues in their work.
C315.3-PSO3	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for beams and circular shafts helps to solve their problems of industries through industry institute interaction and alumni social networks in their related work.
C315.4-PSO3	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for 1D heat transfer and fluid flow requires to resolve problems related to such applications in industries.
C315.5-PSO3	A strong correlation is given so as to Develop element characteristic equation and solve the global equation of FEA for axis symmetric and dynamic problems requires to resolve contemporary issues of industries through industry institute interaction and alumni social networks.

VIII. Bench Mark Setting

VTU Result(CIE+SEE)					
July/August 2015 Max. Marks:125		July/August 2016 Max. Marks: 125		July/August 2017 Max. Marks: 125	
USN	Marks Obtained	USN	Marks Obtained	USN	Marks Obtained
2HN12ME031	40	2HN13ME084	15	2HN15ME404	13
2HN13ME409	40	2HN13ME045	16	2HN14ME041	14
2HN12ME018	50	2HN13ME031	19	2HN15ME425	22
2HN12ME034	50	2HN13ME014	41	2HN14ME048	25
2HN12ME082	50	2HN13ME098	49	2HN14ME024	50
2HN13ME401	50	2HN13ME061	50	2HN14ME047	50
2HN13ME406	50	2HN13ME086	50	2HN14ME056	50
2HN13ME410	50	2HN13ME087	50	2HN14ME085	50
2HN13ME423	50	2HN13ME114	50	2HN15ME403	50
2HN12ME005	51	2HN13ME123	50	2HN15ME409	50
2HN12ME055	52	2HN14ME400	50	2HN15ME417	50
2HN13ME407	52	2HN13ME090	51	2HN15ME420	50
2HN13ME413	52	2HN14ME402	52	2HN14ME001	51
2HN12ME024	53	2HN14ME420	52	2HN14ME068	52
2HN12ME105	53	2HN13ME052	53	2HN14ME102	54
2HN12ME048	54	2HN13ME082	56	2HN15ME406	55
2HN12ME022	55	2HN14ME416	57	2HN14ME016	58
2HN12ME026	55	2HN14ME424	57	2HN14ME031	58
2HN12ME070	56	2HN13ME083	58	2HN14ME033	58
2HN12ME047	57	2HN14ME407	58	2HN14ME053	58
2HN13ME426	58	2HN14ME403	59	2HN15ME418	58
2HN12ME098	59	2HN13ME055	60	2HN15ME422	58
2HN13ME402	59	2HN13ME064	60	2HN14ME045	59
2HN12ME065	60	2HN13ME116	60	2HN14ME081	59
2HN12ME083	60	2HN14ME409	60	2HN14ME083	59
2HN13ME408	60	2HN14ME401	61	2HN15ME407	59
2HN13ME418	60	2HN14ME413	61	2HN14ME111	60
2HN13ME424	60	2HN13ME042	62	2HN14ME115	60
2HN12ME079	62	2HN13ME072	62	2HN15ME413	60
2HN13ME412	62	2HN13ME085	62	2HN14ME089	62
2HN12ME028	63	2HN13ME093	62	2HN14ME090	62
2HN12ME069	64	2HN14ME417	62	2HN14ME076	63
2HN12ME071	64	2HN14ME406	64	2HN14ME084	63
2HN12ME084	64	2HN14ME418	64	2HN14ME037	64
2HN13ME419	65	2HN13ME007	65	2HN14ME091	64
2HN12ME001	67	2HN13ME097	65	2HN14ME110	64

2HN13ME422	67	2HN14ME404	65	2HN14ME065	65
2HN13ME427	67	2HN13ME075	66	2HN14ME106	65
2HN12ME059	69	2HN13ME092	66	2HN14ME120	65
2HN12ME063	69	2HN14ME405	66	2HN14ME087	66
2HN12ME078	69	2HN13ME032	67	2HN14ME119	67
2HN12ME023	70	2HN13ME051	67	2HN14ME049	68
2HN12ME045	70	2HN13ME073	67	2HN15ME410	68
2HN12ME057	70	2HN13ME074	67	2HN14ME003	69
2HN12ME017	71	2HN14ME408	67	2HN14ME039	70
2HN12ME056	71	2HN14ME415	67	2HN14ME040	70
2HN12ME095	71	2HN13ME049	68	2HN14ME097	70
2HN12ME027	72	2HN13ME067	68	2HN15ME401	70
2HN12ME050	73	2HN13ME069	68	2HN15ME408	70
2HN12ME121	73	2HN13ME025	69	2HN15ME414	70
2HN12ME036	74	2HN13ME037	69	2HN15ME416	70
2HN13ME400	74	2HN13ME078	69	2HN14ME032	71
2HN13ME421	74	2HN13ME120	69	2HN14ME082	71
2HN12ME014	75	2HN13ME088	70	2HN14ME096	71
2HN12ME043	75	2HN13ME004	71	2HN14ME036	72
2HN13ME417	75	2HN13ME005	71	2HN14ME117	72
2HN12ME041	76	2HN13ME009	71	2HN14ME060	73
2HN12ME094	76	2HN13ME011	71	2HN14ME072	73
2HN13ME416	76	2HN13ME015	71	2HN14ME086	73
2HN13ME425	76	2HN13ME024	71	2HN15ME415	73
2HN12ME096	77	2HN13ME033	71	2HN14ME030	75
2HN12ME099	77	2HN13ME095	71	2HN14ME019	76
2HN12ME020	78	2HN13ME035	72	2HN14ME054	76
2HN12ME030	78	2HN13ME046	72	2HN14ME077	76
2HN12ME072	78	2HN13ME113	72	2HN14ME118	76
2HN12ME075	78	2HN13ME038	73	2HN14ME078	77
2HN12ME104	78	2HN13ME065	73	2HN14ME079	77
2HN12ME037	79	2HN13ME091	73	2HN14ME101	77
2HN12ME064	79	2HN13ME109	73	2HN15ME424	78
2HN12ME102	79	2HN13ME111	73	2HN14ME021	79
2HN12ME108	79	2HN13ME119	73	2HN14ME028	79
2HN12ME077	80	2HN14ME412	73	2HN14ME034	79
2HN12ME114	80	2HN13ME002	74	2HN14ME002	80
2HN13ME414	80	2HN13ME044	74	2HN14ME061	80
2HN12ME042	81	2HN13ME081	74	2HN14ME105	82
2HN12ME073	81	2HN13ME034	75	2HN14ME067	83
2HN12ME103	81	2HN13ME062	75	2HN14ME113	83
2HN12ME106	81	2HN14ME423	75	2HN14ME004	84
2HN12ME120	81	2HN13ME013	76	2HN14ME063	84

2HN13ME404	82	2HN13ME020	76	2HN14ME108	84
2HN13ME411	82	2HN14ME411	76	2HN14ME043	86
2HN12ME011	83	2HN13ME096	77	2HN14ME058	86
2HN12ME086	83	2HN13ME080	78	2HN14ME055	87
2HN12ME091	83	2HN13ME106	78	2HN14ME074	87
2HN12ME101	83	2HN13ME110	78	2HN15ME423	87
2HN13ME403	83	2HN14ME414	78	2HN14ME026	88
2HN12ME080	84	2HN13ME008	79	2HN14ME066	88
2HN12ME081	84	2HN13ME017	79	2HN15ME412	89
2HN12ME113	84	2HN13ME053	79	2HN14ME012	90
2HN12ME115	85	2HN13ME012	80	2HN14ME116	90
2HN12ME088	86	2HN13ME030	80	2HN14ME070	91
2HN12ME002	87	2HN13ME066	80	2HN14ME052	92
2HN12ME021	88	2HN13ME099	80	2HN14ME064	93
2HN12ME062	88	2HN13ME118	80	2HN14ME099	93
2HN12ME100	88	2HN13ME050	81	2HN15ME426	93
2HN13ME420	88	2HN13ME079	81	2HN14ME069	94
2HN12ME054	89	2HN13ME103	81	2HN14ME020	95
2HN12ME067	89	2HN13ME041	82	2HN15ME421	95
2HN13ME428	89	2HN13ME056	82	2HN14ME029	96
2HN12ME044	90	2HN13ME016	83	2HN14ME114	96
2HN12ME087	90	2HN13ME043	83	2HN15ME402	97
2HN12ME019	91	2HN13ME068	83	2HN14ME008	98
2HN12ME052	91	2HN13ME104	83	2HN15ME400	98
2HN12ME089	91	2HN13ME108	83	2HN14ME013	101
2HN12ME097	91	2HN14ME422	83	2HN14ME121	109
2HN13ME415	92	2HN13ME010	84		
2HN12ME040	93	2HN13ME054	84		
2HN12ME051	93	2HN14ME421	84		
2HN12ME004	94	2HN13ME023	85		
2HN12ME112	94	2HN13ME027	85		
2HN12ME012	95	2HN13ME063	85		
2HN12ME038	95	2HN13ME070	85		
2HN12ME039	95	2HN13ME076	85		
2HN12ME046	95	2HN13ME029	86		
2HN12ME003	97	2HN13ME059	86		
2HN12ME032	97	2HN13ME117	86		
2HN12ME116	97	2HN13ME089	88		
2HN12ME085	98	2HN13ME071	89		
2HN12ME119	99	2HN13ME019	90		
2HN12ME008	100	2HN13ME026	90		
2HN12ME010	100	2HN13ME036	90		
2HN12ME066	100	2HN13ME107	90		

2HN12ME109	100	2HN13ME040	92		
2HN12ME007	101	2HN13ME047	92		
2HN12ME053	101	2HN13ME105	93		
2HN12ME118	101	2HN13ME022	96		
2HN12ME035	102	2HN13ME021	99		
2HN12ME006	103				
2HN12ME111	103				
2HN12ME117	103				
2HN12ME013	104				
2HN12ME110	105				
2HN12ME015	106				
2HN12ME016	106				
MEDIAN	**78.5**		**72**		**71**

Year	Median	Median of Medians	Initial Target Value **ITV= (Median of Medians)*3/100**
July/August 2015	71	72	**2.16**
July/August 2016	72		
July/August 2017	78.5		

IX. DIRECT ASSESSMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

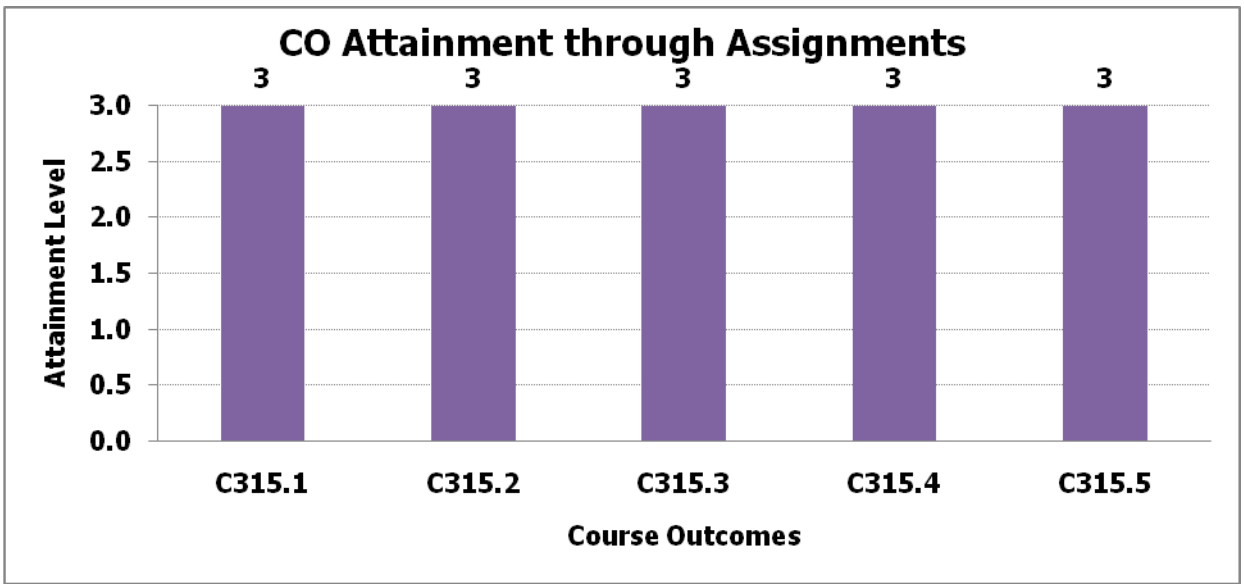
Assessment Tools:

- Continuous assessment
- Laboratory experiments
- End semester exam

1. CO Attainment through Assignment:

A: Appeared R: Reached Low =1 (50-59 %) Medium =2 (60-69 %) High =3 (above 70 %)

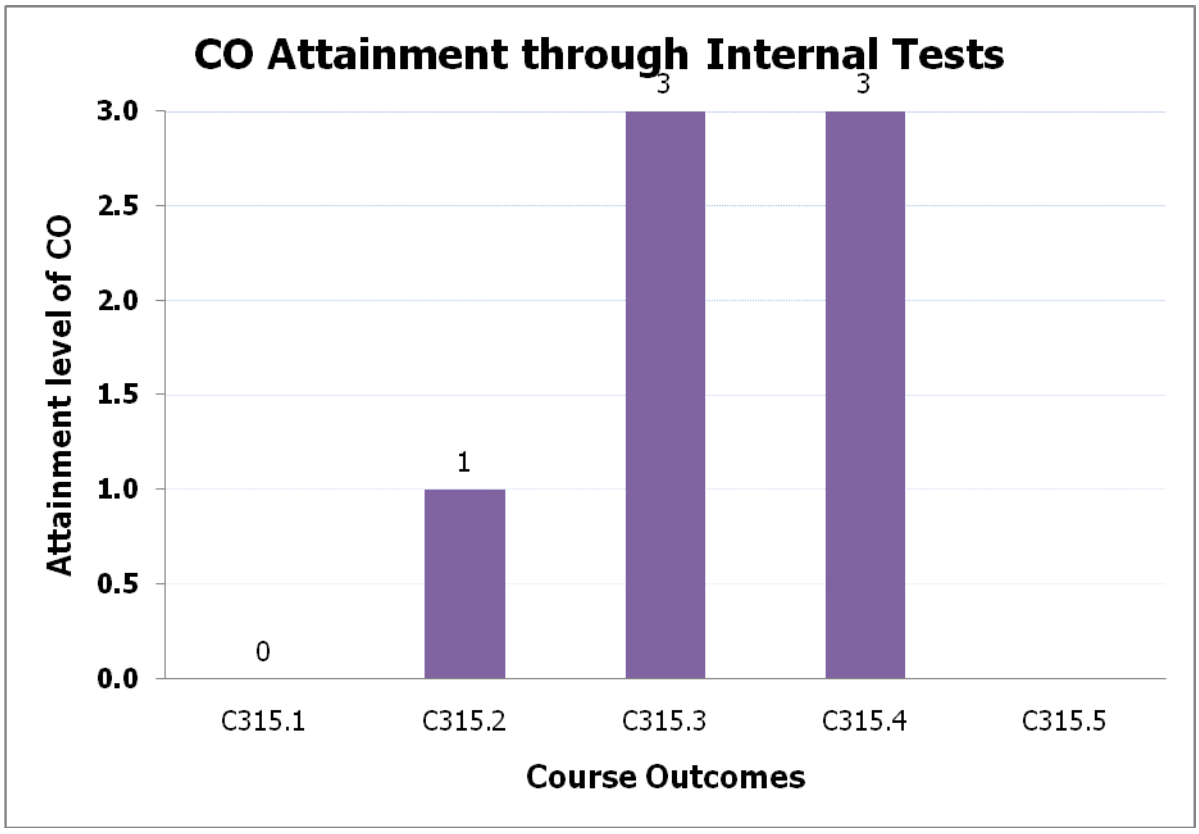
COs	Assignment -1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO	Mapped PSO
	A	R	A	R	A	R	A	R	A	R				
C315.1	62	62									100.00	3	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.2			62	62							100.00	3	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.3					62	62					100.00	3	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.4							62	62			100.00	3	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.5									62	61	98.39	3	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3



2. CO Attainment through Internal Tests:

A: Appeared R: Reached Low =1 (50-59 %) Medium =2 (60-69 %) High =3 (above 70 %)

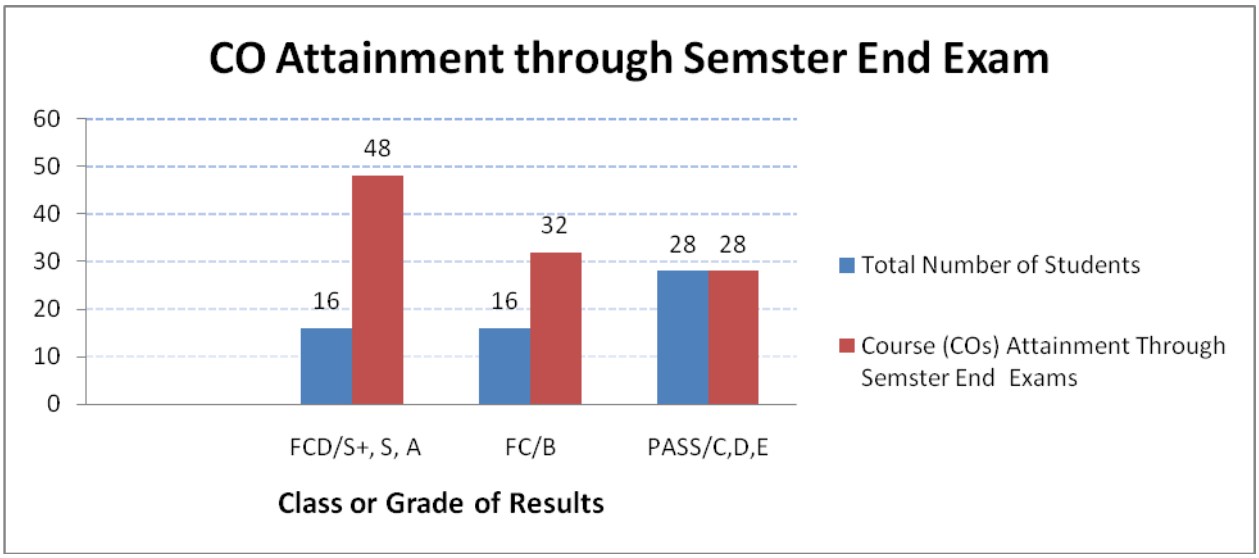
COs	IA Test-1				IA Test -2				IA Test -3				Attainment level of CO	Mapped PO	Mapped PSO
	Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4				
	A	R	A	R	A	R	A	R	A	R	A	R			
C315.1	56	30	54	24									0	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.2					60	40	61	28					1	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.3									42	31			3	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.4											47	44	3	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.5														PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3



3. CO Attainment through Semester End Exam:

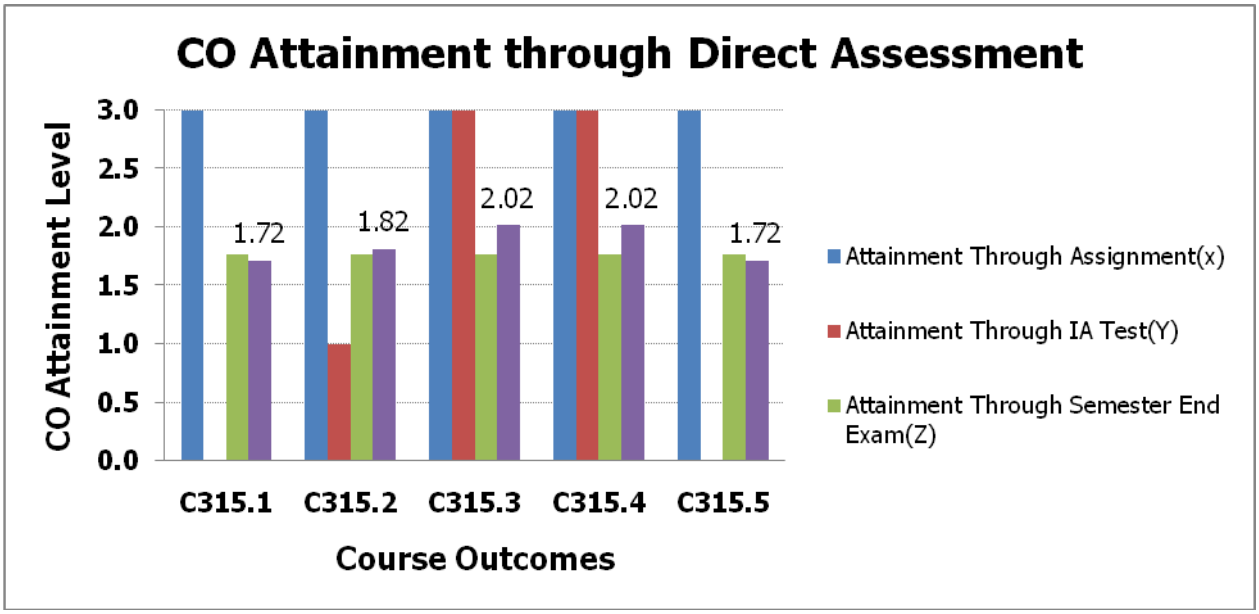
COs Attainment Levels:
FCD: S+, S, & A = 3; FC (B) = 2; Pass: C, D, & E = 1; Fail = 0

Total no. of Students Appeared	61	
Class/Grade	Total Number of Students	Course (COs) Attainment through Semester End Exams
FCD/S+, S, A	16	48
FC/B	16	32
PASS/C,D,E	28	28
Total Percentage of Passing	98.36%	1.77



4. CO Attainment through Direct Assessment:

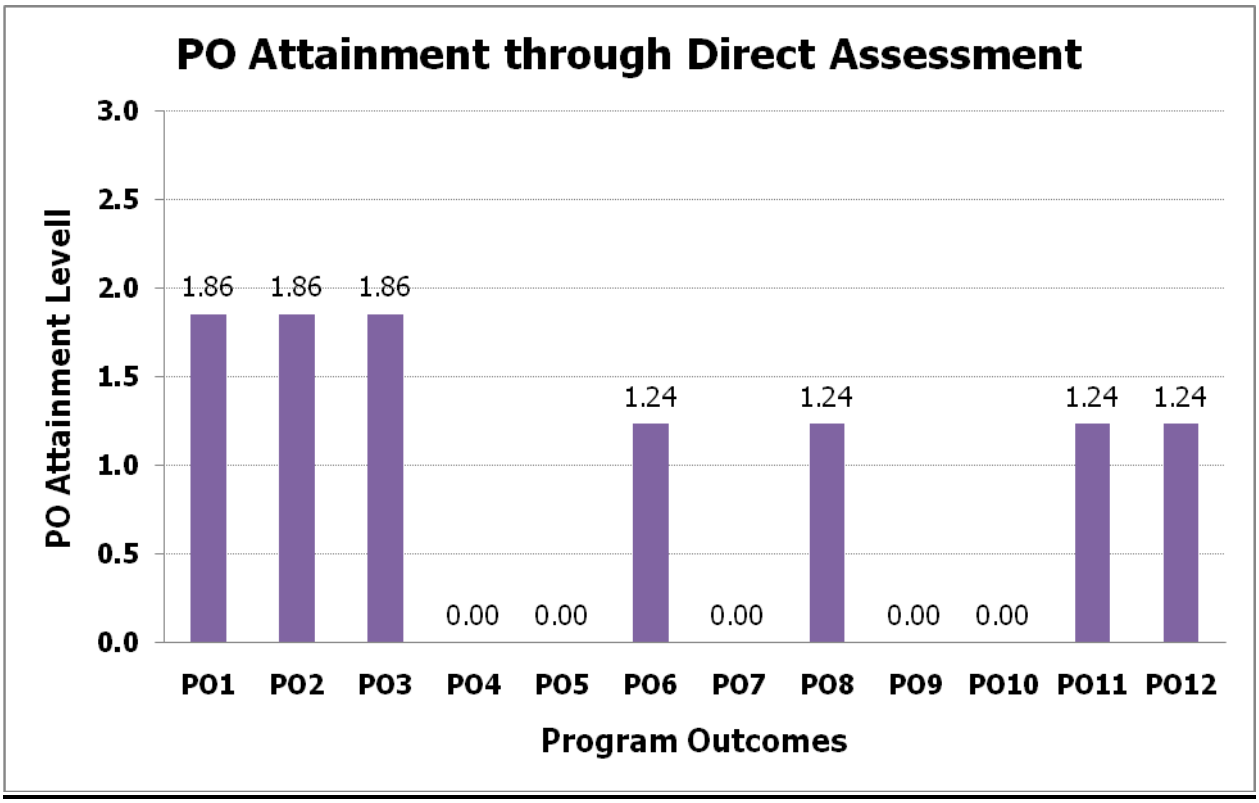
COs	Attainment Through Assignment (X)	Attainment Through IA Test(Y)	Attainment Through Semester End Exam(Z)	Attainment level of CO [0.2(X+Y)/2]+0.8Z	Mapped POs	Mapped PSOs
C315.1	3	0	1.77	1.72	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.2	3	1	1.77	1.82	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.3	3	3	1.77	2.02	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.4	3	3	1.77	2.02	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.5	3	0	1.77	1.72	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
Average				1.86		



5. PO Attainment through Direct Assessment:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C315	1.86	1.86	1.86	--	--	1.24	--	1.24	--	--	1.24	1.24

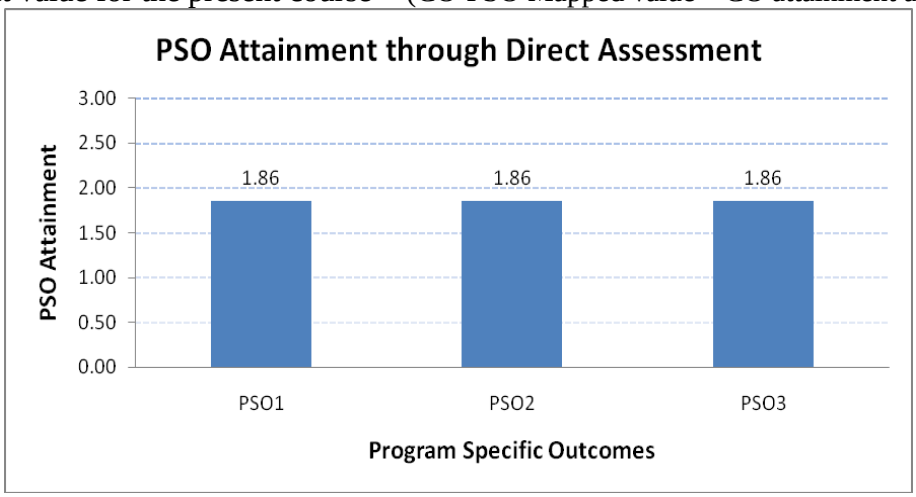
POs attainment value for the present course = (CO-PO Mapped value * CO attainment average)/3



6. PSO Attainment for the Entire Course:

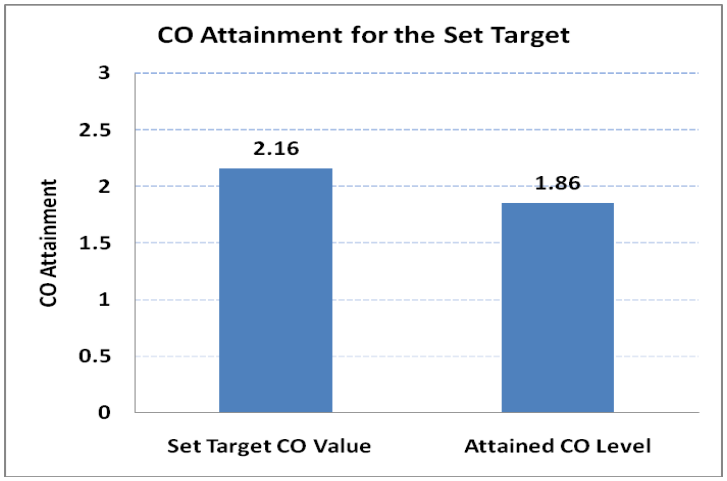
CO	PSO1	PSO2	PSO3
Attainment Level	1.86	1.86	1.86

PSOs attainment value for the present course = (CO-PSO Mapped value * CO attainment average)/3



7. Target Attainment:

CO Attainment for the Set Target	
Set Target CO Value	**Attained CO Value**
2.16	1.86



Median of median of previous three years university results of SEE has been taken to set bench mark. If the attained value is greater than or equal to initial target value, then for next subsequent years attained value is taken as the set target. If the attained value is less than set target then the same set target is continued for the next subsequent years.

Set Target Value (ITV)	2.16
Attained Value	1.86
New Target Value for the next Exam	2.16

8. Course Coordinator Remarks:

S. No.	Observations	Comments
1	**Impact of Delivery Methods**	Delivery methods are satisfactory. Pedagogy used to deliver lectures is quite satisfactory. But overall attainment of all course outcomes is moderate as it is observed in CO attainment table. More practice problems shall be given as home work on previous question paper problems and some tutorial classes are required to clarify ambiguities of students.
2	**Course Outcome Attainment**	Overall Attainment of all course outcomes (CIE+SEE) is more than 50% on 1 -3 performance scale as observed CO attainment table. But attainment level of COs 1, 2&5 is less than 2 as compared to other remaining COs. To improve attainment level course outcomes C315.1, C315.2&C315.5 following activates are to be implemented. • Tutorial/Remedial classes are to be conducted to explain concepts in simpler way by one to one interaction to weaker/slow learners. • Home assignments are to be given to improve hands on experience to solve more numerical so appreciate/understand problem and solution to it. Verification and suggestions of the same in front of the students/slow learners.
3	**Scope for Improvement**	As this subject is prerequisite for sequel of subjects like design of machine elements for a design engineer, below mentioned activities can be suggested. • Animated videos to clarify concepts of stress strain analysis done using modern analysis soft tools. • Videos of advanced application oriented problems with solution • Application based problems of design; thermal area shall be solved to have hands on experience for better understanding concepts of use finite element methods.
4	**Additional Comments (if any)**	Real world small problems can be given as mini project work using industrial/academic version FEM software.

X. Indirect Attainment of PO & PSO Through Course Exit Survey (CES)

PO Attainment = (CO-PO Mapped value * CES attainment value)/3

CO Attainment Value through Course Exit Survey:	2.94

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C315	2.94	2.94	2.94	0.00	0.00	1.96	0.00	1.96	0.00	0.00	1.96	1.96

PSO Attainment = (CO-PSO Mapped value * CES attainment value)/3

PSO	PSO1	PSO2	PSO3
Attainment Level	2.94	2.94	2.94

Mr. S A Goudadi	Mr. D N Inamdar	
Name & Signature of Course Coordinator	Name & Signature of Module Coordinator	HOD

Attainment of POs through Direct and Indirect Method for the Batch 2018-19

S. N.	Attainment Methods	Assessment Tools	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	**Direct Attainment(A)**	Continuous Internal Evaluation +Semester End Exam	1.61	1.43	1.20	1.14	1.25	0.98	0.87	0.92	1.17	1.15	1.09	1.26
2	**Indirect Attainment (B)**	Senior Exit Survey	2.7	2.6	2.7	2.6	2.6	2.7	2.8	2.7	2.8	2.66	2.72	2.68
		Alumni Survey	1.9	2.4	2.5	2.6	1.7	1.6	1.7	2.5	1.7	2.73	1.82	1.9
		Employer Survey	3	3	3	3	3	3	2.67	2.67	3	3	3	3
		Activity Feedback	3	3	3	3	2.86	2.86	3	3	2.86	3	3	3
		Course Exit Survey(CES)	2.06	1.73	1.46	1.23	1.68	1.04	1.03	1.23	1.09	1.01	1.45	1.75
		Placement Higher Studies(PHE)	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47
Average Indirect Attainment (B)			2.36	2.37	2.36	2.32	2.22	2.11	2.11	2.26	2.15	2.31	2.24	2.30
Average PO Attainment through (0.8A+0.2B)			1.76	1.62	1.43	1.38	1.44	1.21	1.12	1.19	1.37	1.38	1.32	1.47

Attainment of PSOs through Direct and Indirect Method for the Batch 2018-19

Sl. No.	Attainment Methods	Assessment Tools	PSO1	PSO2	PSO3
1	**Direct Attainment (A)**	Continuous Internal Evaluation + Semester End Exam	1.72	1.62	1.78
2	**Indirect Attainment (B)**	Senior Exit Survey	2.78	2.78	2.66
		Alumni Survey	2.91	2.73	1.91
		Activity Feedback	3.00	3.00	2.89
		Course Exit Survey(CES)	2.09	1.96	2.11
		Placement Higher Studies(PHE)	1.47	1.47	1.47
Average Indirect Attainment (B)			2.45	2.39	2.21
Average PO Attainment through (0.8A+0.2B)			1.87	1.77	1.87

Attainment of POs & PSOs through Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) for the Passed Out Batch 2018-19

The POs and PSOs attainments of all courses for the **Passed out Batch 2018-19** are as below

S.N.	Course Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1.	C101	1.37	0.91	-	-	-	-	-	-	-	-	-	0.46
2.	C102	1.38	-	0.92	-	0.46	-	-	0.46	-	0.46	-	0.46
3.	C103	1.33	1.33	0.89	0.89	-	0.44	-	0.44	-	-	0.44	0.89
4.	C104	2.01	1.34	-	-	-	-	0.67	-	-	-	-	-
5.	C105	0.89	0.89	-	-	-	-	-	-	-	-	-	-
6.	C106	2.35	1.47	2.65	1.44	-	2.65	-	2.65	1.77	1.77	2.65	1.61
7.	C107	2.56	-	-	-	0.85	-	-	0.85	1.71	1.71	-	0.85
8.	C108	-	-	-	-	-	1.12	-	0.75	-	-	-	-
9.	C109	1.11	0.74	-	-	-	-	-	-	-	-	-	0.37
10.	C110	0.91	0.73	0.61	-	-	0.55	-	-	-	-	-	0.30
11.	C111	1.37	1.10	1.19	-	-	-	-	-	-	-	-	0.20
12.	C112	0.85	-	-	-	1.69	-	-	0.44	-	2.54	-	-
13.	C113	0.84	0.77	0.89	0.58	0.71	0.90	0.26	0.26	0.64	0.89	0.69	0.84
14.	C114	2.23	2.23	1.33	0.90	-	-	-	-	1.33	-	1.33	0.90
15.	C115	2.59	2.59	2.59	-	-	1.73	-	-	-	-	-	0.86
16.	C116	2.38	1.58	1.58	-	-	1.58	1.58	0.79	-	-	0.79	0.79
17.	C201	1.23	0.82	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41
18.	C202	2.23	1.49	-	0.74	0.74	-	1.49	-	-	-	-	2.23
19.	C203	0.75	0.75	-	0.38	-	0.38	-	-	-	-	-	0.75
20.	C204	0.67	0.44	-	-	-	0.44	-	0.22	-	-	-	0.44
21.	C205	1.77	1.05	1.26		1.26	0.76	-	-	-	-	-	1.51
22.	C206	1.40	1.40	-	0.70	0.70	-	0.70	-	-	-	-	2.10
23.	C207	1.08	-	1.08	-	1.63	-	-	0.54	-	1.08	-	1.63
24.	C208	1.33	0.67	0.67	-	-	0.67	0.67	-	-	-	-	2.00
25.	C209	2.76	2.76	-	1.84	-	1.84	-	-	-	-	-	2.76
26.	C210	2.49	2.49	-	2.49	2.49	1.66	-	-	-	-	-	2.49
27.	C211	1.76	1.76	1.76	-	-	0.88	-	0.88	0.88	-	-	1.76
28.	C212	2.40	1.60	0.80	-	-	1.60	-	-	-	-	-	2.40
29.	C213	1.33	0.88	0.44	-	-	-	-	-	-	-	-	0.21
30.	C214	1.40	1.40	0.93	0.93	-	0.47		0.47	-	-	0.47	0.93
31.	C215	0.63	0.63		0.32	-	0.32	0.32	-	-	-	-	0.63
32.	C216	0.71	0.56	0.35	0.35	-	0.47	0.35	-	0.35	-	-	0.35
33.	C301	1.02	0.51	0.51	-	-	-	-	-	1.02	1.02	-	1.02
34.	C302	1.43	1.43	0.95	-	-	0.95	-	0.95	-	-	0.95	0.95
35.	C303	0.63	0.32	0.32	-	-	-	-	-	-	-	-	0.32

36.	C304	1.50	1.50	1.50	-	-	1.00	-	1.00	-	-	1.00	1.00
37.	C308	2.10	-	-	-	2.10	0.70	1.40	-	-	-	-	2.10
38.	C311	0.87	0.44	0.44	0.44	-	0.44	0.44	-	-	0.44	0.44	0.87
39.	C313	0.96	0.96	-	-	-	-	-	-	-	-	-	0.96
40.	C314	0.90	0.90	-	-	-	-	0.90	-	-	-	-	0.90
41.	C315	1.86	1.86	1.86	-	-	1.24	-	1.24	-	-	1.24	1.24
42.	C316	1.86	1.86	0.85		0.62	0.62	-	-	-	-	0.85	1.86
43.	C317	1.16	1.16	0.82	0.46	0.23	0.70	-	0.47	-	-	-	0.93
44.	C318	0.91	0.91	-	-	-	0.46	-	0.91	-	-	-	0.91
45.	C321	2.15	1.79	0.72	-	1.43	-	-	-	-	-	-	2.15
46.	C327	1.56	-	-	-	1.39	1.05	-	1.91	-	-	1.56	1.56
47.	C328	1.97	1.97	-	-	1.97	-	-	-	1.97	-	-	0.99
48.	C329	2.50	2.50	1.66	2.50	2.50	0.83	-	0.83	1.66	0.83	1.66	2.50
49.	C401	2.13	2.13	2.13	1.42	-	2.13	2.13	0.71	0.71	1.42	1.42	2.13
50.	C402	1.42	1.42	1.42	-	-	-	-	-	-	-	-	0.71
51.	C403	1.95	1.95	-	-	-	-	0.65	-	-	-	-	1.95
52.	C405	1.39	1.39	-	-	-	0.69	-	1.39	-	-	-	1.39
53.	C411	1.52	-	-	-	1.52	0.76	0.76	-	-	-	-	1.52
54.	C413	2.97	2.97	-	-		1.98	-	1.98	-	-	-	1.98
55.	C414	1.97	1.97	0.97	2.95	2.95	0.48	-	0.48	0.97	0.48	-	1.97
56.	C415	1.63	2.00	1.67	1.67	1.50	1.39	1.23	1.00	2.07	2.08	1.78	1.40
57.	C416	-	1.19	1.79	1.79	-	-	-	-	-	-	1.19	1.19
58.	C417	1.97	-	-	1.77	2.27	0.79	0.49	0.99	-	1.48	0.99	0.98
59.	C422	1.55	-	-	-	-	-	1.55	0.77	-	-	1.55	0.77
60.	C423	2.00	1.67	1.67	1.50	1.39	1.23	1.00	2.07	2.08	1.78	1.40	-
61.	C424	1.63	2.00	1.67	1.67	1.50	1.39	1.23	1.00	2.07	2.08	1.78	1.40
62.	C425	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	Average	**1.61**	**1.43**	**1.20**	**1.14**	**1.25**	**0.98**	**0.87**	**0.92**	**1.17**	**1.15**	**1.09**	**1.26**

S.N.	Course Code	PSO1	PSO2	PSO3
1.	C202	2.23	-	2.23
2.	C203	1.21	1.13	1.13
3.	C204	0.67	0.22	-
4.	C205	1.89	1.89	1.26
5.	C206	2.10	-	2.10
6.	C207	1.63	1.63	1.63
7.	C208	1.33	-	1.18
8.	C209	2.32	-	2.32
9.	C210	2.69	-	1.80
10.	C211	2.50	-	1.75
11.	C212	1.98	-	1.98
12.	C214	1.4	1.4	1.4

13.	C215	1.01	1.01	-
14.	C216	1.06	0.71	-
15.	C301	1.43	-	1.43
16.	C302	1.43	0.95	-
17.	C303	-	0.81	-
18.	C304	1.5	1.5	1.5
19.	C308	2.23	-	2.23
20.	C311	1.22	1.22	1.22
21.	C313	-	-	2.87
22.	C314	1.81	-	-
23.	C315	1.86	1.86	1.86
24.	C316	1.97	-	1.97
25.	C317	1.16	0.93	-
26.	C318	0.91	1.37	-
27.	C321	1.44	-	1.08
28.	C327	1.39	-	1.05
29.	C328	0.99	1.97	-
30.	C329	2.50	2.50	2.50
31.	C401	1.74	0.58	1.74
32.	C402	1.42	1.42	-
33.	C403	1.95	1.95	-
34.	C405	1.38	1.38	-
35.	C411	1.91	-	1.91
36.	C413	2.97	2.97	2.97
37.	C414	2.61	2.86	2.61
38.	C415	1.60	2.30	1.60
39.	C416	1.19	1.19	-
40.	C417	2.04	1.06	2.04
41.	C422	1.56	-	1.56
42.	C423	1.58	2.33	1.56
43.	C424	1.58	2.33	1.56
44.	C425	3.00	3.00	3.00
Average		**1.72**	**1.62**	**1.78**

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