Attainment of Program Outcomes and Program Specific Outcomes:

PO/PSO Attainment through Direct Assessment Methods:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	**2.31**	**1.86**	**1.81**	**1.23**	**0.87**	**1.05**	**0.50**	**0.76**	**0.81**	**0.92**	**0.95**	**1.24**	**1.90**	**1.61**

PO/PSO Attainment through Indirect Assessment Methods:

Sl. No.	Indirect Method	Weightage	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Employer Survey	5	3	3	3	3	3	3	3	3	3	3	3	3	--	--
2	Alumni Survey	15	3.00	2.17	2.16	2.14	2.55	2.16	2.19	2.20	2.29	2.23	2.44	2.34	--	--
3	Senior Exit Survey	15	2.91	2.77	2.77	2.74	2.83	2.74	2.83	2.83	2.80	2.86	2.97	2.77	2.83	2.74
4	Activity Feedback	35	2.57	0.00	0.00	0.00	0.00	2.57	0.00	2.61	2.59	2.62	0.00	2.60	2.62	2.62
5	Course Exit Survey	15	2.41	1.91	1.82	1.21	0.85	0.98	0.59	0.82	0.75	0.93	0.93	1.26	2.08	1.72
6	Placement, Higher Education and Entrepreneurship	15	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Overall Indirect Attainment(B)			**2.50**	**1.38**	**1.37**	**1.27**	**1.29**	**2.14**	**1.20**	**2.15**	**2.14**	**2.17**	**1.31**	**2.22**	**2.22**	**2.11**

PO/PSO Attainment through Direct and Indirect Assessment Methods:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	2.31	1.86	1.81	1.23	0.87	1.05	0.50	0.76	0.81	0.92	0.95	1.24	1.90	1.61
Indirect Assessment(B)	2.50	1.38	1.37	1.27	1.29	2.14	1.20	2.15	2.14	2.17	1.31	2.22	2.22	2.11
AVG(0.8*A+0.2*B)	2.35	1.76	1.72	1.24	0.95	1.27	0.64	1.04	1.08	1.17	1.02	1.44	1.96	1.71

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Program Level Course-PO and PSO Attainment matrix (2017 Batch)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	2.39	1.59	0.80	---	---	---	---	---	---	---	---	0.80	---	---
C102	2.56	---	1.71	---	0.85	---	---	0.85	---	0.85	---	0.85	---	---
C103	1.73	1.73	1.16	1.16	---	0.58	---	0.58	---	---	0.58	1.16	---	---
C104	2.33	1.56	---	---	---	---	---	---	---	---	---	---	---	---
C105	2.36	1.57	1.57	---	---	---	---	0.79	---	---	0.79	---	---	---
C106	2.67	1.67	3.00	1.33	---	3.00	---	3.00	2.00	2.00	3.00	2.50	---	---
C107	2.89	---	---	---	0.96	---	---	0.85	-	---	---	---	---	---
C109	1.82	1.21	---	0.61	---	---	---	---	---	---	---	0.61	---	---
C110	2.33	1.86	1.55	---	---	1.40	---	---	---	---	---	0.78	---	---
C111	1.60	1.60	1.07	1.07	---	0.53	---	0.53	---	---	0.53	1.07	---	---
C112	0.83	---	---	---	1.66	---	---	0.83	---	2.49	---	---	---	---
C113	1.80	1.80	1.80	1.20	---	0.60	---	---	---	---	---	1.20	---	---
C114	2.81	2.81	1.87	1.87	---	0.94	---	0.94	---	---	0.94	1.87	---	---
C115	2.95	2.95	2.95	---	---	1.97	---	---	---	---	---	0.98	---	---
C116	2.68	1.78	1.78	---	---	1.78	1.78	0.89	---	---	0.89	0.89	---	---
C201	1.81	1.21	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	---	---
C202	1.93	1.29	1.29	1.29	0.64	0.00	0.00	0.00	0.00	0.00	1.29	0.64	1.28	0.64
C203	2.61	1.39	2.08	1.04	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.87	1.1	0.82
C204	2.59	2.59	2.59	1.73	1.21	1.73	0.86	0.86	1.29	0.86	1.38	1.29	2.59	0.86
C205	1.76	1.76	0.59	0.59	0.00	0.00	0.00	0.59	0.00	0.00	0.00	0.59	0.82	0.64
C206	1.64	1.09	0.55	--	--	--	--	--	--	0.55	--	0.55	1.09	0.55
C207	2.94	2.94	2.94	1.27	0.98	0.00	0.00	0.00	0.98	1.96	0.00	0.98	1.98	1.98
C208	2.31	1.92	2.31	0.96	0.96	0.96	0.00	0.00	0.96	0.96	0.96	0.96	1.73	1.15
C209	2.36	1.58	0.79	--	--	--	--	--	--	--	--	0.79	--	--
C210	2.40	2.40	2.40	0.80	0.00	0.80	0.00	0.00	0.00	0.00	0.00	1.60	1.60	0.8
C211	2.22	1.92	2.22	1.72	1.48	0.00	0.00	0.74	0.00	0.00	0.00	0.74	0.74	0.74
C212	1.46	1.46	1.46	0.78	0.49	0.00	0.00	0.49	0.00	0.00	0.49	0.49	0.97	0.49

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213	2.05	0.73	1.90	0.73	0.00	0.73	0.00	0.00	0.00	0.00	0.00	0.73	2.20	1.46
C214	1.46	0.83	1.25	0.94	1.35	1.04	0.83	0.00	0.00	0.00	0.52	0.52	1.14	1.46
C215	1.46	0.83	1.25	0.94	1.35	1.04	0.83	0.00	0.00	0.00	0.52	0.52	1.14	1.46
C216	2.40	2.00	2.40	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	2.00	2.00
C301	0.82	0.82	0.82	0.82	0.00	0.82	0.00	0.82	2.30	1.64	2.46	0.82	0.82	0.82
C302	2.42	2.42	1.62	1.62	0.00	0.81	0.00	0.81	0.00	0.00	0.81	1.62	1.94	1.62
C303	2.43	1.46	2.11	1.14	1.62	0.97	0.00	0.00	0.00	0.00	0.81	1.79	1.42	0.71
C304	2.46	1.97	1.64	1.47	0.00	1.64	1.64	0.00	1.64	2.46	1.64	2.46	2.46	0.82
C305	2.66	2.17	2.41	1.45	1.21	1.45	0.00	0.00	0.97	0.97	1.93	1.45	1.86	1.86
C306	2.45	1.40	2.10	1.58	2.28	1.75	1.40	0.00	0.00	0.00	1.05	1.75	1.93	2.45
C307	2.89	2.89	1.92	1.92	0.00	0.96	0.00	0.96	0.00	0.00	0.96	1.92	2.33	1.48
C308	2.66	2.17	2.41	1.45	1.21	1.45	0.00	0.00	0.97	0.97	1.93	1.45	2.66	1.69
C309	3.00	3.00	2.60	2.40	0.00	1.00	0.00	1.00	0.00	1.00	2.00	2.00	3.00	2.60
C310	2.40	2.00	2.40	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	2.0	2.0
C311	1.58	1.98	0.99	0.00	0.00	0.99	0.99	0.99	0.00	0.00	0.99	0.99	1.98	1.98
C312	3.00	3.00	2.80	2.40	2.60	2.40	0.00	1.00	0.00	0.00	0.00	2.80	2.4	2.4
C313	3.00	2.00	1.00	1.00	0.00	1.00	0.00	1.00	2.80	2.00	1.00	1.00	1.00	1.00
C314	2.57	1.38	1.78	0.99	1.98	0.00	0.00	0.99	0.99	0.00	0.00	0.99	1.58	1.78
C315	2.86	2.29	2.48	1.91	1.91	1.53	0.95	0.95	0.95	0.95	0.95	1.53	2.95	1.57
C316	3.00	3.00	2.50	1.75	2.25	1.50	1.00	1.00	1.00	1.50	2.00	2.00	2.95	2.21
C401	0.82	0.82	0.82	0.82	0.00	0.82	0.00	0.82	2.29	1.63	2.45	0.82	0.81	0.81
C402	2.89	1.74	1.54	1.74	1.54	1.74	0.00	0.96	0.00	1.93	1.93	1.54	1.9	1.9
C403	1.91	1.03	1.32	0.73	0.73	0.00	0.00	0.73	0.55	0.00	0.00	0.73	1.17	1.32
C404	2.51	2.17	2.17	2.00	1.34	1.25	0.84	0.84	0.84	0.84	0.84	2.00	1.42	0.71
C405	2.79	1.86	1.86	0.93	0.93	0.93	0.00	0.00	0.00	0.93	0.93	0.93	1.76	1.76
C406	3.00	3.00	2.00	2.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	2.33	1.48
C407	3.00	2.00	2.00	--	3.00	1	1.00	--	1	1	--	1	2.00	3.00
C408	3.00	2.00	3.00	2.00	2.00	1.00	2.00	2.00	3.00	3.00	3.00	1.00	3	3.00
C409	2.74	1.83	1.83	0.91	0.00	0.91	0.91	0.91	0.91	0.91	0.00	0.91	1.76	1.76

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410	2.70	2.70	2.34	1.80	0.00	1.80	0.90	0.90	0.90	0.90	0.90	1.80	2.70	1.98
C411	1.88	1.88	1.88	0.94	0.00	1.88	0.94	0.94	0.94	0.94	0.94	1.88	1.89	1.89
C412	1.88	1.88	1.88	0.94	0.00	1.88	0.94	0.94	0.94	0.94	0.94	1.88	1.88	1.88
C413	2	2	2	1	2	1	2	3	3	3	2	2	3	3
C414	3.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	3.00	1.00	1.00	3	3
C415	2.00	2.00	2.00	1.00	2.00	1.00	2.00	3.00	3.00	3.00	2.00	2.00	3	3
Avg.	**2.31**	**1.86**	**1.81**	**1.23**	**0.87**	**1.05**	**0.50**	**0.76**	**0.81**	**0.92**	**0.95**	**1.24**	**1.90**	**1.61**

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FACULTY COURSE ASSESSEMENT REPORT (FCAR)

Course Coordinator: **Prof: S. S. Ittannavar** **Class Strength:35**

Semester: V **Subject: Digital Signal Processing** **Code: 17EC52**

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:	An ability to understand the concepts of Basic Electronics and Communication Engineering and to apply them to various areas like Signal Processing, VLSI, Embedded Systems, Communication Systems and Digital& Analog Devices.
PSO2:	An ability to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive at cost effective and appropriate solutions.

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

CO	Description
C302.1:	Define DSP and compute DFT and IDFT of various signals using its properties.
C302.2:	Apply the knowledge of DFT to find the computational complexity and convolution for long duration sequence.
C302.3:	Apply fast and efficient algorithms for computing DFT and IDFT of a given sequence.
C302.4:	Design and Analyze the structures of IIR filters.
C302.5:	Design and Analyze the structures of FIR filters.

IV. Mapping of Course Outcomes (Cos) to Program Outcomes (Pos):

POs / Cos	1	2	3	4	5	6	7	8	9	10	11	12
C302.1	3	3	2	NA	NA	1	NA	1	NA	NA	1	2
C302.2	3	3	2	NA	0	1	NA	1	0	0	1	2
C302.3	3	3	2	2	NA	1	NA	1	NA	NA	1	2
C302.4	3	3	2	2	NA	1	0	1	NA	NA	1	2
C302.5	3	3	2	NA	NA	1	NA	1	NA	NA	1	2
AVG	3	3	2	2	0	1	0	1	0	0	1	2

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

PSOs / Cos	PSO1	PSO2
C302.1	2	2
C302.2	2	2
C302.3	3	2
C302.4	2	2
C302.5	3	2
AVG	2.4	2

VI. Justification of CO-PO Mapping:

Mapping	Justification
C302.1-5 TO PO1	A high correlation since explaining the concept require a certain level of knowledge of mathematics and engineering sciences.
C302.1-5 TO PO2	A high correlation since explaining the concept require a certain level of problem analysis skills based on literature research. However, first principles of mathematics, science are required.
C302.1-5 TO PO3	A medium correlation since explaining the concept require a certain level of knowledge on designing / developing solutions considering public safety and environmental issues.
C302.3-PO4	A medium correlation since a higher level of knowledge such as research-based and research methods is not essential to give conclusions on the problems solved.
C302.4-PO4	
C302.1-5 TO PO5	Not using any modern tools to understand the concepts of operating systems.
C302.1-5 TO PO6	How better we can develop a DSP system that has less effect on health and security issues and how legal DSP can be developed.
C302.1-5 TO PO7	Good impact on society and environment are not included.
C302.1-5 TO PO8	Low correlation with Ethical values, team work and communication concepts are included.
C302.1-5 TO PO9,10	Team work and communication concepts are not included.
C302.1-5 TO PO11	A low correlation with 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.
C302.1-5 TO PO12	A student working in DSP domain can apply the concepts studied in this course throughout his carrier.

VII. Justification of CO-PSO Mapping (Digital Signal Processing – 17EC52):

Mapping	Justification
C302.1,2,4 TO PSO1	A medium correlation with understand the concepts of Basic Electronics and Communication Engineering and to apply them to various areas like Signal Processing, VLSI, Embedded Systems, Communication Systems and Digital& Analog Devices.
C302.3,5 TO PSO1	A strong correlation with understand the concepts of Basic Electronics and Communication Engineering and to apply them to various areas like Signal Processing, VLSI, Embedded Systems, Communication Systems and Digital& Analog Devices.
C302.1-5 TO PSO2	A medium correlation to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive at cost effective and appropriate solutions.

MEASUREMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

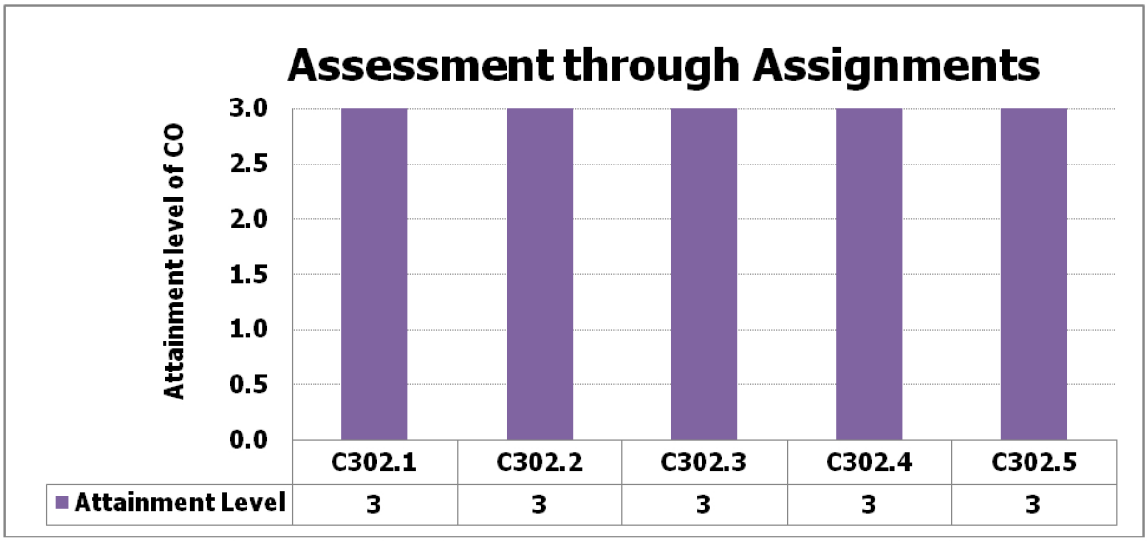
Assessment Tools:

- Continuous assessment
- Laboratory experiments
- End semester exam

I. Assessment through Assignment:

A: Appeared R: Reached Low =1 (50-60 %) Medium =2 (61-70 %) 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
	A	R	A	R	A	R	A	R	A	R			
C302.1	35	35									100.00	3	PO1,PO3,PO6,PO8, PO11-PO12
C302.2			35	35							100.00	3	PO1,PO3,PO6,PO8, PO11-PO12
C302.3					35	35					100.00	3	PO1,PO3,PO6,PO8, PO11-PO12
C302.4							35	35			100.00	3	PO1,PO3,PO6,PO8, PO11-PO12
C302.5									35	35	100.00	3	PO1,PO3,PO6,PO8, PO11-PO12

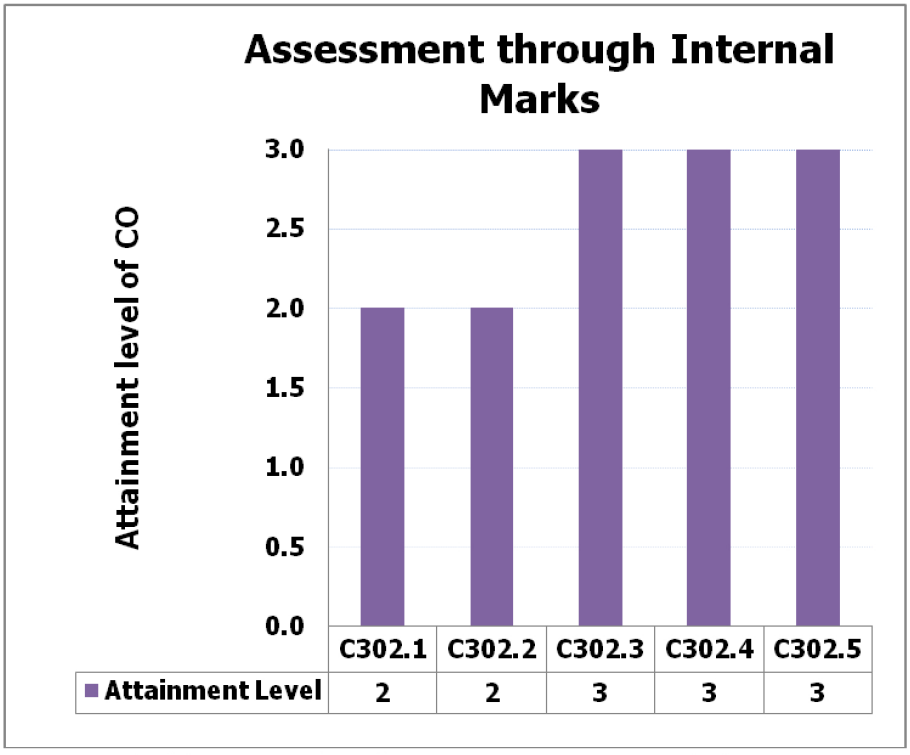


(Table & Bar Chart from Assignment Assessment Excel Sheet)

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		
C302.1	35	34	35	23									2	PO1- PO3,PO6,PO8,PO11-PO12
C302.2					35	24							2	PO1- PO3,PO6,PO8,PO11-PO12
C302.3							35	35					3	PO1- PO4,PO6,PO8,PO11-PO12
C302.4									35	31			3	PO1- PO4,PO6,PO8,PO11-PO12
C302.5											35	29	3	PO1- PO3,PO6,PO8,PO11-PO12



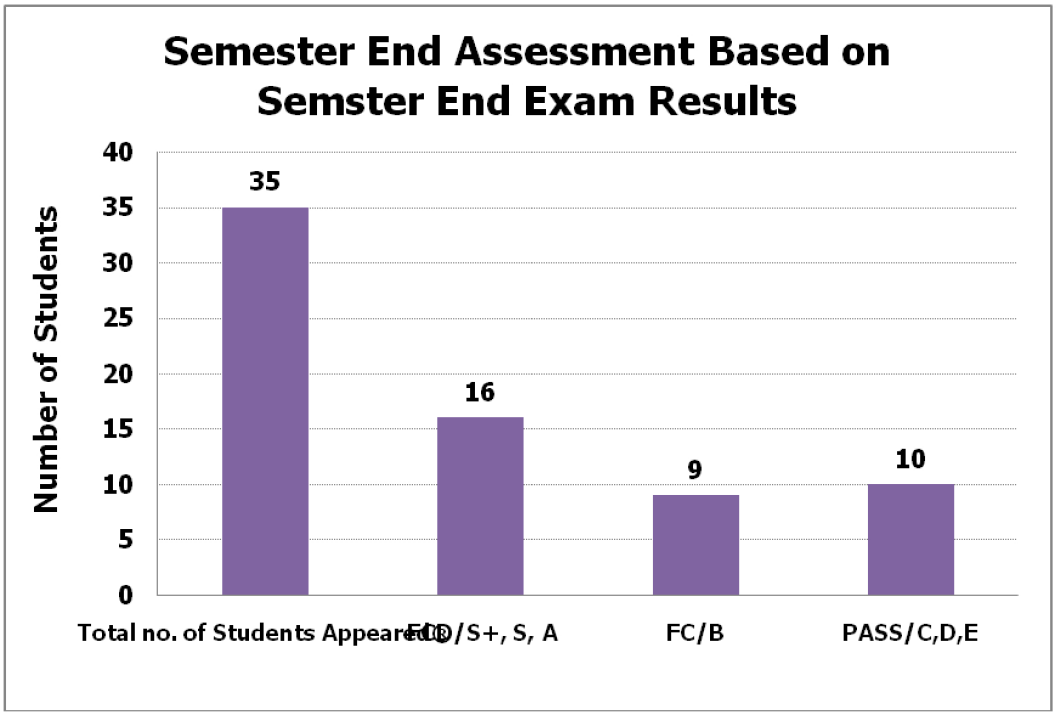
(Table & Bar Chart from IA Assessment Excel Sheet)

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

COs Attainment Levels:

FCD: S+, S, & A = 16; FC (B) = 9; Pass: C, D, & E = 10; Fail = 0

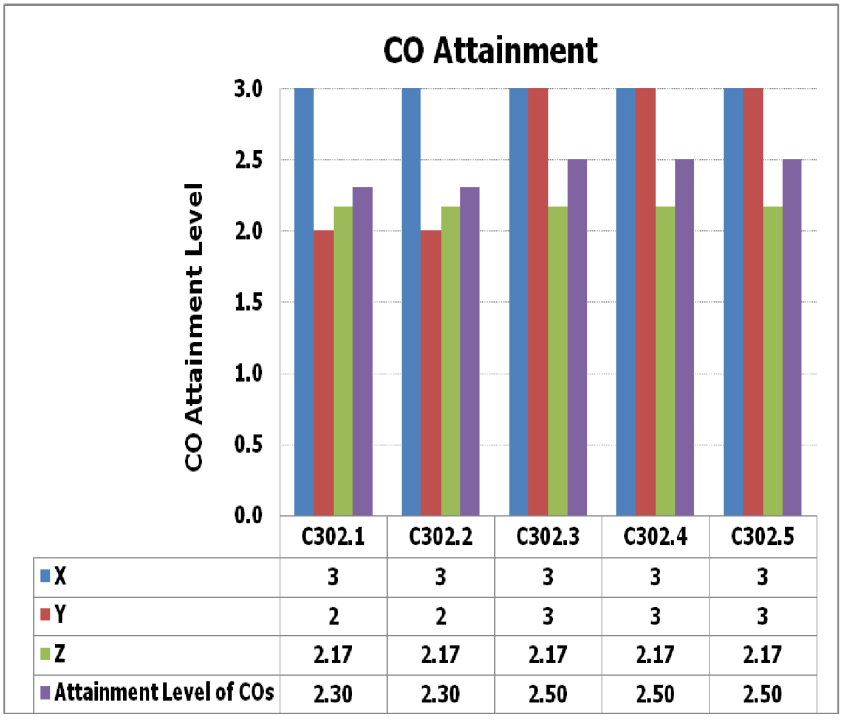
Total no. of Students Appeared→	35	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semester End Exams
FCD/S+, S, A	16	48
FC/B	9	18
PASS/C,D,E	10	10
Total Percentage of Passing	100.00%	2.17



(Table & Bar chart from SEE_Assessment Excel Sheet)

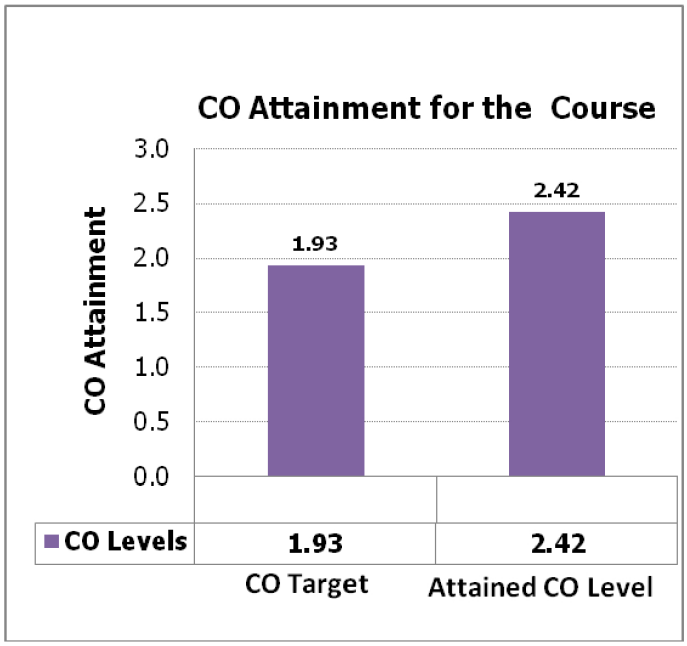
IV. CO Attainment:

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
C302.1	3	2	2.17	2.30	PO1- PO3,PO6,PO8,PO11-PO12
C302.2	3	2	2.17	2.30	PO1- PO3,PO6,PO8,PO11-PO12
C302.3	3	3	2.17	2.50	PO1- PO4,PO6,PO8,PO11-PO12
C302.4	3	3	2.17	2.50	PO1- PO4,PO6,PO8,PO11-PO12
C302.5	3	3	2.17	2.50	PO1- PO3,PO6,PO8,PO11-PO12
			Average	**2.42**	
Indirect Course attainment through Course Exit Survey				**2.7**	



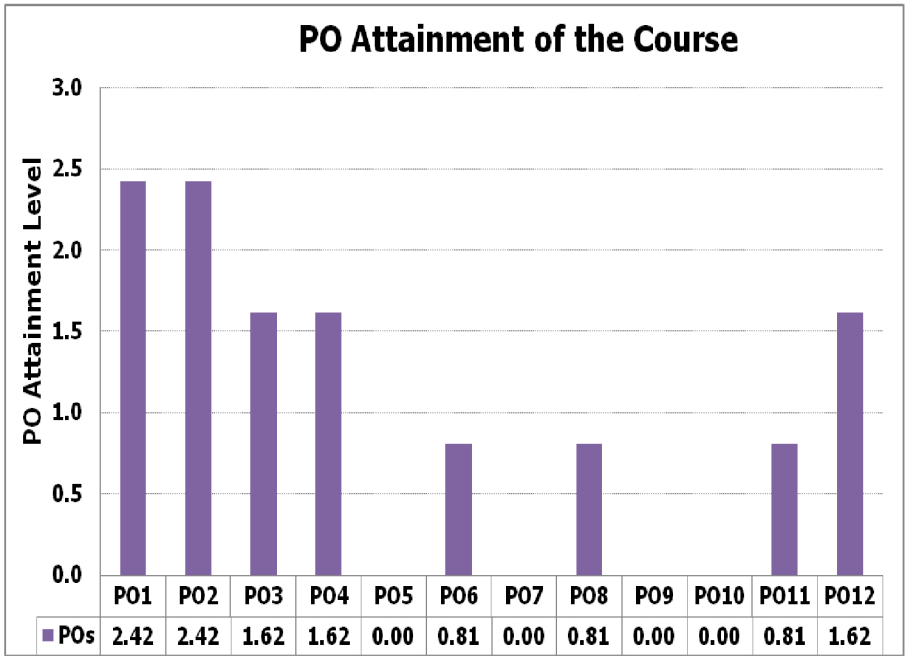
(Table & Bar Chart from CO Assessment Excel Sheet)

CO Attainment for the Course	
Target CO Level	1.5
Attained CO Level	2.42



V. PO Attainment for the Entire Course:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302	2.42	2.42	1.62	1.62	--	0.81	--	0.81	--	--	0.81	1.62



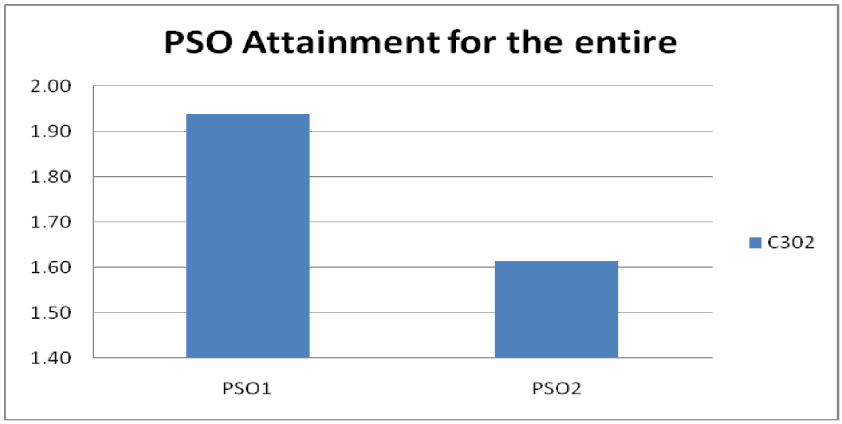
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
POs	2.42	2.42	1.62	1.62	0.00	0.81	0.00	0.81	0.00	0.00	0.81	1.62

(Table & Bar Chart from PO Assessment Excel Sheet)

POs attainment value for the present course = (Mapped value * CO attainment average)/3
Note: Mapped value is available in section 4.

VI. PSO Attainment for the Entire Course:

CO	PSO1	PSO2
CO302	1.94	1.62



(Table & Bar chart from PSO Assessment Excel Sheet)

PSOs attainment value for the present course = **(Mapped value * CO attainment average)/3**
Note: Mapped value is available in section 5 given above.

VII. Course Coordinator Remarks:

S. No.	Observations	Comments
1	Impact of Delivery Methods	**Delivery implemented is better and acceptable.**
2	Course Outcome Attainment	**Attainment level is less than target level set, student's performance in internal exams and semester end exam has to be improved.**
3	Scope for Improvement	**Additional lectures /seminar has to be conducted to cover the Pos not attained through course content.**
4	Additional Comments (if any)	**NIL**

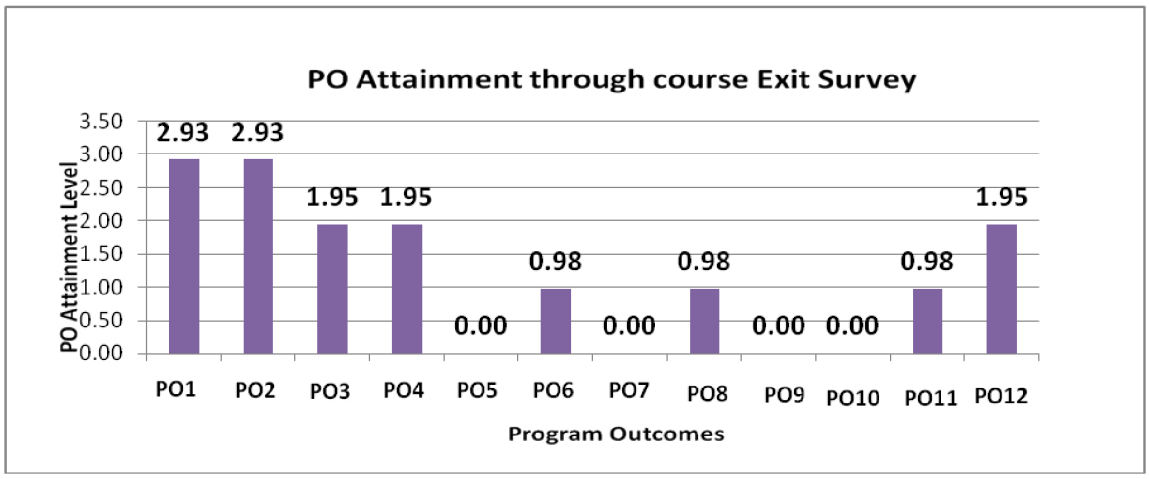
VIII. Attainment Through indirect Methods

PO Attainment through Course Exit Survey

CO Attainment Value through Course Exit Survey:	**97.56**	**2.93**

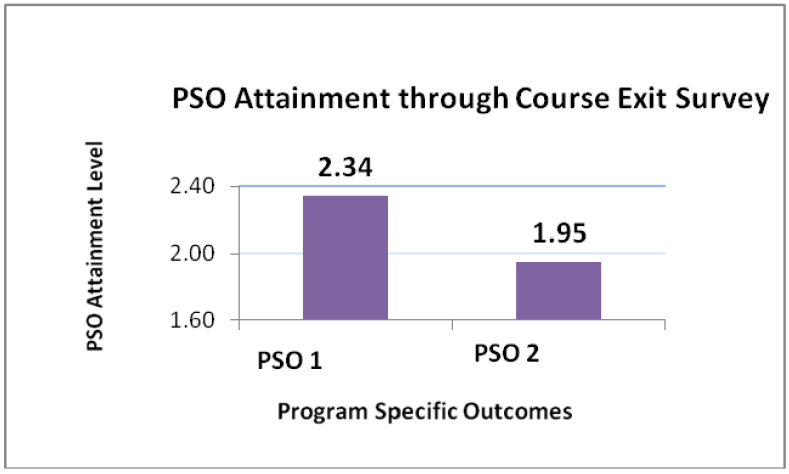
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302.1	3	3	2	NA	NA	1	NA	1	NA	NA	1	2
C302.2	3	3	2	NA	0	1	NA	1	0	0	1	2
C302.3	3	3	2	2	NA	1	NA	1	NA	NA	1	2
C302.4	3	3	2	2	NA	1	0	1	NA	NA	1	2
C302.5	3	3	2	NA	NA	1	NA	1	NA	NA	1	2
Average	3	3	2	2	0	1	0	1	0	0	1	2
CES Attainment	2.93	2.93	1.95	1.95	0.00	0.98	0.00	0.98	0.00	0.00	0.98	1.95

POs/PSOs attainment value for the present course = (Mapped value * CO Attainment Value through Course Exit Survey)/3



PSO Attainment through Course Exit Survey

CO	PSO 1	PSO 2
C302.1	2	2
C302.2	2	2
C302.3	3	2
C302.4	2	2
C302.5	3	2
Average	2.4	2
CES Attainment	2.34	1.95



Prof. S. S. Ittannavar	HOD	HOD
Name & Signature of Course Coordinator	Name & Signature of Module Coordinator	HOD

PO/PSO Attainment through Course Exit Survey

CO Attainment Value through Course Exit Survey:	97.56	2.93

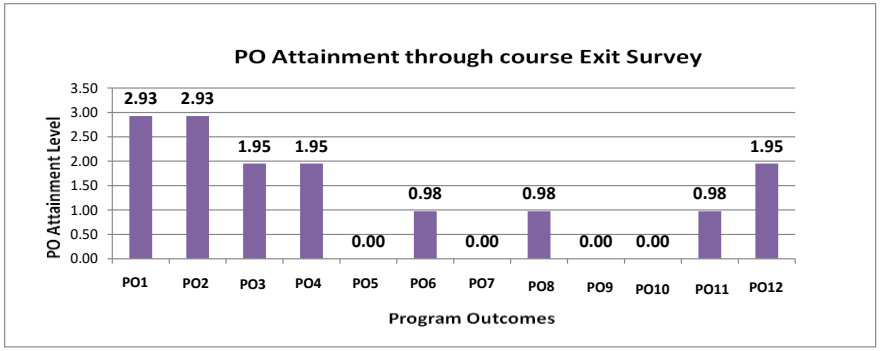
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302.1	3	3	2	NA	NA	1	NA	1	NA	NA	1	2
C302.2	3	3	2	NA	0	1	NA	1	0	0	1	2
C302.3	3	3	2	2	NA	1	NA	1	NA	NA	1	2
C302.4	3	3	2	2	NA	1	0	1	NA	NA	1	2
C302.5	3	3	2	NA	NA	1	NA	1	NA	NA	1	2
Average	3	3	2	2	0	1	0	1	0	0	1	2
CES Attainment	2.93	2.93	1.95	1.95	0.00	0.98	0.00	0.98	0.00	0.00	0.98	1.95

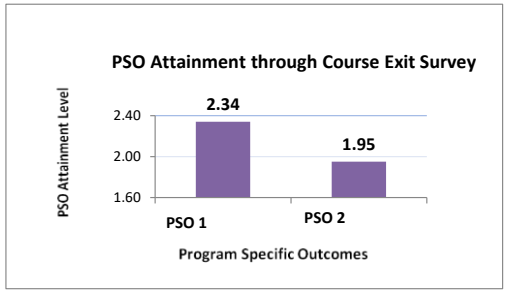
POs attainment value for the present course = (Mapped value * CO Attainment Value through Course Exit Survey)/3

PSO Attainment through Course Exit Survey

CO	PSO 1	PSO 2
C302.1	2	2
C302.2	2	2
C302.3	3	2
C302.4	2	2
C302.5	3	2
Average	2.4	2
CES Attainment	2.34	1.95

PSOs attainment value for the present course = (Mapped value * CO Attainment Value through Course Exit Survey)/3





Hirasugar Institute of Technology, Nidasoshi-591236

Course Outcome/Program Outcome Assesment

COURSE COORDINATOR: Mr. S. S. Ittannavar
A.Y: 2019-20 **PROGRAM: ECE** **COURSE:Digital Signal Processing**
SEM: V **DIV:** **COURSE CODE:17EC52**
CO Code: C302

Mapping of Course Outcomes (COs) to Program Outcomes (POs)

POs→ / COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302.1	3	3	2	NA	NA	1	NA	1	NA	NA	1	2
C302.2	3	3	2	NA	0	1	NA	1	0	0	1	2
C302.3	3	3	2	2	NA	1	NA	1	NA	NA	1	2
C302.4	3	3	2	2	NA	1	0	1	NA	NA	1	2
C302.5	3	3	2	NA	NA	1	NA	1	NA	NA	1	2
Average	3	3	2	2	0	1	0	1	0	0	1	2

Mapping of Course Outcomes (COs) to Program Specific Outcomes(PSOs)

PSOs / COs	PSO 1	PSO 2
C302.1	2	2
C302.2	2	2
C302.3	3	2
C302.4	2	2
C302.5	3	2
Average	2.4	2

Mapping of IA Questions to COs

IA Test-1		IA Test -2		IA Test -3	
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
C302.1	C302.1	C302.2	C302.3	C302.4	C302.5
Maximum Marks for Each Question					
15	15	15	15	15	15

Mapping of Assignment Questions to COs

ASSIGNMENTS				
ASSGN-1	ASSGN-2	ASSGN-3	ASSGN-4	ASSGN-5
C302.1	C302.2	C302.3	C302.4	C302.5
Maximum Marks for Each Assignment				
25	25	25	25	25

Target Level Set for the Attainment of Course:	1.93

Instructions:

1. The course coordinator should manually enter correlated IA questions with mapped COs

2. The course coordinator should manually enter correlated assignments with mapped COs

3. Based on the previous three assessment years course coordinator/faculty has to set the target level for course attainment.

4. Mapped POs must be entered manually in IA Assessement Sheet, Assignment Assessement Sheet and CO Attainment Sheet.

COURSE OUTCOME ASSESSMENT DATA ENTRY SHEET

Sl.No	Student Name		IA Test -1			IA Test -2			IA Test -3			Assignments					Semster End Exam	
			Q.No.1 OR Q.No.2	Q.No.3 OR Q.No.4	Total Marks	Q.No.1 OR Q.No.2	Q.No.3 OR Q.No.4	Total Marks	Q.No.1 OR Q.No.2	Q.No.3 OR Q.No.4	Total Marks	Assgn-1	Assgn-2	Assgn-3	Assgn-4	Assgn-5	PO1-PO4, PO6-PO9	
		MAX MARKS→	15	15	30	15	15	30	15	15	30	25	25	25	25	25	GRADES	
		COs→	C302.1	C302.1		C302.2	C302.3		C302.4	C302.5		C302.1	C302.2	C302.3	C302.4	C302.5	CO1-CO8	
		USN↓																
1	ABHISHEK S. MALGONDKAR	2HN17EC001	0	8	8	12	13	25	2	11	13	25	25	25	25	25	C	55
2	ADARSH MADIHALLI	2HN17EC002	12	14	26	15	11	26	15	9	24	25	25	25	25	25	C	57
3	AISHWARYA N.PATIL	2HN17EC003	14	8	22	15	12	27	15	15	30	25	25	25	25	25	B	68
4	AKSHATA C .SHIVANNAVAR	2HN17EC004	7	7	14	10	13	23	10	15	25	25	25	25	25	25	C	55
5	AMOGH DADDI	2HN17EC005	15	15	30	14	8	22	8	15	23	25	25	25	25	25	A	72
6	ARPITA BHAJANTRI	2HN17EC006	8	11	19	15	13	28	12	15	27	25	25	25	25	25	B	61
7	ASHWINI R. KORI	2HN17EC007	14	15	29	15	13	28	15	15	30	25	25	25	25	25	S	87
8	AVINASH SUNTHE	2HN17EC008	3	9	12	14	14	28	9	15	24	25	25	25	25	25	C	59
9	DANAMMA IRAPPA NERLI	2HN17EC009	15	15	30	15	15	30	15	11	26	25	25	25	25	25	S	89
10	KIRAN KELAGINAMANI	2HN17EC010	13	15	28	15	15	30	15	15	30	25	25	25	25	25	S	83
11	LAXMI PATIL	2HN17EC011	12	15	27	15	13	28	15	15	30	25	25	25	25	25	S	89
12	MALLIKARJUN S. PARANDI	2HN17EC012	1	4	5	14	10	24	3	5	8	25	25	25	25	25	C	50
13	MEENAKSHI B.PATIL	2HN17EC013	15	15	30	15	15	30	9	11	20	25	25	25	25	25	B	69
14	NIKHITA S. MANE	2HN17EC014	15	11	26	15	15	30	15	15	30	25	25	25	25	25	S	88
15	NISARGA BAGALKOT	2HN17EC015	15	10	25	14	13	27	9	6	15	25	25	25	25	25	B	65
16	NITYASHREE P.PATIL	2HN17EC016	6	2	8	15	10	25	15	12	27	25	25	25	25	25	B	63
17	PAVITRA S .RANJANAGI	2HN17EC017	9	12	21	9	15	24	2	13	15	25	25	25	25	25	B	62
18	PRAJAKTA MARADI	2HN17EC019	7	3	10	13	10	23	15	8	23	25	25	25	25	25	C	52
19	PRAVEENKUMAR ANKAD	2HN17EC020	4	9	13	15	11	26	15	15	30	25	25	25	25	25	C	56
20	PREETI MASODAGE	2HN17EC021	11	15	26	14	11	25	15	15	30	25	25	25	25	25	A	73
21	PRIYANKA TELAGADE	2HN17EC022	10	7	17	9	11	20	12	11	23	25	25	25	25	25	B	61
22	SANGEETA RAGHA	2HN17EC023	3	8	11	15	14	29	10	8	18	25	25	25	25	25	B	62
23	SAPNA T. YEGAPPAGOL	2HN17EC024	12	13	25	13	12	25	13	7	20	25	25	25	25	25	A	75
24	SHIVANI U. KANERKAR	2HN17EC025	15	13	28	14	14	28	15	15	30	25	25	25	25	25	S+	91
25	SHRADDHA. S. MURADUNDE	2HN17EC026	12	7	19	14	11	25	13	13	26	25	25	25	25	25	A	78
26	SHRUTI S. MURADUNDE	2HN17EC027	15	15	30	15	14	29	15	15	30	25	25	25	25	25	A	76
27	SNEHA BANNURI	2HN17EC028	13	11	24	15	12	27	15	15	30	25	25	25	25	25	A	71
28	SNEHAL GURAV	2HN17EC029	10	11	21	15	12	27	13	11	24	25	25	25	25	25	C	56
29	SUNITA R .HAMIDWADE	2HN17EC030	14	15	29	15	12	27	11	6	17	25	25	25	25	25	B	62
30	SUPRIYA D.KULKARNI	2HN17EC031	8	8	16	15	15	30	15	15	30	25	25	25	25	25	A	74
31	SUREKHA HUBBALLI	2HN17EC032	15	15	30	15	15	30	15	15	30	25	25	25	25	25	S	80
32	VAISHALI N.MUCHANDI	2HN17EC033	9	12	21	14	12	26	11	15	26	25	25	25	25	25	S	82
33	VEENA PATIL	2HN17EC035	3	6	9	14	11	25	9	11	20	25	25	25	25	25	C	51
34	VINAY HIREKODI	2HN17EC036	3	12	15	15	12	27	9	15	24	25	25	25	25	25	A	72
35	VINAYAK TUPPAROTTI	2HN17EC037	15	15	30	15	15	30	10	15	25	25	25	25	25	25	C	57
***	END OF RECORDS***																	
	Apeared		35	35		35	35		35	35		35	35	35	35	35	35	
	Absent		0	0		0	0		0	0		0	0	0	0	0	0	
	Reached		23	24		35	34		31	29		35	35	35	35	35	16	
	Attainment level of CO in Percentage		65.71	68.57		100.00	97.14		88.57	82.86		100.00	100.00	100.00	100.00	100.00	9	
	Attainment level of CO		2	2		3	3		3	3		3	3	3	3	3	10	
																	1.00	

	40-44	E
	45-49	D
	50-59	C
	60-69	B
	70-79	A
	80-89	S
	90-99	S+

FCD	S+,S,A	16
FC	B	9
PASS	C,D,E	10
Fail	F	0
AB		0
Total number of Students		35

Attainment Level set for IA Tests

Attainment Level 1: Students scoring more than 60% of maximum marks allotted to each question.

Attainment Level set for Semester End Examination(SEE)

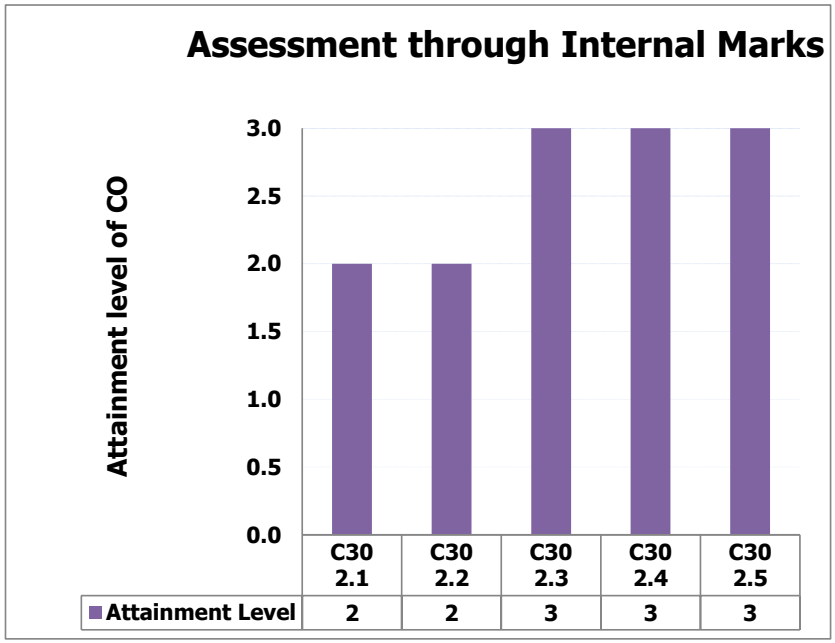
1. **Attainment 3(High)**: students scoring more than 70% marks
2. **Attainment 2(Medium)**: students scoring more than or equal to 60% to less than 70% Marks
3. **Attainment 1(Low)**: students scoring more than or equal to 50% to less than 35% Marks

Assessment through Internal Marks

Calculate

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

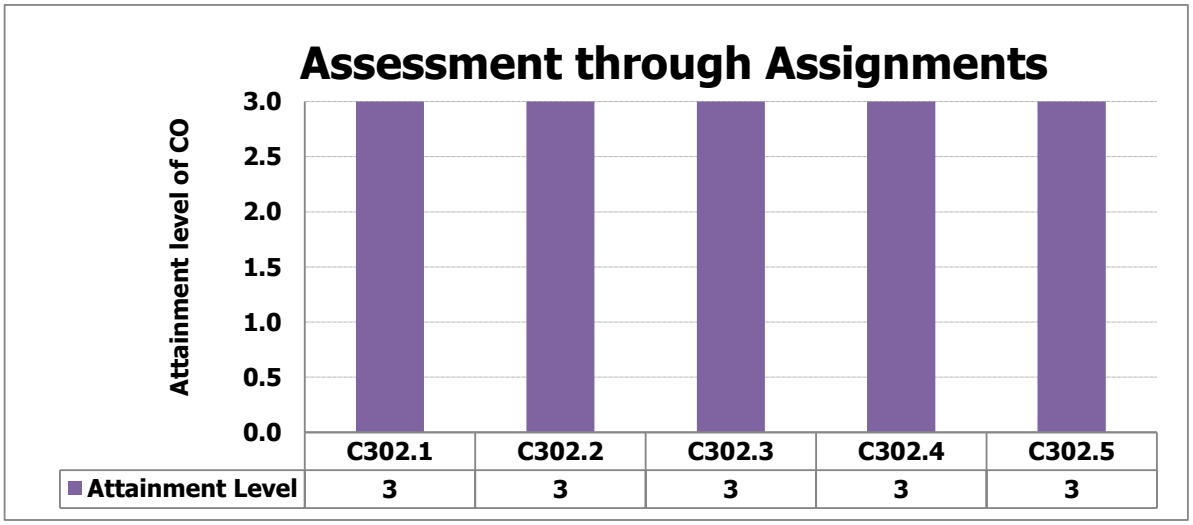
COs	IA Test-1				IA Test -2				IA Test -3				Attainment level of CO	Mapped PO	Mapped PSO
	Q.No.1 OR Q.		Q.No.3 OR Q.		Q.No.1 OR Q.		Q.No.3 OR Q.		Q.No.1 OR Q.		Q.No.3 OR Q.				
	A	R	A	R	A	R	A	R	A	R	A	R			
C302.1	35	34	35	23									2	PO1- PO3,PO6,PO8,PO11-PO12	PSO1,PSO2
C302.2					35	24							2	PO1- PO3,PO6,PO8,PO11-PO12	PSO1,PSO2
C302.3							35	35					3	PO1- PO4,PO6,PO8,PO11-PO12	PSO1,PSO2
C302.4									35	31			3	PO1- PO4,PO6,PO8,PO11-PO12	PSO1,PSO2
C302.5											35	29	3	PO1- PO3,PO6,PO8,PO11-PO12	PSO1,PSO2



Assessment through Assignment

A: Appeared R: Reached Low =1 (50-60 %) Medium =2 (61-70 %) 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
	A	R	A	R	A	R	A	R	A	R		
C302.1	35	35									100.00	3
C302.2			35	35							100.00	3
C302.3					35	35					100.00	3
C302.4							35	35			100.00	3
C302.5									35	35	100.00	3

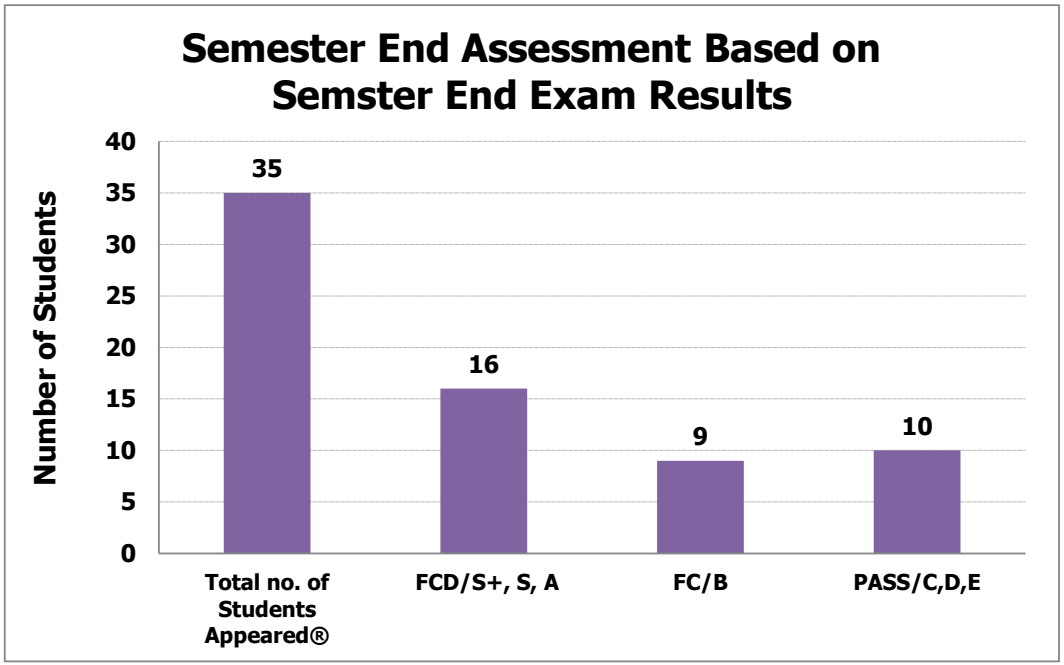


Mapped PO	Mapped PSO
PO1- PO3,PO6,PO8,PO11-PO12	PSO1, PSO2
PO1- PO3,PO6,PO8,PO11-PO12	PSO1, PSO2
PO1- PO4,PO6,PO8,PO11-PO12	PSO1, PSO2
PO1- PO4,PO6,PO8,PO11-PO12	PSO1, PSO2
PO1- PO3,PO6,PO8,PO11-PO12	PSO1, PSO2

Semester End Assessment Based on Semster End Exam Results

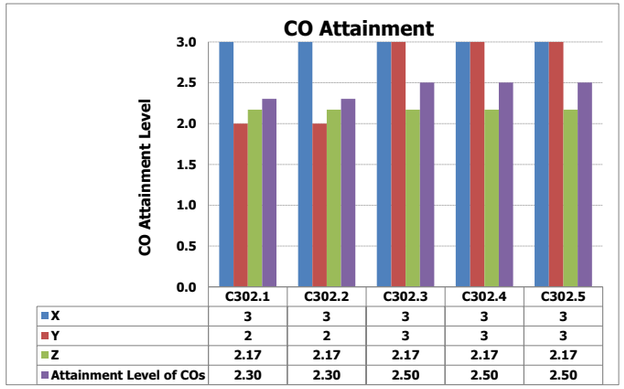
(Cos Attainment Levels for: FCD (S+, S,A) = 3, FC (B) = 2, SC(C,D,E) = 1 and Fail = 0)

Total no. of Students Appeared→	35	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semster End Exams
FCD/S+, S, A	16	48
FC/B	9	18
PASS/C,D,E	10	10
Total Percentage of Passing	100.00%	2.17

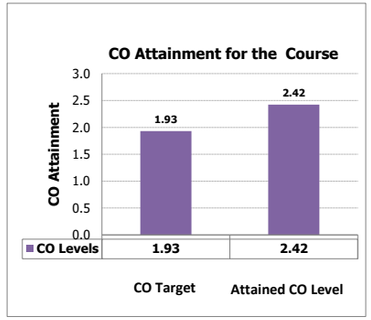


CO Attainment

COs	Attainment Through Assignment(X)	Attainment Through IA Test(Y)	Attainment Through Semster End Exam(Z)	Attainment level of CO [0.4(X+Y)/2]+0.6Z	Mapped POs
C302.1	3	2	2.17	2.30	PO1-PO4, PO6-PO12
C302.2	3	2	2.17	2.30	PO1-PO4, PO6-PO12
C302.3	3	3	2.17	2.50	PO1-PO4, PO6-PO12
C302.4	3	3	2.17	2.50	PO1-PO4, PO6-PO12
C302.5	3	3	2.17	2.50	PO1-PO4, PO6-PO12
			Average	2.42	



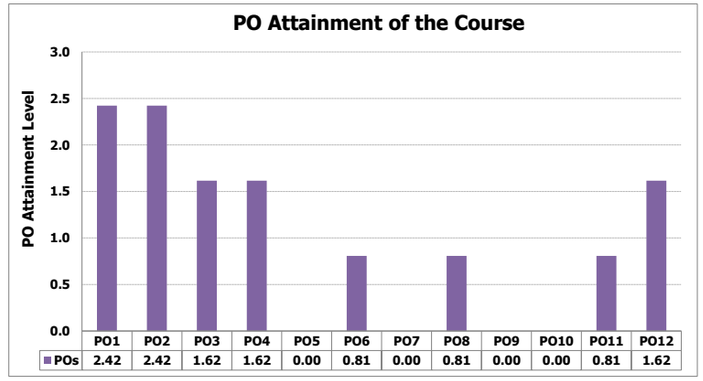
CO Attainment for the Course	
Target CO Level	1.93
Attained CO Level	2.42



PO Attainment for the Course

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302	2.42	2.42	1.62	1.62	0.00	0.81	0.00	0.81	0.00	0.00	0.81	1.62

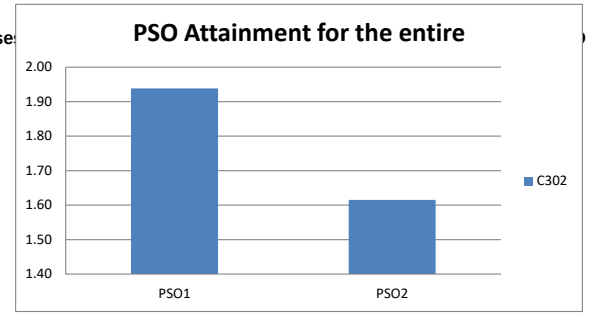
POs attainment value for the present course = (Mapped value * CO attainment average)/3



PSO Attainment

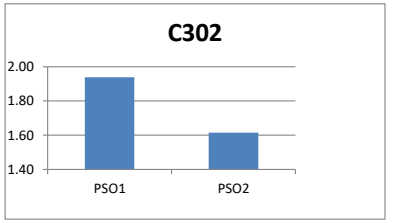
COs	ATTAINMENT THROUGH RELEVANT COURSES MAPPED	ATTAINMENT THROUGH RELEVANT ACTIVITIES MAPPED	ANY OTHER ACTIVITIES	Attainment Level of CO	Mapped PSOs
C302.1				2.30	PSO1, PSO2
C302.2				2.30	PSO1, PSO2
C302.3				2.50	PSO1, PSO2
C302.4				2.50	PSO1, PSO2
C302.5				2.50	PSO1, PSO2
			Average	2.42	

NOTE: Department has to frame PSOs & map them to relevant Course) attainment



PSO Attainment for the entire course

CO	PSO1	PSO2
C302	1.94	1.62



Attainment of Program Outcomes and Program Specific Outcomes:

PO/PSO Attainment through Direct Assessment Methods:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	**2.07**	**1.62**	**1.56**	**1.09**	**0.72**	**0.85**	**0.43**	**0.68**	**0.68**	**0.78**	**0.83**	**1.02**	**1.72**	**1.48**

PO/PSO Attainment through Indirect Assessment Methods:

Sl. No.	Indirect Method	Weightage	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Employer Survey	5	3	3	3	3	3	3	3	3	3	3	3	3	--	--
2	Alumni Survey	15	2.54	2.33	2.27	2.26	2.56	2.30	2.33	2.30	2.43	2.33	2.38	2.27	--	--
3	Senior Exit Survey	15	2.88	2.69	2.71	2.67	2.60	2.74	2.76	2.71	2.76	2.74	2.88	2.60	2.79	2.67
4	Activity Feedback	35	2.60	2.73	2.80	2.80	2.79	2.58	2.75	2.55	2.57	2.59	2.80	2.61	2.58	2.61
5	Course Exit Survey	15	2.41	1.94	1.82	1.28	0.81	0.92	0.54	0.69	0.76	0.93	0.87	1.22	1.99	1.70
6	Placement, Higher Education and Entrepreneurship	15	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Overall Indirect Attainment(B)			**2.35**	**2.27**	**2.27**	**2.18**	**2.14**	**2.07**	**2.08**	**2.02**	**2.06**	**2.08**	**2.17**	**2.10**	**2.04**	**1.94**

PO/PSO Attainment through Direct and Indirect Assessment Methods:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	2.07	1.62	1.56	1.09	0.72	0.85	0.43	0.68	0.68	0.78	0.83	1.02	1.72	1.48
Indirect Assessment(B)	2.35	2.27	2.27	2.18	2.14	2.07	2.08	2.02	2.06	2.08	2.17	2.10	2.04	1.94
AVG(0.8*A+0.2*B)	2.13	1.75	1.70	1.31	1.00	1.09	0.76	0.95	0.96	1.04	1.10	1.24	1.78	1.57

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Program Level Course-PO, PSO Attainment matrix (2016 Batch)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	2.20	1.47	---	---	---	---	---	---	---	---	---	0.73	---	---
C102	2.10	---	1.40	---	0.70	---	---	0.70	---	0.70	---	0.70	---	---
C103	1.51	1.51	1.01	1.01	---	0.50	---	0.50	---	---	0.50	1.01	---	---
C104	1.69	1.41	---	---	---	0.43	0.28	---	---	---	---	1.29	---	---
C105	1.34	1.34	0.39	---	---	0.20	---	0.20	---	---	0.20	---	---	---
C106	2.55	1.59	2.88	1.28	---	2.88	---	2.88	1.92	1.92	2.88	2.40	---	---
C107	2.31	1.18	1.54	0.78	0.38	0.39	---	0.39	---	---	0.39	1.16	---	---
C108	---	---	---	---	---	1.12	---	0.75	---	---	---	---	---	---
C109	1.74	1.16	---	---	---	---	---	---	---	---	---	0.58	---	---
C110	1.77	1.42	1.18	---	---	1.06	---	---	---	---	---	0.59	---	---
C111	1.68	1.34	1.46	---	---	---	---	---	---	---	---	0.26	---	---
C112	0.86	---	---	---	1.72	---	---	0.29	---	2.58	---	---	---	---
C113	2.10	2.10	2.10	1.40	---	0.70	---	---	---	---	---	1.51	---	---
C114	2.66	2.66	2.66	---	---	---	---	---	2.66	---	2.66	---	---	---
C115	2.75	2.75	2.75	---	---	1.83	---	---	---	---	---	0.92	---	---
C116	2.31	1.54	1.54		0.00	1.54	1.54	0.77	---	---	0.77	0.77	---	---
C201	1.88	1.25	0.63	--	--	--	--	--	--	--	--	0.63	---	--
C202	2.02	1.35	1.35	1.35	0.67	0.00	0.00	0.00	0.00	0.00	1.35	0.67	1.35	0.67
C203	2.76	1.47	2.20	1.10	0.00	0.92	0.00	0.00	0.00	0.00	0.00	0.92	1.29	1.65
C204	1.91	1.91	0.64	0.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.64	1.27	0.95
C205	2.36	1.57	0.79	--	--	--	--	--	--	0.79	--	0.79	1.57	0.79
C206	1.59	1.06	0.53	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.51	1.02	0.51
C207	2.73	2.73	2.73	1.18	0.91	0.00	0.00	0.00	0.91	1.82	0.00	0.91	1.82	1.82
C208	2.10	1.75	2.10	0.88	0.88	0.88	0.00	0.00	0.88	0.88	0.88	0.88	1.58	1.05
C209	2.16	1.30	2.02	1.01	0.86	0.86	0.86	0.00	0.00	0.00	0.00	0.72	--	--
C210	2.16	1.30	2.02	1.01	0.86	0.86	0.86	0.00	0.00	0.00	0.00	0.72	1.08	0.72
C211	1.61	1.40	1.61	1.25	1.07	0.00	0.00	0.54	---	---	---	0.54	0.54	0.54

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212	1.57	1.05	1.05	--	0.00	--	--	--	--	0.52	0.00	0.51	1.05	0.51
C213	1.28	1.28	1.28	0.68	0.43	0.00	0.00	0.43	0.00	0.00	0.43	0.43	2.53	1.69
C214	1.66	0.59	1.54	0.59	0.00	0.59	0.00	0.00	0.00	0.00	0.00	0.59	1.78	1.19
C215	1.38	1.35	1.38	1.35	1.38	1.35	1.38	1.35	1.38	1.35	1.38	1.35	1.38	1.35
C216	2.84	1.89	1.14	0.94	0.00	0.94	0.00	0.94	0.94	0.94	0.00	0.94	2.84	0.94
C301	0.75	0.75	0.75	0.75	0.00	0.75	0.00	0.75	2.11	1.51	2.26	0.75	0.75	0.75
C302	1.93	1.93	1.28	1.28	0.00	0.64	0.00	0.64	0.00	0.00	0.64	1.28	1.54	1.29
C303	2.09	1.26	1.81	0.98	1.40	0.84	0.00	0.00	0.00	0.00	0.70	1.54	1.42	0.71
C304	1.73	1.73	1.73	0.92	0.58	0.00	0.00	0.58	0.00	0.00	0.58	0.58	1.16	0.58
C305	1.36	0.68	0.68	0.68	0.00	0.68	1.09	0.68	0.68	0.68	0.68	0.68	1.6	1.6
C306	1.92	1.10	1.64	1.23	1.78	1.37	1.10	0.00	0.00	0.00	0.82	1.37	1.51	1.92
C307	2.63	2.63	1.75	1.75	0.00	0.88	0.00	0.88	0.00	0.00	0.88	1.75	2.63	2.63
C308	2.33	1.90	2.11	1.27	1.06	1.27	0.00	0.00	0.85	0.85	1.69	1.27	2.33	1.48
C309	1.83	1.83	1.59	1.63	0.00	0.61	0.00	0.61	0.00	1.22	1.22	1.22	1.8	1.6
C310	2.11	1.69	1.83	1.69	0.70	1.13	0.70	0.70	0.70	0.70	0.70	0.84	2.11	1.41
C311	2.47	1.65	0.82	-	0.82	--	0.82		-	0.82		0.82	1.65	1.65
C312	1.68	1.68	1.57	1.34	1.45	1.34	0.00	0.56	0.00	0.00	0.00	1.57	1.8	1.8
C313	2.33	2.33	0.78	0.78	0.00	0.78	0.00	0.78	2.18	1.55	0.78	0.78	0.78	0.78
C314	1.31	0.70	0.90	0.50	1.00	0.00	0.00	0.50	0.50	0.00	0.00	0.50	0.81	0.91
C315	2.95	2.36	2.55	1.96	1.96	1.57	0.98	0.98	0.98	0.98	0.98	1.57	2.95	1.57
C316	2.50	2.50	1.67	0.00	0.83	0.83	0.83	0.83	0.83	0.83	0.83	1.67	1.66	1.66
C401	0.62	0.62	0.62	0.62	0.00	0.62	0.00	0.62	1.72	1.23	1.85	0.62	0.61	0.61
C402	2.55	1.53	1.36	1.53	1.36	1.53	0.00	0.85	0.00	1.70	1.70	1.36	1.76	1.76
C403	1.59	0.85	1.10	0.61	0.61	0.00	0.00	0.61	0.61	0.00	0.00	0.61	0.98	1.10
C404	2.57	1.71	1.71	0.86	0.86	0.86	0.00	0.00	0.00	0.86	1.71	1.71	1.71	0.86
C405	2.57	1.71	1.71	0.86	0.86	0.86	0.00	0.00	0.00	0.86	1.71	1.71	1.56	1.56
C406	3.00	3.00	2.00	2.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.98	2.99	2.99
C407	2.91	1.94	1.94	--	2.91	0.97	0.97	--	0.97	0.97	--	0.97	1.94	2.91

C408	2.95	2.95	1.97	1.97	0.00	0.98	0.00	0.98	0.00	0.00	0.00	0.98	2.95	2.95
C409	1.87	1.24	1.24	0.62	0.00	0.62	0.62	0.62	0.62	0.62	0.00	0.62	1.56	1.56
C410	2.11	2.11	1.83	1.40	0.00	1.40	0.70	0.70	0.70	0.70	0.70	1.40	2.11	1.55
C411	2.35	1.34	2.01	1.40	2.10	1.68	1.26	0.84	0.00	0.00	0.84	1.68	0.94	1.19
C412	1.82	1.82	1.82	0.91	0.00	1.82	0.91	0.91	0.91	0.91	0.91	1.82	1.87	1.87
C413	3.0	2.0	3.0	2.0	2.0	1.0	2.0	2.0	3.0	3.0	3.0	1.0	3.0	3.0
C414	3.0	1.0	1.0	1.0	1.0	1.0	1.0	3.0	1.0	3.0	1.0	1.0	3.0	3.0
C415	2.00	2.00	2.00	1.00	2.00	1.00	2.00	3.00	3.00	3.00	2.00	2.00	3	3
Avg.	**2.07**	**1.62**	**1.56**	**1.09**	**0.72**	**0.85**	**0.43**	**0.68**	**0.68**	**0.78**	**0.83**	**1.02**	**1.72**	**1.48**

Criteria Coordinator

Programme Coordinator

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FACULTY COURSE ASSESSEMENT REPORT (FCAR)

Course Coordinator: **Prof: S. S. Kamate** **Class Strength:45**
Semester: VI **Subject: VLSI DESIGN** **Code: 15EC63**

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:	An ability to understand the concepts of basic Electronics & Communication Engineering and to apply them to various areas like Signal processing, VLSI, Embedded systems, Communication Systems, Digital & Analog Devices.
PSO2:	An ability to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions

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

CO	Description
C311.1	Demonstrate understanding of MOS transistor theory, CMOS fabrication flow and technology scaling. …L1,L2
C311.2	Draw the basic gates using the stick and layout diagrams with the knowledge of physical design aspects. …L1,L2,L3
C311.3	Interpret Memory elements along with timing considerations. …L1,L2,L3
C311.4	Demonstrate knowledge of FPGA based system design. …L1,L2,L3
C311.5	Interpret testing and testability issues in VLSI Design. …L1,L2,L3
C311.6	Analyze CMOS subsystems and architectural issues with the design constraints. …L1,L2,L3

IV. Mapping of Course Outcomes (Cos) to Program Outcomes (Pos):

POs / Cos	1	2	3	4	5	6	7	8	9	10	11	12
C311.1	3	2	1	-	1	-	1	-	-	1	-	1
C311.2	3	2	1	-	1	-	1	-	-	1	-	1
C311.3	3	2	1	-	1	-	1	-	-	1	-	1
C311.4	3	2	1	-	1	-	1	-	-	1	-	1
C311.5	3	2	1	-	1	-	1	-	-	1	-	1
C311.6	3	2	1	-	1	-	1	-	-	1	-	1
Average	3	2	1	-	1	-	1	-	-	1	-	1

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

PSOs / Cos	PSO1	PSO2
C311.1	2	2
C311.2	2	2
C311.3	2	2
C311.4	2	2
C311.5	2	2
C311.6	2	2
AVG	2	2

VI. Justification of CO-PO Mapping:

CO311-PO1	Strong correlation as explaining the concepts of the VLSI and requires good knowledge of mathematics and engineering sciences.
CO311-PO2	Strong and medium correlation since understanding and solving the course problems and derivations need better problem analysis skills and first principles of mathematics, science.
CO311-PO3	Weak correlation since explaining and solving some problems require certain level of knowledge of designing solutions considering public safety and environmental issues.
CO311-PO4	As we are not carrying out any research method or design experiments analysis and interpretation of data and synthesis throughout the course we can't correlate here.
CO311-PO5	As we are demonstrating some concepts using cadence modern tools or IT tools for the course hence we correlate to low level.
CO311-PO6	No correlation since this course doesn't discuss directly the societal, safety issues relevant to professional practice.
CO311-PO7	As one of the basic course in the domain of electronics and communication certainly has the impact on professional engineering solutions but to the weak level.
CO311-PO8	As we follow ethics in our behavior, while delivering the lecture, maintenance in classrooms conducing exams everywhere so, definitely we cultivate professionalism.
CO311-PO9&PO11	As we don't deal with Individual, teamwork, communication in relation to complex engineering problems and project management we can't correlate.
CO311-PO10	Weak correlation as communication on subject related concepts takes place through exams and discussions.
CO311-PO12	Weak correlation as one needs to have the knowledge of behavior of charges and some concepts.

VII. Justification of CO-PSO Mapping (VLSI Design– 15EC63):

Mapping	Justification
CO311-PSO1	As the course deals with the basic concepts of Electronics and communication we have given medium correlation.
CO311-PSO2	Medium correlation as the course doesn't expose to much to latest hardware and software tools.

MEASUREMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

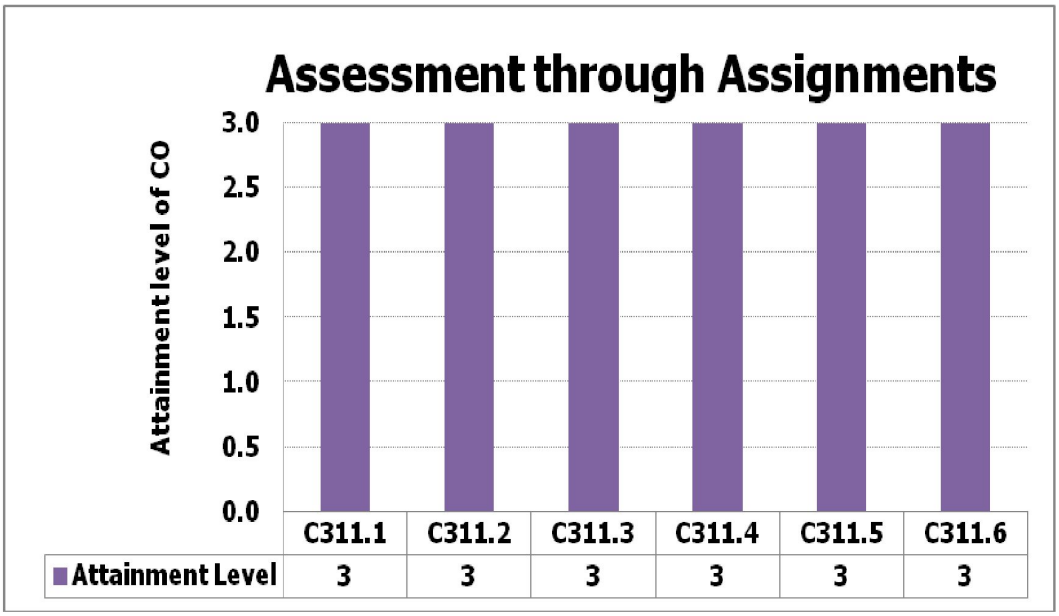
Assessment Tools:

- Continuous assessment
- End semester exam

I. Assessment through Assignment:

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

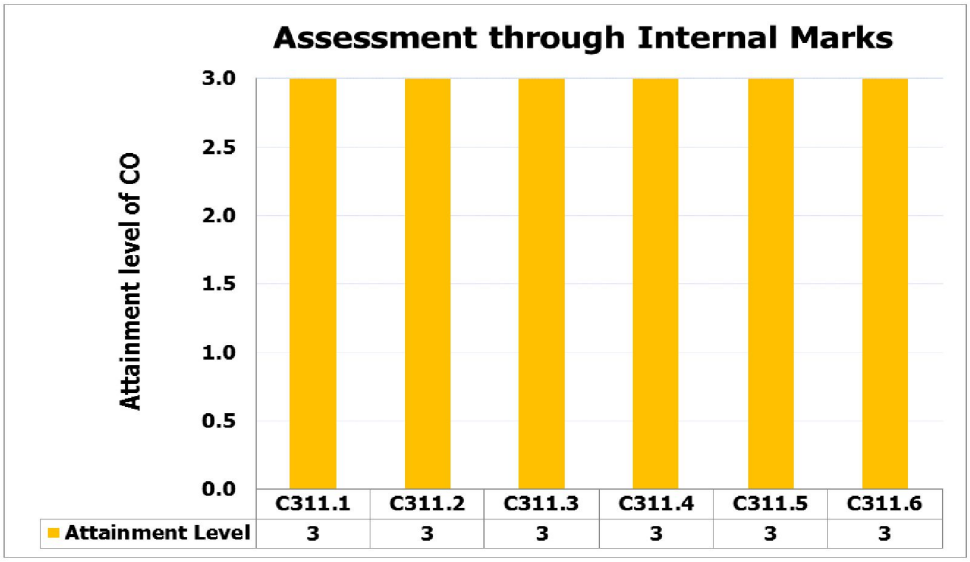
COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO	Mapped PSO
	A	R	A	R	A	R	A	R	A	R				
C311.1	45	45									100.00	3	PO1 -PO3,PO5, PO7,PO10, PO12	PSO1, PSO2
C311.2			45	45							100.00	3	PO1 -PO3,PO5, PO7,PO10, PO12	PSO1, PSO2
C311.3					45	45					100.00	3	PO1 -PO3,PO5, PO7,PO10, PO12	PSO1, PSO2
C311.4							45	45			100.00	3	PO1 -PO3,PO5, PO7,PO10, PO12	PSO1, PSO2
C311.5									45	45	100.00	3	PO1 -PO3,PO5, PO7,PO10, PO12	PSO1, PSO2
C311.6									45	45	100.00	3	PO1 -PO3,PO5, PO7,PO10, PO12	PSO1, PSO2



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	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			
C311.1	43	35	43	35									3	PO1 -PO3, PO5-PO7,PO12	PSO1,PSO2
C311.2					38	31	38	31					3	PO1 -PO3,PO6-PO7,PO12	PSO1,PSO2
C311.3									29	29			3	PO1 -PO3,PO6-PO7,PO12	PSO1,PSO2
C311.4											5	5	3	PO1 -PO3,PO6-PO7,PO12	PSO1,PSO2
C311.5											5	5	3	PO1 -PO3,PO6-PO7,PO12	PSO1,PSO2
C311.6											2	2	3	PO1 -PO3,PO6-PO7,PO12	PSO1,PSO2

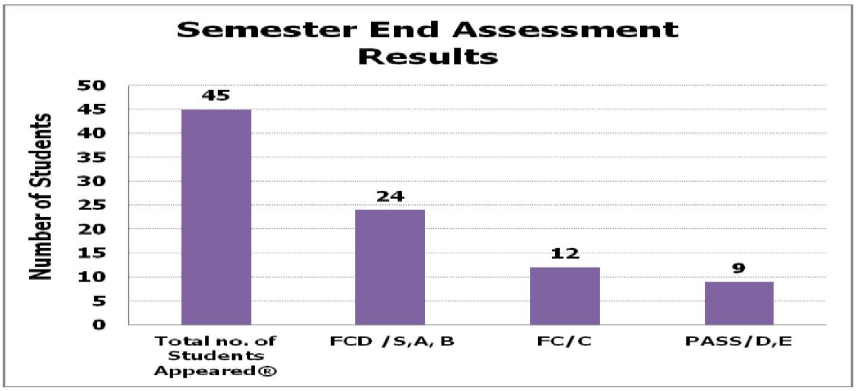


III. Semester End Exam Assessment Based on VTU Exam Results:

COs Attainment Levels:

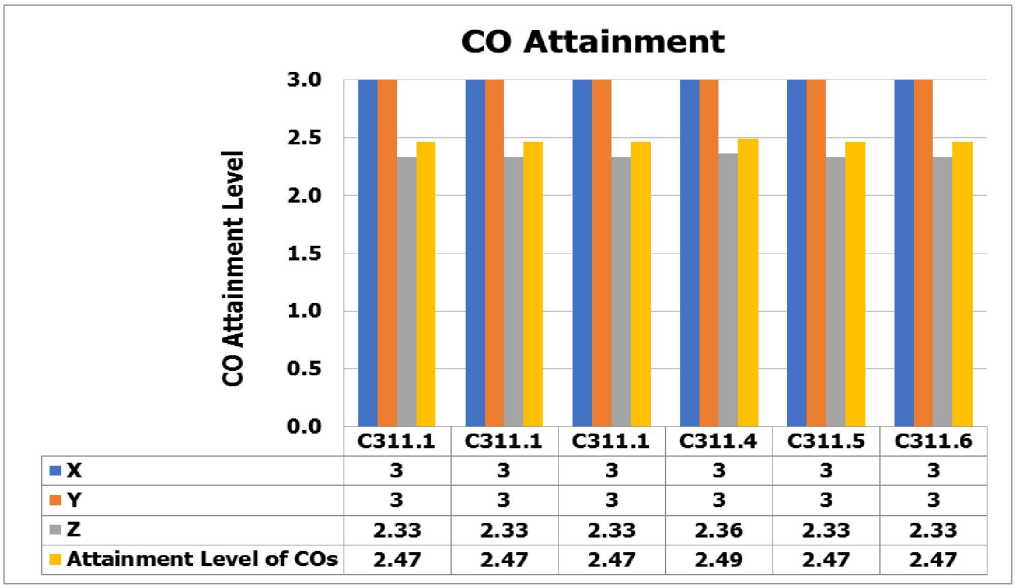
FCD: S+, S, & A = 3; **FC (B) = 2;** **Pass: C, D, & E = 1;** **Fail = 0**

Total no. of Students Appeared→	45	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semester End Exams
FCD /S,A, B	24	72
FC/C	12	24
PASS/D,E	9	9
Total Percentage of Passing	100.00%	2.33



IV. CO Attainment:

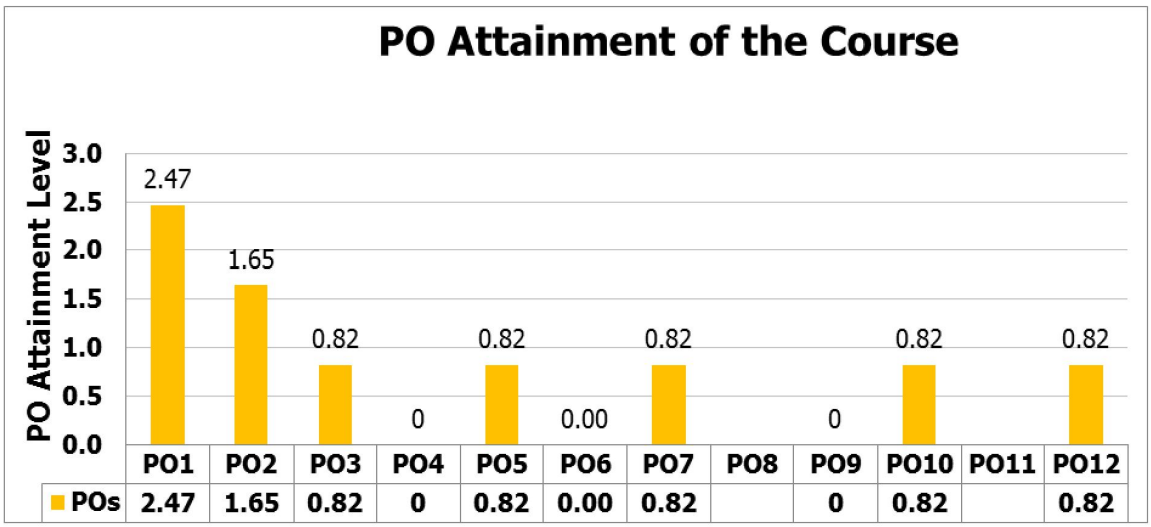
COs	Attainment Through Assignment(X)	Attainment Through IA Test(Y)	Attainment Through Semester End Exam(Z)	Attainment level of CO [0.2(X+Y)/2]+0.8Z	Mapped POs
C311.1	3	3	2.33	2.47	PO1 -PO3,PO5-PO7,PO12
C311.2	3	3	2.33	2.47	PO1 -PO3,PO6-PO7,PO12
C311.3	3	3	2.33	2.47	PO1 -PO3,PO6-PO7,PO12
C311.4	3	3	2.36	2.49	PO1 -PO3,PO6-PO7,PO12
C311.5	3	3	2.33	2.47	PO1 -PO3,PO5-PO7,PO12
C311.6	3	3	2.33	2.47	PO1 -PO3,PO6-PO7,PO12
			Average	2.47	



	C311.1	C311.1	C311.1	C311.4	C311.5	C311.6
X	3	3	3	3	3	3
Y	3	3	3	3	3	3
Z	2.33	2.33	2.33	2.36	2.33	2.33
Attainment Level of COs	2.47	2.47	2.47	2.49	2.47	2.47

I. PO Attainment for the Entire Course:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311	2.47	1.65	0.82	-	0.82	--	0.82		-	0.82		0.82

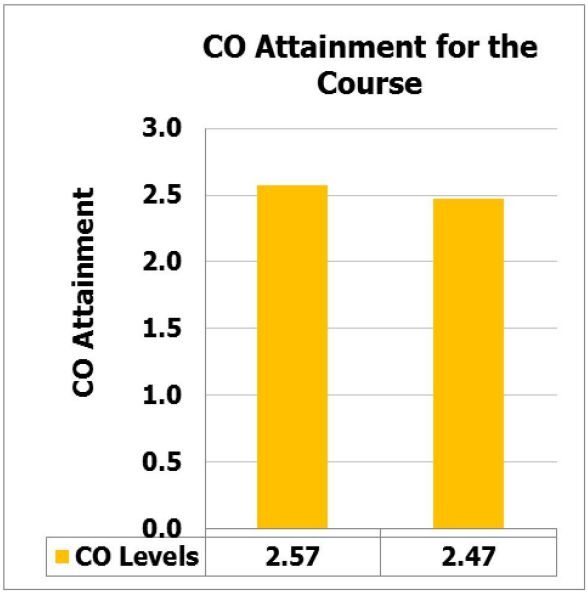


	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
POs	2.47	1.65	0.82	0	0.82	0.00	0.82		0	0.82		0.82

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

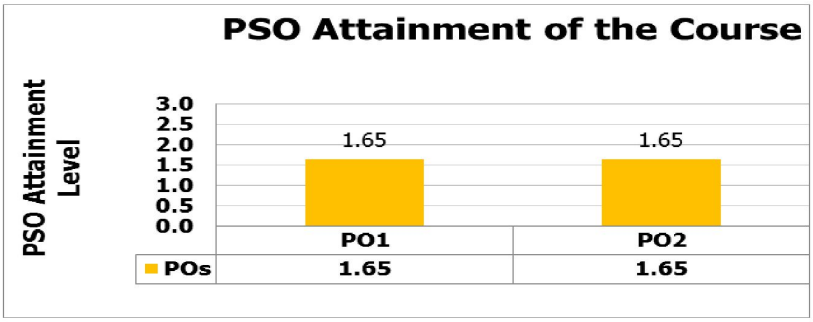
Note: Mapped value is available in section 4.

CO Attainment for the Course	
Target CO Level	2.57
Attained CO Level	2.47



II. PSO Attainment for the Entire Course:

CO	PSO1	PSO2
C205	1.65	1.65



PSOs attainment value for the present course = **(Mapped value * CO attainment average)/3**
Note: Mapped value is available in section 5 given above.

Course Coordinator Remarks:

S. No.	Observations	Comments
1	Impact of Delivery Methods	**The course delivery methods are acceptable and they can be continued in future**
2	Course Outcome Attainment	**The attainment level is 2.47(good) against the set target of 2.57**
3	Scope for Improvement	**Some lectures/ seminars/ projects have to be carried out to cover other POs**
4	Additional Comments (if any)	--

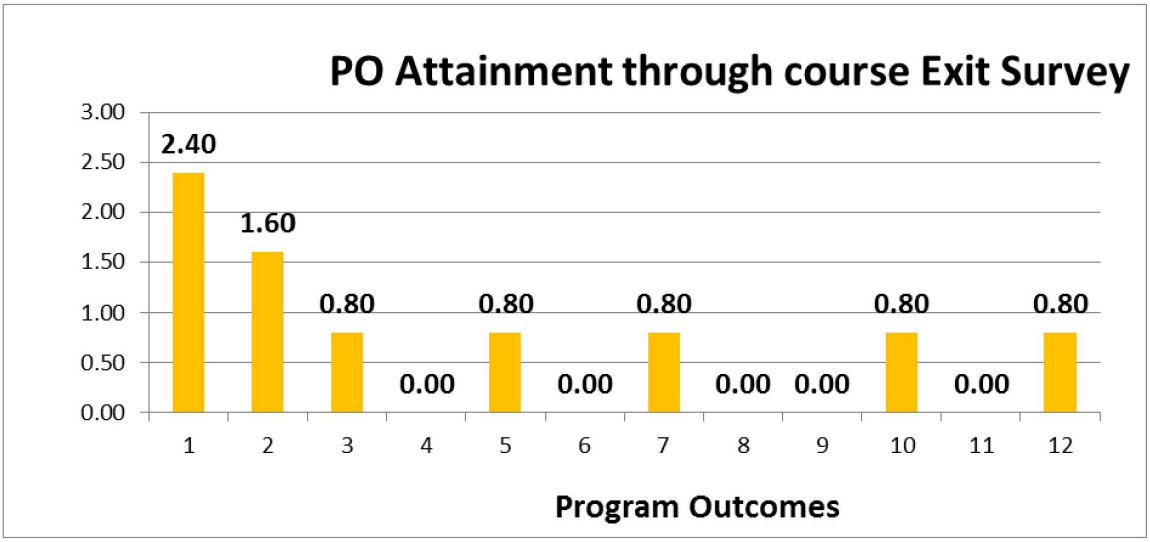
I. PO Attainment through Course Exit Survey:

PO/PSO Attainment through Course Exit Survey

CO Attainment Value through Course Exit Survey:	79.87	2.40

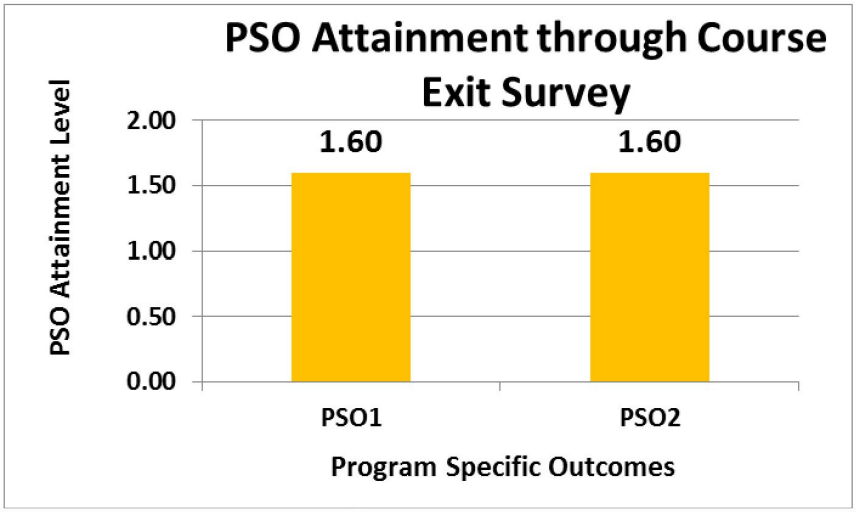
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311.1	3	2	1	-	1		1	-	-	1	-	1
C311.2	3	2	1	-	1		1	-	-	1	-	1
C311.3	3	2	1	-	1		1	-	-	1	-	1
C311.4	3	2	1	-	1		1	-	-	1	-	1
C311.5	3	2	1	-	1		1	-	-	1	-	1
C311.6	3	2	1	-	1		1	-	-	1	-	1
Average	3	2	1	-	1		1	-	-	1	-	1
CES Attainment	2.40	1.60	0.80	0.00	0.80	0.00	0.80	0.00	0.00	0.80	0.00	0.80

POs attainment value for the present course = (Mapped value * CO Attainment Value through Course Exit Survey)/3



PSO Attainment through Course Exit Survey

CO/PSO	PSO1	PSO2
C311.1	2	2
C311.2	2	2
C311.3	2	2
C311.4	2	2
C311.5	2	2
C311.6	2	2
Average	2	2
CES Attainment	1.60	1.60



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

HOD
Electronics & Communication Engg.
Hirasugar Institute of Technology,
Nidasoshi-591 236

Hirasugar Institute of Technology, Nidasoshi-591236

Course Outcome/Program Outcome Assesment

COURSE COORDINATOR: Mrs. S. S. KAMATE
A.Y: 2018-19 **PROGRAM: ECE** **COURSE:VLSI DESIGN**
SEM: VI **DIV:** **COURSE CODE:15EC63**
CO Code: C311

Mapping of Course Outcomes (COs) to Program Outcomes (POs)

POs→ / COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311.1	3	2	1	-	1		1	-	-	1	-	1
C311.2	3	2	1	-	1		1	-	-	1	-	1
C311.3	3	2	1	-	1		1	-	-	1	-	1
C311.4	3	2	1	-	1		1	-	-	1	-	1
C311.5	3	2	1	-	1		1	-	-	1	-	1
C311.6	3	2	1	-	1		1	-	-	1	-	1
Average	3	2	1	-	1		1	-	-	1	-	1

Mapping of Course Outcomes (COs) to Program Specific Outcomes(PSOs)

PSOs / COs	PSO 1	PSO 2
C311.1	2	2
C311.2	2	2
C311.3	2	2
C311.4	2	2
C311.5	2	2
C311.6	2	2
Average	2	2

Mapping of IA Questions to COs

IA Test-1		IA Test -2		IA Test -3				ASSIGNMENTS				
Q.No.1 OR Q.No.2	Q.No.3 OR Q.No.4	Q.No.1 OR Q.No.2 and Q.No.3	Q.No.4	Q.No.1 & Q.No.3	Q.No.2	Q.No. 4a	Q.No.4b	ASSGN-1	ASSGN-2	ASSGN-3	ASSGN-4	ASSGN-5
C311.1	C311.1	C311.2	C311.2	C311.3	C311.6	C311.4	C311.4	C311.1	C311.2	C311.3	C311.4	C311.5
Maximum								Maximum Marks for Each Assignment				
25		25		12	12	6	7	5	5	5	5	5

Target Level Set for the Attainment of Course:		1.5

Instructions:

1. The course coordinator should manually enter correlated IA questions with mapped COs

2. The course coordinator should manually enter correlated assignments with mapped COs

3. Based on the previous three assessment years course coordinator/faculty has to set the target level for course attainment.

4. Mapped POs must be entered manually in IA Assessement Sheet, Assignment Assessement Sheet and CO Attainment Sheet.

COURSE OUTCOME ASSESSMENT DATA ENTRY SHEET

Sl.No	Student Name		IA Test -1			IA Test -2			IA Test -3					Assigments					Semster End Exam
			Q.No.1 OR Q.No.2		Total Marks	Q.No.1 OR Q.No.2 and Q.No.3		Total Marks	Q.No.1 & Q.No.3	Q.No.2	Q.No. 4a	Q.No.4b	Total Marks	Assgn-1	Assgn-2	Assgn-3	Assgn-4	Assgn-5	PO1-PO4, PO8-PO9,PO12
		MAX MARKS→	25	0	25	25	0	25	12	12	6	7	25	5	5	5	5	5	GRADES
		COs→	C311.1			C311.2			C311.3	C311.6	C311.4	C311.5		C311.1	C311.2	C311.3	C311.4	C311.5	CO1-CO8
		USN↓																	
1	SANKET B. PIMPALE	2HN15EC031	8			ab			11					5	5	5	5	5	D
2	ABHISHEK KHADAKBHAVI	2HN16EC001	21			ab			11					5	5	5	5	5	B
3	AISHWARYA V. HAMBAR	2HN16EC002	15			21			ab	ab	ab	ab		5	5	5	5	5	C
4	AISHWARYA B. PATIL	2HN16EC003	24			21			ab	ab	ab	ab		5	5	5	5	5	B
5	AISHWARYA JADHAV	2HN16EC004	23			16			ab	ab	ab	ab		5	5	5	5	5	B
6	AKSHAY PRAKASH POWAR	2HN16EC005	25			21			12					5	5	5	5	5	C
7	AMRUTA M. HUNASHYALI	2HN16EC006	ab			18			12		6	6		5	5	5	5	5	S
8	ANUPAMA MURUGODE	2HN16EC007	14			21			12		6	7		5	5	5	5	5	C
9	ANUSHA J. BOLLARAPU	2HN16EC008	19			20			ab	ab	ab	ab		5	5	5	5	5	B
10	ARCHANA B. PATIL	2HN16EC009	11						12					5	5	5	5	5	A
11	ASHWINI M. SHETTIMANI	2HN16EC010	25			20			13					5	5	5	5	5	B
12	BHAGYASHREE S. PATIL	2HN16EC011	24			19			ab	ab	ab	ab		5	5	5	5	5	B
13	CHAITRA VIRAKTAMATH	2HN16EC012	21			16			ab	ab	ab	ab		5	5	5	5	5	C
14	DALAWAI LAXMI DUNDAPPA	2HN16EC013	25			24			ab	ab	ab	ab		5	5	5	5	5	C
15	DAMMAKKA J. PANDAV	2HN16EC014	24			13			ab	ab	ab	ab		5	5	5	5	5	E
16	GANGADHAR MARUTI GIRAGAVE	2HN16EC015	24			19			12	12				5	5	5	5	5	C
17	GOMATESH S. PATIL	2HN16EC016	17			ab			13					5	5	5	5	5	B
18	KAVERI N. DADDIMANI	2HN16EC017	16			24			12					5	5	5	5	5	C
19	KAVITA DILIP PATIL	2HN16EC018	25			21			12					5	5	5	5	5	D
20	LAXMI AIGALI	2HN16EC020	18			21			ab	ab	ab	ab		5	5	5	5	5	S
21	MADHUMATI HAVAL	2HN16EC022	18			16			11	12				5	5	5	5	5	A
22	MOUSEEN A. RANGAPUR	2HN16EC023	16			13			ab	ab	ab	ab		5	5	5	5	5	D
23	MOUSEEN BAGWAN	2HN16EC024	25			25			ab	ab	ab	ab		5	5	5	5	5	B
24	PAVAN DESHPANDE	2HN16EC025	25			13			12					5	5	5	5	5	B
25	PRIYANKA R. DANOLLI	2HN16EC026	20			20			12					5	5	5	5	5	D
26	SACHIN NINGANUR	2HN16EC028	11			15			ab	ab	ab	ab		5	5	5	5	5	E
27	SANA M. ATTAR	2HN16EC030	22			23			12					5	5	5	5	5	B
28	SEEMA G. GANI	2HN16EC031	11			20			12					5	5	5	5	5	E
29	SHRADDHA M. HIPPARAGI	2HN16EC032	17			10			12		6	6		5	5	5	5	5	A
30	SHWETA V. SANTANAVAR	2HN16EC033	15			22			12					5	5	5	5	5	B
31	SOUMYA M. METAGUDLI	2HN16EC034	19			20			ab	ab	ab	ab		5	5	5	5	5	A
32	SOUNDRYA B. PATIL	2HN16EC035	21			21			ab	ab	ab	ab		5	5	5	5	5	E
33	SUNITA N. KARABASANNAVAR	2HN16EC036	25			24			12					5	5	5	5	5	B
34	SUPREETA D HIRARAPPAGOL	2HN16EC037	25			18			ab	ab	ab	ab		5	5	5	5	5	C
35	SUPRIYA K. CHOUGALA	2HN16EC038	23			ab			12		6	6		5	5	5	5	5	C
36	SURESH MUNJE	2HN16EC039	20			12			12					5	5	5	5	5	A
37	SUSHMITA S. MARADI	2HN16EC041	21			16			ab	ab	ab	ab		5	5	5	5	5	B
38	VEENASHRI BORAGALLI	2HN16EC042	24			25			12					5	5	5	5	5	B
39	VIDYA P SHETTI	2HN16EC043	17			24			12					5	5	5	5	5	D
40	DEEPAK KARNE	2HN16EC403	12			AB			12					5	5	5	5	5	S
41	LINGANGOUDA PATIL	2HN16EC405	23			AB			12		6	6		5	5	5	5	5	S
42	REVANSIDDAYYA V. MATHAPATI	2HN16EC411	23			4			12					5	5	5	5	5	C
43	SANGAMESH KODEKALMATH	2HN16EC413	9			20			12					5	5	5	5	5	C
44	SANTOSH SHEDABAL	2HN16EC415	12			0			12					5	5	5	5	5	A
45	SHITAL KHEMANNAVAR	2HN16EC416	AB			18			12					5	5	5	5	5	C
***	END OF RECORDS***																		
	Apeared		43	0		38	0		29	2	5	5		45	45	45	45	45	45
	Absent		2	0		6	0		16	16	0	16		0	0	0	0	0	0
	Reached		35	0		31	0		29	2	5	5		45	45	45	45	45	24
	Attainment level of CO in Percentage		81.40	#DIV/0!		81.58	#DIV/0!		100.00	100.00	100.00	100.00		100.00	100.00	100.00	100.00	100.00	12
	Attainment level of CO		3	#DIV/0!		3	#DIV/0!		3	3	3	3		3	3	3	3	3	9
																			1.00

FCD	S, A, B	24
FC	C	12
PASS	D,E	9
Fail	F	0
AB		0
Total number of Students		45

Attainment Level set for IA Tests

Attainment Level 1: Students scoring more than 60% of maximum marks allotted to each question.

Attainment Level set for Semester End Examination(SEE)

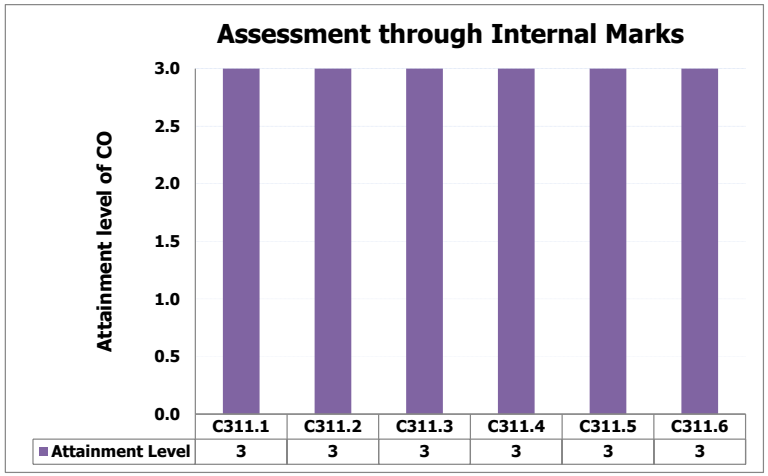
1. **Attainment Level 1**: students scoring more than 70% marks
2. **Attainment Level 2**: students scoring more than or equal to 60% to less than 70% Marks
3. **Attainment Level 3**: students scoring more than or equal to 50% to less than 35% Marks

Assessment through Internal Marks

Calculate

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

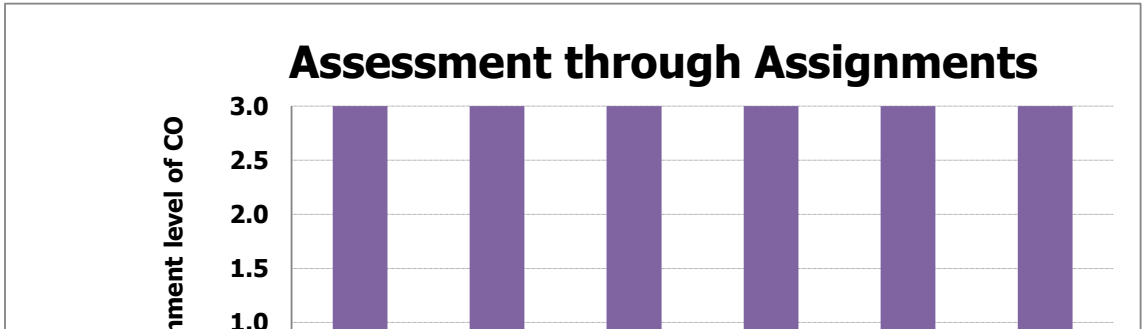
COs	IA Test-1				IA Test -2				IA Test -3				Attainment level of CO	Mapped PO	Mapped PSO
	Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 3		Q.No.2 OR Q. No. 4				
	A	R	A	R	A	R	A	R	A	R	A	R			
C311.1	43	35	43	35									3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2
C311.2					38	31	38	31					3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2
C311.3									29	29			3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2
C311.4											5	5	3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2
C311.5											5	5	3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2
C311.6											2	2	3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2

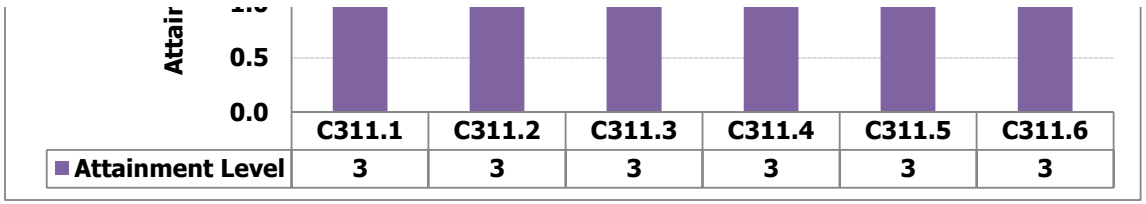


Assessment through Assignment

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

COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO
	A	R	A	R	A	R	A	R	A	R		
C311.1	45	45									100.00	3
C311.2			45	45							100.00	3
C311.3					45	45					100.00	3
C311.4							45	45			100.00	3
C311.5									45	45	100.00	3
C311.6									45	45	100.00	3




Attair
0.5
0.0
C311.1
C311.2
C311.3
C311.4
C311.5
C311.6
Attainment Level
3
3
3
3
3
3

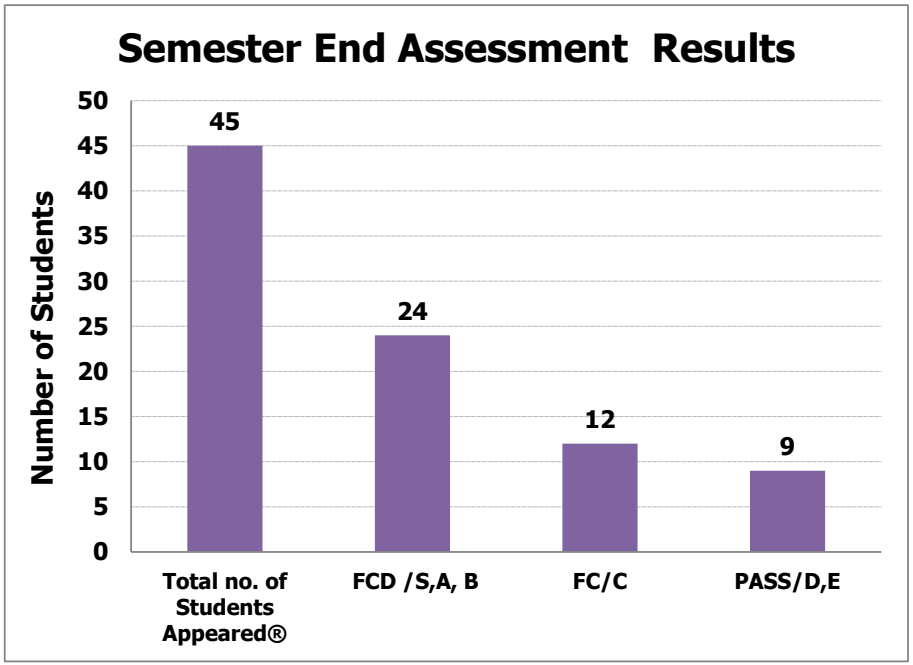
(above 70 %)

Mapped PO	Mapped PSO
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2

Semester End Assessment Based on Semster End Exam Results

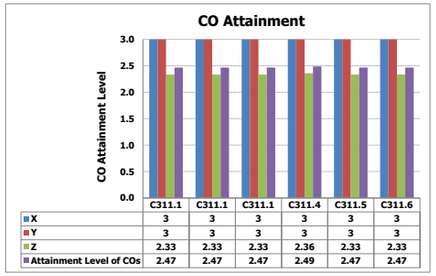
(COs Attainment Levels for: FCD (S,A,B) = 3, FC (C) = 2, SC(D,E) = 1 and Fail = 0)

Total no. of Students Appeared→	45	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semster End Exams
FCD /S,A, B	24	72
FC/C	12	24
PASS/D,E	9	9
Total Percentage of Passing	100.00%	2.33



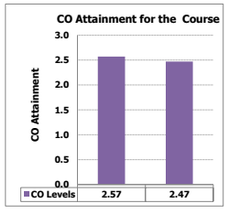
CO Attainment

COs	Attainment Through Assignment(X)	Attainment Through IA Test(Y)	Attainment Through Semster End Exam(Z)	Attainment level of CO [0.2(X+Y)/2]+0.8Z	Mapped POs
C311.1	3	3	2.33	2.47	PO1 - PO2 PO3 PO7 PO10 PO12
C311.1	3	3	2.33	2.47	PO1 - PO2 PO3 PO7 PO10 PO12
C311.1	3	3	2.33	2.47	PO1 - PO2 PO3 PO7 PO10 PO12
C311.4	3	3	2.36	2.49	PO1 - PO2 PO3 PO7 PO10 PO12
C311.5	3	3	2.33	2.47	PO1 - PO2 PO3 PO7 PO10 PO12
C311.6	3	3	2.33	2.47	PO1 - PO2 PO3 PO7 PO10 PO12
			Average	2.47	



	C311.1	C311.1	C311.1	C311.4	C311.5	C311.6
X	3	3	3	3	3	3
Y	3	3	3	3	3	3
Z	2.33	2.33	2.33	2.36	2.33	2.33
Attainment Level of COs	2.47	2.47	2.47	2.49	2.47	2.47

CO Attainment for the Course	
Target CO Level	2.57
Attained CO Level	2.47

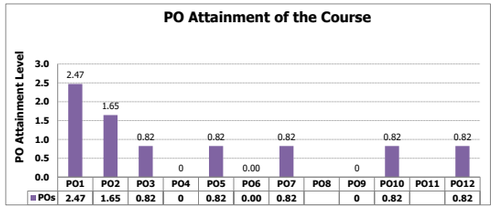


CO Levels	2.57	2.47

PO Attainment for the Course

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311	2.47	1.65	0.82	-	0.82	--	0.82		-	0.82		0.82

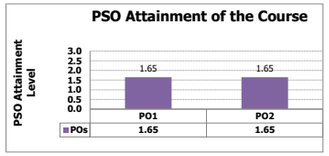
POs attainment value for the present course = (Mapped value * CO attainment average)/3



	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
POs	2.47	1.65	0.82	0	0.82	0.00	0.82		0	0.82		0.82

PSO Attainment for the Course

CO/PSO	PSO1	PSO2
C311	1.65	1.65



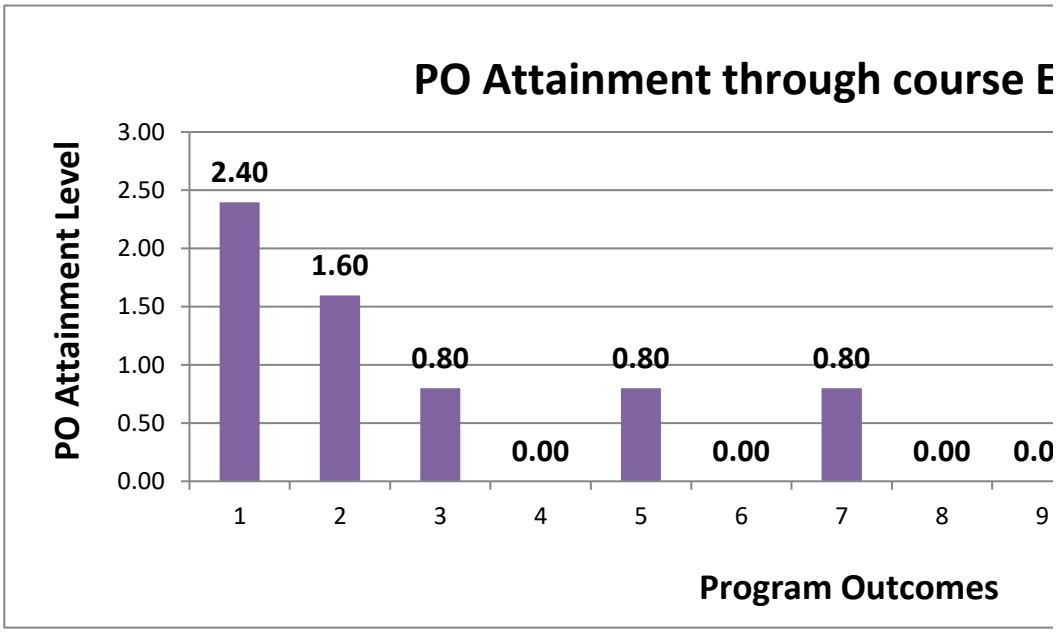
	PO1	PO2
POs	1.65	1.65

PO/PSO Attainment through Course Exit Survey

CO Attainment Value through Course Exit Survey:	79.87	2.40

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
C311.1	3	2	1	-	1		1
C311.2	3	2	1	-	1		1
C311.3	3	2	1	-	1		1
C311.4	3	2	1	-	1		1
C311.5	3	2	1	-	1		1
C311.6	3	2	1	-	1		1
Average	3	2	1	-	1		1
CES Attainment	2.40	1.60	0.80	0.00	0.80	0.00	0.80

POs attainment value for the present course = (Mapped value * CO Attainment Value thro

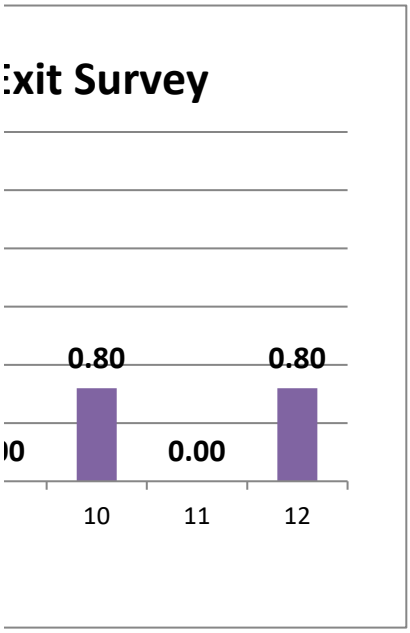


P

PO8	PO9	PO10	PO11	PO12
-	-	1	-	1
-	-	1	-	1
-	-	1	-	1
-	-	1	-	1
-	-	1	-	1
-	-	1	-	1
-	-	1	-	1
0.00	0.00	0.80	0.00	0.80

PSOs attainment

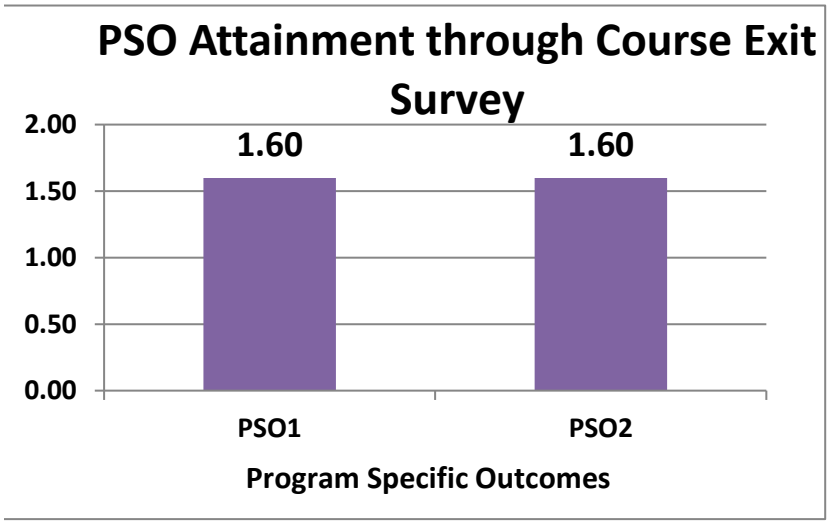
ough Course Exit Survey)/3



PSO Attainment Level

PSO Attainment through Course Exit Survey

CO/PSO	PSO1	PSO2
C311.1	2	2
C311.2	2	2
C311.3	2	2
C311.4	2	2
C311.5	2	2
C311.6	2	2
Average	2	2
CES Attainment	1.60	1.60



Hirasugar Institute of Technology, Nidasoshi-591236

Course Outcome/Program Outcome Assesment

COURSE COORDINATOR: Mrs. S. S. KAMATE
A.Y: 2018-19 **PROGRAM: ECE** **COURSE:VLSI DESIGN**
SEM: VI **DIV:** **COURSE CODE:15EC63**
CO Code: C311

Mapping of Course Outcomes (COs) to Program Outcomes (POs)

POs→ / COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311.1	3	2	1	-	1		1	-	-	1	-	1
C311.2	3	2	1	-	1		1	-	-	1	-	1
C311.3	3	2	1	-	1		1	-	-	1	-	1
C311.4	3	2	1	-	1		1	-	-	1	-	1
C311.5	3	2	1	-	1		1	-	-	1	-	1
C311.6	3	2	1	-	1		1	-	-	1	-	1
Average	3	2	1	-	1		1	-	-	1	-	1

Mapping of Course Outcomes (COs) to Program Specific Outcomes(PSOs)

PSOs / COs	PSO 1	PSO 2
C311.1	2	2
C311.2	2	2
C311.3	2	2
C311.4	2	2
C311.5	2	2
C311.6	2	2
Average	2	2

Mapping of IA Questions to COs

IA Test-1		IA Test -2		IA Test -3				ASSIGNMENTS				
Q.No.1 OR Q.No.2	Q.No.3 OR Q.No.4	Q.No.1 OR Q.No.2 and Q.No.3	Q.No.4	Q.No.1 & Q.No.3	Q.No.2	Q.No. 4a	Q.No.4b	ASSGN-1	ASSGN-2	ASSGN-3	ASSGN-4	ASSGN-5
C311.1	C311.1	C311.2	C311.2	C311.3	C311.6	C311.4	C311.4	C311.1	C311.2	C311.3	C311.4	C311.5
Maximum								Maximum Marks for Each Assignment				
25		25		12	12	6	7	5	5	5	5	5

Target Level Set for the Attainment of Course:		1.5

Instructions:

1. The course coordinator should manually enter correlated IA questions with mapped COs

2. The course coordinator should manually enter correlated assignments with mapped COs

3. Based on the previous three assessment years course coordinator/faculty has to set the target level for course attainment.

4. Mapped POs must be entered manually in IA Assessement Sheet, Assignment Assessement Sheet and CO Attainment Sheet.

COURSE OUTCOME ASSESSMENT DATA ENTRY SHEET

Sl.No	Student Name		IA Test -1			IA Test -2			IA Test -3					Assigments					Semster End Exam
			Q.No.1 OR Q.No.2		Total Marks	Q.No.1 OR Q.No.2 and Q.No.3		Total Marks	Q.No.1 & Q.No.3	Q.No.2	Q.No. 4a	Q.No.4b	Total Marks	Assgn-1	Assgn-2	Assgn-3	Assgn-4	Assgn-5	PO1-PO4, PO8-PO9,PO12
		MAX MARKS→	25	0	25	25	0	25	12	12	6	7	25	5	5	5	5	5	GRADES
		COs→	C311.1			C311.2			C311.3	C311.6	C311.4	C311.5		C311.1	C311.2	C311.3	C311.4	C311.5	CO1-CO8
		USN↓																	
1	SANKET B. PIMPALE	2HN15EC031	8			ab			11					5	5	5	5	5	D
2	ABHISHEK KHADAKBHAVI	2HN16EC001	21			ab			11					5	5	5	5	5	B
3	AISHWARYA V. HAMBAR	2HN16EC002	15			21			ab	ab	ab	ab		5	5	5	5	5	C
4	AISHWARYA B. PATIL	2HN16EC003	24			21			ab	ab	ab	ab		5	5	5	5	5	B
5	AISHWARYA JADHAV	2HN16EC004	23			16			ab	ab	ab	ab		5	5	5	5	5	B
6	AKSHAY PRAKASH POWAR	2HN16EC005	25			21			12					5	5	5	5	5	C
7	AMRUTA M. HUNASHYALI	2HN16EC006	ab			18			12		6	6		5	5	5	5	5	S
8	ANUPAMA MURUGODE	2HN16EC007	14			21			12		6	7		5	5	5	5	5	C
9	ANUSHA J. BOLLARAPU	2HN16EC008	19			20			ab	ab	ab	ab		5	5	5	5	5	B
10	ARCHANA B. PATIL	2HN16EC009	11						12					5	5	5	5	5	A
11	ASHWINI M. SHETTIMANI	2HN16EC010	25			20			13					5	5	5	5	5	B
12	BHAGYASHREE S. PATIL	2HN16EC011	24			19			ab	ab	ab	ab		5	5	5	5	5	B
13	CHAITRA VIRAKTAMATH	2HN16EC012	21			16			ab	ab	ab	ab		5	5	5	5	5	C
14	DALAWAI LAXMI DUNDAPPA	2HN16EC013	25			24			ab	ab	ab	ab		5	5	5	5	5	C
15	DAMMAKKA J. PANDAV	2HN16EC014	24			13			ab	ab	ab	ab		5	5	5	5	5	E
16	GANGADHAR MARUTI GIRAGAVE	2HN16EC015	24			19			12	12				5	5	5	5	5	C
17	GOMATESH S. PATIL	2HN16EC016	17			ab			13					5	5	5	5	5	B
18	KAVERI N. DADDIMANI	2HN16EC017	16			24			12					5	5	5	5	5	C
19	KAVITA DILIP PATIL	2HN16EC018	25			21			12					5	5	5	5	5	D
20	LAXMI AIGALI	2HN16EC020	18			21			ab	ab	ab	ab		5	5	5	5	5	S
21	MADHUMATI HAVAL	2HN16EC022	18			16			11	12				5	5	5	5	5	A
22	MOUSEEN A. RANGAPUR	2HN16EC023	16			13			ab	ab	ab	ab		5	5	5	5	5	D
23	MOUSEEN BAGWAN	2HN16EC024	25			25			ab	ab	ab	ab		5	5	5	5	5	B
24	PAVAN DESHPANDE	2HN16EC025	25			13			12					5	5	5	5	5	B
25	PRIYANKA R. DANOLLI	2HN16EC026	20			20			12					5	5	5	5	5	D
26	SACHIN NINGANUR	2HN16EC028	11			15			ab	ab	ab	ab		5	5	5	5	5	E
27	SANA M. ATTAR	2HN16EC030	22			23			12					5	5	5	5	5	B
28	SEEMA G. GANI	2HN16EC031	11			20			12					5	5	5	5	5	E
29	SHRADDHA M. HIPPARAGI	2HN16EC032	17			10			12		6	6		5	5	5	5	5	A
30	SHWETA V. SANTANAVAR	2HN16EC033	15			22			12					5	5	5	5	5	B
31	SOUMYA M. METAGUDLI	2HN16EC034	19			20			ab	ab	ab	ab		5	5	5	5	5	A
32	SOUNDRYA B. PATIL	2HN16EC035	21			21			ab	ab	ab	ab		5	5	5	5	5	E
33	SUNITA N. KARABASANNAVAR	2HN16EC036	25			24			12					5	5	5	5	5	B
34	SUPREETA D HIRARAPPAGOL	2HN16EC037	25			18			ab	ab	ab	ab		5	5	5	5	5	C
35	SUPRIYA K. CHOUGALA	2HN16EC038	23			ab			12		6	6		5	5	5	5	5	C
36	SURESH MUNJE	2HN16EC039	20			12			12					5	5	5	5	5	A
37	SUSHMITA S. MARADI	2HN16EC041	21			16			ab	ab	ab	ab		5	5	5	5	5	B
38	VEENASHRI BORAGALLI	2HN16EC042	24			25			12					5	5	5	5	5	B
39	VIDYA P SHETTI	2HN16EC043	17			24			12					5	5	5	5	5	D
40	DEEPAK KARNE	2HN16EC403	12			AB			12					5	5	5	5	5	S
41	LINGANGOUDA PATIL	2HN16EC405	23			AB			12		6	6		5	5	5	5	5	S
42	REVANSIDDAYYA V. MATHAPATI	2HN16EC411	23			4			12					5	5	5	5	5	C
43	SANGAMESH KODEKALMATH	2HN16EC413	9			20			12					5	5	5	5	5	C
44	SANTOSH SHEDABAL	2HN16EC415	12			0			12					5	5	5	5	5	A
45	SHITAL KHEMANNAVAR	2HN16EC416	AB			18			12					5	5	5	5	5	C
***	END OF RECORDS***																		
	Apeared		43	0		38	0		29	2	5	5		45	45	45	45	45	45
	Absent		2	0		6	0		16	16	0	16		0	0	0	0	0	0
	Reached		35	0		31	0		29	2	5	5		45	45	45	45	45	24
	Attainment level of CO in Percentage		81.40	#DIV/0!		81.58	#DIV/0!		100.00	100.00	100.00	100.00		100.00	100.00	100.00	100.00	100.00	12
	Attainment level of CO		3	#DIV/0!		3	#DIV/0!		3	3	3	3		3	3	3	3	3	9
																			1.00

FCD	S, A, B	24
FC	C	12
PASS	D,E	9
Fail	F	0
AB		0
Total number of Students		45

Attainment Level set for IA Tests

Attainment Level 1: Students scoring more than 60% of maximum marks allotted to each question.

Attainment Level set for Semester End Examination(SEE)

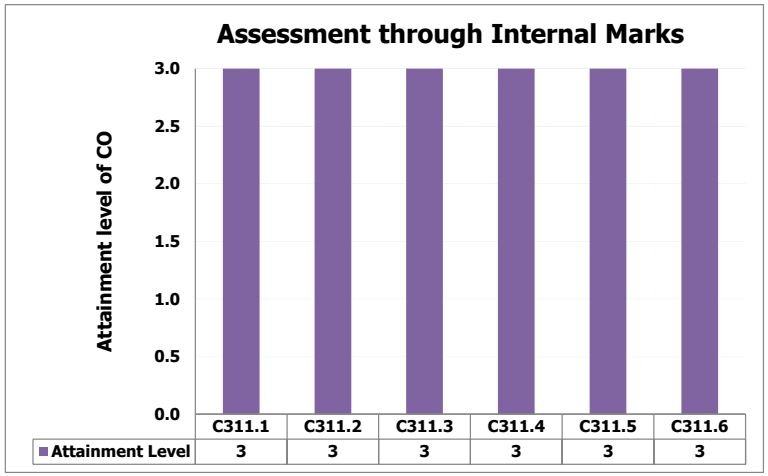
1. **Attainment Level 1**: students scoring more than 70% marks
2. **Attainment Level 2**: students scoring more than or equal to 60% to less than 70% Marks
3. **Attainment Level 3**: students scoring more than or equal to 50% to less than 35% Marks

Assessment through Internal Marks

Calculate

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

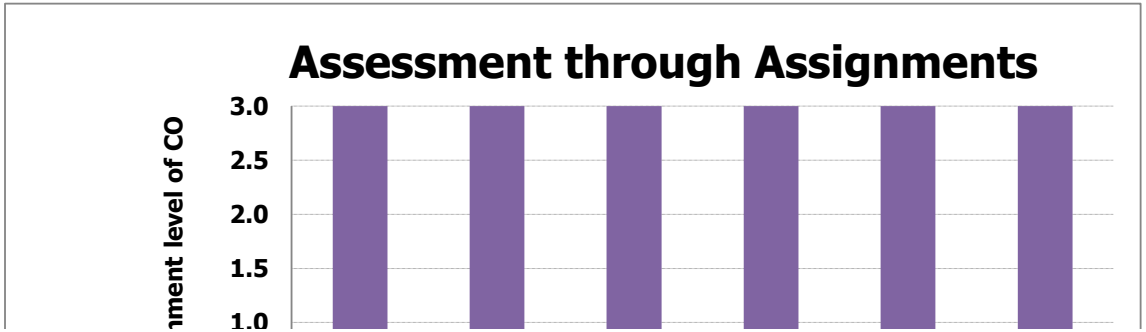
COs	IA Test-1				IA Test -2				IA Test -3				Attainment level of CO	Mapped PO	Mapped PSO
	Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 3		Q.No.2 OR Q. No. 4				
	A	R	A	R	A	R	A	R	A	R	A	R			
C311.1	43	35	43	35									3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2
C311.2					38	31	38	31					3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2
C311.3									29	29			3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2
C311.4											5	5	3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2
C311.5											5	5	3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2
C311.6											2	2	3	PO1 -PO3,PO5,PO7,PO10,PO12	PSO1,PSO2

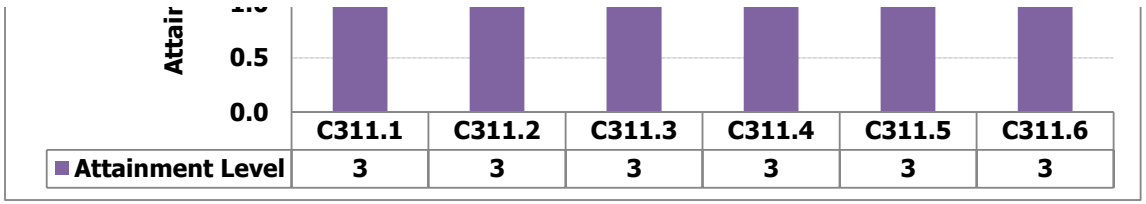


Assessment through Assignment

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

COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO
	A	R	A	R	A	R	A	R	A	R		
C311.1	45	45									100.00	3
C311.2			45	45							100.00	3
C311.3					45	45					100.00	3
C311.4							45	45			100.00	3
C311.5									45	45	100.00	3
C311.6									45	45	100.00	3




Attair
0.5
0.0
C311.1
C311.2
C311.3
C311.4
C311.5
C311.6
Attainment Level
3
3
3
3
3
3

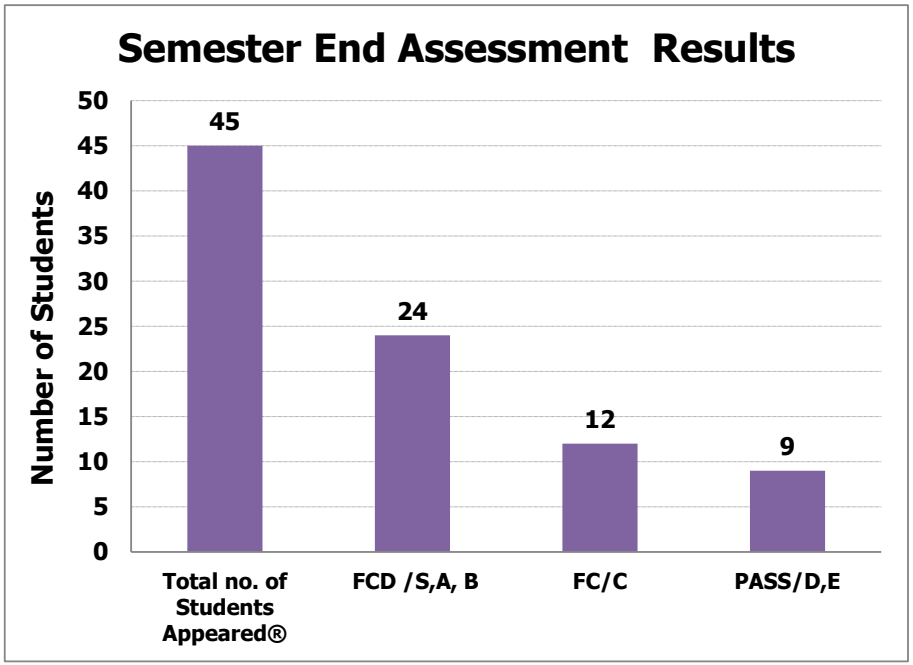
(above 70 %)

Mapped PO	Mapped PSO
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2
PO1 -PO3,PO5,PO7,PO10,PO12	PSO1, PSO2

Semester End Assessment Based on Semster End Exam Results

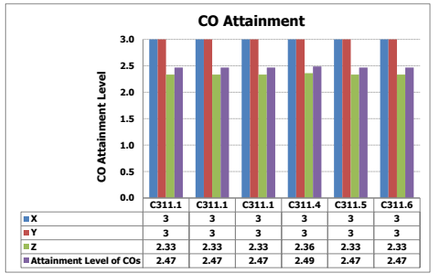
(COs Attainment Levels for: FCD (S,A,B) = 3, FC (C) = 2, SC(D,E) = 1 and Fail = 0)

Total no. of Students Appeared→	45	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semster End Exams
FCD /S,A, B	24	72
FC/C	12	24
PASS/D,E	9	9
Total Percentage of Passing	100.00%	2.33



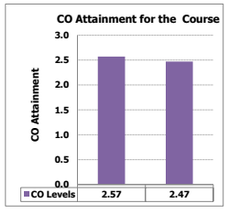
CO Attainment

COs	Attainment Through Assignment(X)	Attainment Through IA Test(Y)	Attainment Through Semster End Exam(Z)	Attainment level of CO [0.2(X+Y)/2]+0.8Z	Mapped POs
C311.1	3	3	2.33	2.47	PO1 - PO2 PO3 PO7 PO10 PO12
C311.1	3	3	2.33	2.47	PO1 - PO2 PO3 PO7 PO10 PO12
C311.1	3	3	2.33	2.47	PO1 - PO2 PO3 PO7 PO10 PO12
C311.4	3	3	2.36	2.49	PO1 - PO2 PO3 PO7 PO10 PO12
C311.5	3	3	2.33	2.47	PO1 - PO2 PO3 PO7 PO10 PO12
C311.6	3	3	2.33	2.47	PO1 - PO2 PO3 PO7 PO10 PO12
			Average	2.47	



	C311.1	C311.1	C311.1	C311.4	C311.5	C311.6
X	3	3	3	3	3	3
Y	3	3	3	3	3	3
Z	2.33	2.33	2.33	2.36	2.33	2.33
Attainment Level of COs	2.47	2.47	2.47	2.49	2.47	2.47

CO Attainment for the Course	
Target CO Level	2.57
Attained CO Level	2.47

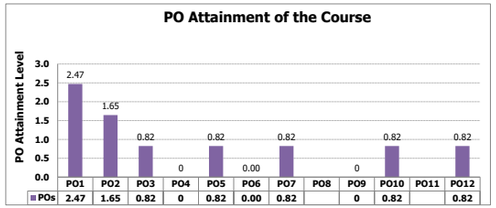


CO Levels	2.57	2.47

PO Attainment for the Course

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311	2.47	1.65	0.82	-	0.82	--	0.82		-	0.82		0.82

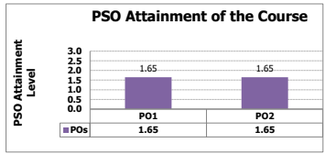
POs attainment value for the present course = (Mapped value * CO attainment average)/3



	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
POs	2.47	1.65	0.82	0	0.82	0.00	0.82		0	0.82		0.82

PSO Attainment for the Course

CO/PSO	PSO1	PSO2
C311	1.65	1.65



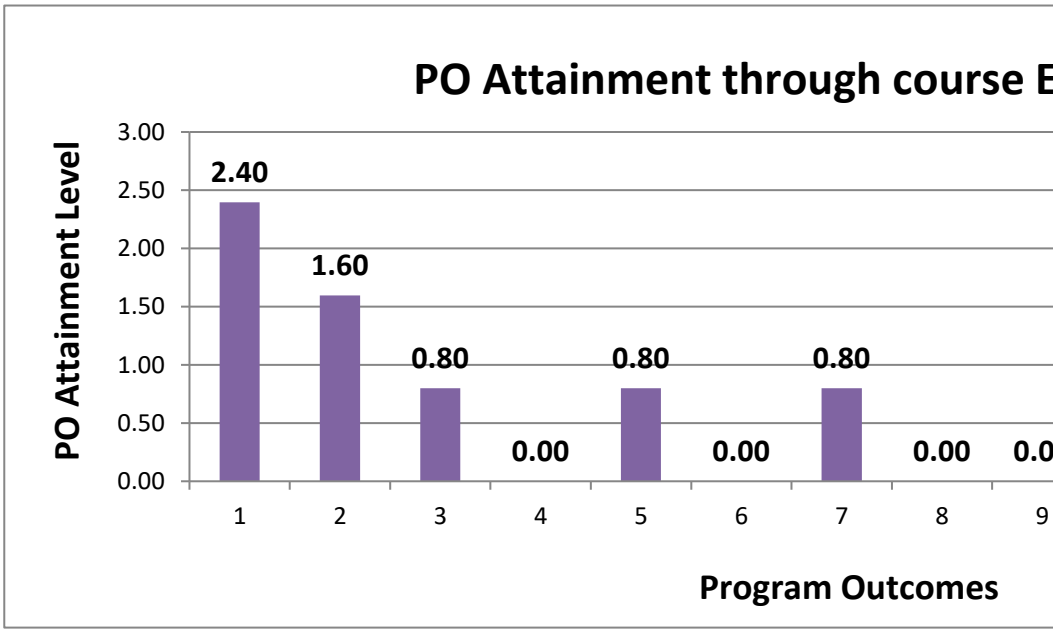
	PO1	PO2
POs	1.65	1.65

PO/PSO Attainment through Course Exit Survey

CO Attainment Value through Course Exit Survey:	79.87	2.40

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
C311.1	3	2	1	-	1		1
C311.2	3	2	1	-	1		1
C311.3	3	2	1	-	1		1
C311.4	3	2	1	-	1		1
C311.5	3	2	1	-	1		1
C311.6	3	2	1	-	1		1
Average	3	2	1	-	1		1
CES Attainment	2.40	1.60	0.80	0.00	0.80	0.00	0.80

POs attainment value for the present course = (Mapped value * CO Attainment Value thro

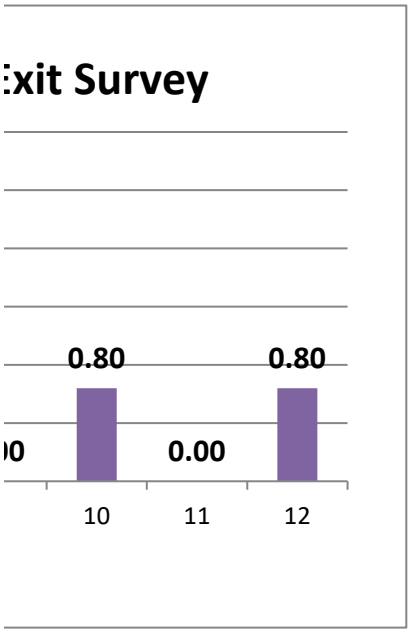


P

PO8	PO9	PO10	PO11	PO12
-	-	1	-	1
-	-	1	-	1
-	-	1	-	1
-	-	1	-	1
-	-	1	-	1
-	-	1	-	1
-	-	1	-	1
0.00	0.00	0.80	0.00	0.80

PSOs attainment

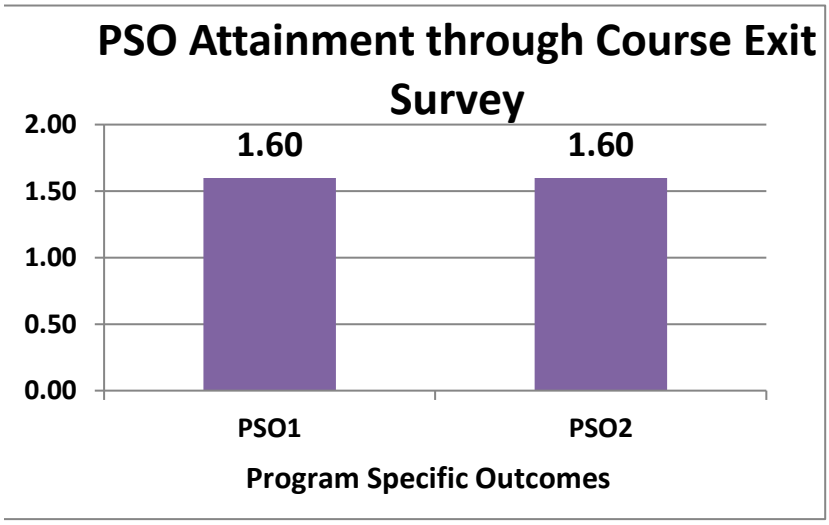
ough Course Exit Survey)/3



PSO Attainment Level

PSO Attainment through Course Exit Survey

CO/PSO	PSO1	PSO2
C311.1	2	2
C311.2	2	2
C311.3	2	2
C311.4	2	2
C311.5	2	2
C311.6	2	2
Average	2	2
CES Attainment	1.60	1.60



Attainment of Program Outcomes and Program Specific Outcomes:

PO/PSO Attainment through Direct Assessment Methods:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	**2.07**	**1.62**	**1.56**	**1.09**	**0.72**	**0.85**	**0.43**	**0.68**	**0.68**	**0.78**	**0.83**	**1.02**	**1.72**	**1.48**

PO/PSO Attainment through Indirect Assessment Methods:

Sl. No.	Indirect Method	Weightage	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Employer Survey	5	3	3	3	3	3	3	3	3	3	3	3	3	--	--
2	Alumni Survey	15	2.54	2.33	2.27	2.26	2.56	2.30	2.33	2.30	2.43	2.33	2.38	2.27	--	--
3	Senior Exit Survey	15	2.88	2.69	2.71	2.67	2.60	2.74	2.76	2.71	2.76	2.74	2.88	2.60	2.79	2.67
4	Activity Feedback	35	2.60	2.73	2.80	2.80	2.79	2.58	2.75	2.55	2.57	2.59	2.80	2.61	2.58	2.61
5	Course Exit Survey	15	2.41	1.94	1.82	1.28	0.81	0.92	0.54	0.69	0.76	0.93	0.87	1.22	1.99	1.70
6	Placement, Higher Education and Entrepreneurship	15	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Overall Indirect Attainment(B)			**2.35**	**2.27**	**2.27**	**2.18**	**2.14**	**2.07**	**2.08**	**2.02**	**2.06**	**2.08**	**2.17**	**2.10**	**2.04**	**1.94**

PO/PSO Attainment through Direct and Indirect Assessment Methods:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	2.07	1.62	1.56	1.09	0.72	0.85	0.43	0.68	0.68	0.78	0.83	1.02	1.72	1.48
Indirect Assessment(B)	2.35	2.27	2.27	2.18	2.14	2.07	2.08	2.02	2.06	2.08	2.17	2.10	2.04	1.94
AVG(0.8*A+0.2*B)	2.13	1.75	1.70	1.31	1.00	1.09	0.76	0.95	0.96	1.04	1.10	1.24	1.78	1.57

Criteria Coordinator

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Program Level Course-PO, PSO Attainment matrix(2015 Batch)

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101	1.40	0.93	---	---	---	---	---	---	---	---	---	0.47	--	--
C102	1.66	---	1.10	---	0.55	---	---	0.55	---	0.55	---	0.55	--	--
C103	1.43	1.43	0.95	0.95	---	0.48	---	0.48	---	---	0.48	0.95	--	--
C104	2.71	1.80	---	---	---	---	0.90	---	---	---	---	---	--	--
C105	1.18	1.18	---	---	---	---	---	---	---	---	---	---	--	--
C106	2.66	1.66	3.00	1.33	---	3.00	---	3.00	2.00	2.00	3.00	2.50	--	--
C107	2.33	---	---	---	0.78	---	---	---	---	---	---	---	--	--
C108	---	---	---	---	---	1.12	---	0.75	---	---	---	---	---	--
C109	1.79	1.19	---	---	---	---	---	---	---	---	---	0.60	--	--
C110	1.65	1.32	1.10	---	---	0.99	---	---	---	---	---	0.55	--	--
C111	1.63	1.30	1.41	---	---	---	1.09	1.09	---	1.09	---	---	--	--
C112	0.81	---	---	---	1.62	---	---	---	---	2.43	---	---	--	--
C113	1.11	0.74	0.96	0.59	0.74	1.11	---	---	0.74	0.96	0.59	1.11	--	--
C114	2.96	2.96	2.96	---	---	---	---	---	2.96	---	2.96	---	--	--
C115	2.65	2.65	2.65	---	---	1.77	---	---	---	---	---	0.88	--	--
C116	2.18	1.46	1.46			1.46	1.46	0.73	0.00	0.00	0.73	0.73	--	--
C201	1.80	1.20	0.60	--	--	--	--	--	--	--	--	0.60		
C202	2.33	1.55	2.33	2.33	0.78	0.00	0.00	0.00	0.00	0.00	1.55	0.78	1.55	1.55
C203	1.43	0.76	1.14	0.57	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.48	0.66	0.85
C204	2.06	2.06	0.69	0.69	0.00	0.00	0.00	0.69	0.00	0.00	0.00	0.69	1.23	0.95
C205	1.66	0.83	1.07	0.59	0.00	0.59	0.00	0.00	0.00	0.00	0.59	1.18		
C206	1.36	0.91	0.45	0.00	0.00	0.00	0.51	0.45	0.00	0.45	0.00	0.57	0.91	0.45
C207	2.82	2.82	2.82	1.31	0.94	0.00	0.00	0.00	0.94	1.88	0.00	0.94	1.87	1.876
C208	2.37	1.89	2.60	0.95	0.95	0.95	0.00	0.00	0.95	0.95	0.95	0.95	2.84	2.84
C209	1.82	1.22	0.61	--	--	--	--	--	--	--	--	0.61		
C210	1.26	0.75	1.09	0.63	0.42	0.42	0.00	0.00	0.00	0.00	0.00	0.63	1.1	0.83
C211	0.73	0.65	0.57	0.49	0.00	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.81	1.22

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C212	1.22	0.81	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.41	0.81	0.41
C213	1.91	1.76	1.76	1.76	0.00	0.00	0.00	0.73	0.00	0.00	0.00	0.73	1.4	1.46
C214	1.34	0.48	1.25	0.48	0.00	0.48	0.00	0.48	0.00	0.00	0.00	0.48	--	--
C215	2.52	1.80	2.34	2.40	1.58	1.08	0.00	0.00	0.00	1.35	0.90	1.80	--	--
C216	2.70	1.80	1.05	0.90	0.00	0.90	0.00	0.90	0.90	0.90	0.00	0.90	--	--
C301	0.66	0.66	0.66	0.66	--	0.66	--	0.66	1.86	1.33	1.99	0.66	0.66	0.66
C302	2.22	2.22	1.48	1.48	--	0.74	--	0.74	--	--	0.74	1.48	1.48	1.48
C303	2.14	1.28	1.85	1.07	1.07	0.71	--	--	--	--	0.36	1.43	1.24	0.71
C304	1.65	1.65	1.65	0.88	0.55	--	--	0.55	--	--	0.55	0.55	1.10	0.55
C305	1.36	0.68	0.68	0.68	0.00	0.68	1.09	0.68	0.68	0.68	0.68	0.68	1.36	1.36
C306	1.66	1.07	1.54	1.07	1.54	1.19	0.95	--	1.19	0.95	0.71	1.19	1.78	1.78
C307	2.58	2.58	1.72	1.72	--	0.86	--	0.86	--	--	0.86	1.72	2.58	2.58
C308	2.66	2.17	2.42	1.45	1.21	1.45	--	--	0.97	0.97	1.93	1.45	2.66	1.69
C309	2.13	2.13	1.85	1.89	--	--	--	0.71	--	1.42	1.42	1.42	2.13	1.84
C310	2.11	1.69	1.83	1.69	0.70	1.13	0.70	0.70	0.70	0.70	0.70	0.84	2.11	1.41
C311	2.55	1.70	0.85	-	-	-	-	-	-	0.85	-	0.85	1.70	1.70
C312	1.35	1.35	0.90	0.90	--	0.45	--	0.45	--	--	0.45	0.90	0.90	1.35
C313	2.58	2.58	0.86	0.86	0.00	0.86	0.00	0.86	2.40	1.72	0.86	0.86	0.86	0.86
C314	1.64	0.88	1.14	0.63	1.26	--	--	0.63	0.63	--	--	0.63	1.10	1.14
C315	2.95	2.36	2.55	1.96	1.96	1.57	0.98	0.98	0.98	0.98	0.98	1.57	2.95	1.57
C316	2.91	2.91	1.94	--	0.97	0.97	0.97	0.97	0.97	0.97	0.97	1.94	1.94	1.94
C401	0.63	0.63	0.63	0.63	0.00	0.63	0.00	0.63	1.76	1.26	1.89	0.63	0.63	0.63
C402	2.52	1.51	1.34	1.51	1.34	1.51	0.00	0.84	0.00	1.68	1.68	1.34	1.68	1.68
C403	1.35	0.73	0.93	0.52	0.52	0.00	0.00	0.52	0.52	0.00	0.00	0.52	1.013	1.14
C404	1.97	1.97	1.31	--	--	0.66	--	0.66	--	--	1.31	1.31	1.97	1.21
C404	2.34	2.03	2.03	1.87	1.25	1.17	0.78	0.78	0.78	0.78	0.78	1.87	1.42	0.71
C405(B)	1.64	1.13	1.26	0.88	1.13	1.38	1.01	0.63	1.01	1.26	0.94	1.13	1.13	1.26
C405(C3)	2.65	1.77	1.77	0.88	0.88	0.88	--	--	--	0.88	1.77	1.77	1.76	0.88

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406	3.00	3.00	2.00	2.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.98	3	3
C407	2.95	2.95	1.97	1.97	--	0.98	--	0.98	--	--	--	0.98	2.95	2.95
C408	3	3	2	2	--	1	--	1	--	--	--	1	3	3
C409	2.36	1.57	1.57	0.79	0.00	0.79	0.79	0.79	0.79	0.79	0.00	0.79	1.56	1.56
C410	2.04	2.04	2.04	1.36	0.68	0.68	0.68	0.00	0.00	0.00	0.68	0.00	2.85	0.95
C411	2.74	2.74	2.37	0.00	0.00	0.91	0.00	0.91	0.00	0.00	0.91	1.82	2.74	2.37
C412	1.98	1.98	1.98	0.99	0.00	1.98	0.99	0.99	0.99	0.99	0.99	1.98	1.98	1.98
C413	3.00	2.00	3.00	2.00	2.00	1.00	2.00	2.00	3.00	3.00	3.00	1.00	3	3
C414	3.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	1.00	3.00	1.00	1.00	3	3
C415	2.00	2.00	2.00	1.00	2.00	1.00	2.00	3.00	3.00	3.00	2.00	2.00	3	3
AVG.	**2.03**	**1.64**	**1.55**	**1.11**	**0.69**	**0.86**	**0.51**	**0.76**	**0.80**	**0.91**	**0.88**	**1.01**	**1.78**	**1.57**

Criteria Coordinator

Programme Coordinator

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Hirasugar Institute of Technology,
Nidasoshi-591 236

FACULTY COURSE ASSESSEMENT REPORT (FCAR)

Course Coordinator:	**Prof: S S Kamate**	**Class Strength:65**
Semester: III	**Subject: Engg. Electromagnetics**	**Code: 15EC36**

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:	PSO1:	An ability to understand the concepts of basic Electronics & Communication Engineering and to apply them to various areas like Signal processing, VLSI, Embedded systems, Communication Systems, Digital & Analog Devices.	
PSO2:	PSO2:	An ability to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions	

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

CO	Description	Mapped POs	RBTL
C206.1	Explain basic concepts of Electric Fields and solve the problems in a given co-ordinate system.	PO1,PO2,PO3, PO8,PO10,PO12	L2
C206.2	Illustrate and verify Gauss divergence theorem and concept of potential and current density.	PO1,PO2,PO3, PO8,PO10,PO12	L3
C206.3	Solve the problems related to Laplace's equations and basic concepts of magnetic fields.	PO1,PO2,PO3, PO8,PO10,PO12	L3
C206.4	Solve problems related to stokes theorem and Magnetic forces.	PO1,PO2,PO3, PO8,PO10,PO12	L3
C206.5	Derive Maxwell's equations for varying fields and solve the wave propagation problems for free space and conductors.	PO1,PO2,PO3, PO8,PO10,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
C206.1	3	2	1	--	--	--	--	1	--	1	--	1
C206.2	3	2	1	--	--	--	--	1	--	1	--	1
C206.3	3	2	1	--	--	--	--	1	--	1	--	1
C206.4	3	2	1	--	--	--	--	1	--	1	--	1
C206.5	3	2	1	--	--	--	--	1	--	1	--	1
Average	3	2	1	--	--	--	--	1	--	1	--	1

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

PSOs / COs	PSO 1	PSO 2
C206.1	2	1
C206.2	2	1
C206.3	2	1
C206.4	2	1
C206.5	2	1
Average	2	1

VI. Justification of CO-PO Mapping:

C206.1-PO1	Strong correlation is given, as explaining and solving Electric Field related problems in a given co-ordinate system requires good knowledge of mathematics and engineering sciences.
C206.2.-PO1	Strong correlation is given, as explaining the concepts of Gauss law, divergence theorem and potential concepts require good knowledge of mathematics and engineering sciences.
C206.3-PO1	Strong correlation is given, as explaining the concepts of Laplace's and poisson's equations and basic concepts of potential, volume charge require good knowledge of mathematics and engineering sciences.
C206.4-PO1	Strong correlation is given, as solving problems related to stokes theorem and Magnetic forces requires good knowledge of mathematics and engineering sciences.
C206.5-PO1	Strong correlation is given, as explaining the concepts of Maxwell's equations for varying fields and solve the equations of wave propagation requires good knowledge of mathematics and engineering sciences.
C206.1-PO2	Medium correlation is given, since understanding and solving the Electric Field problems in a given co-ordinate system and their derivations need better problem analysis skills and first principles of mathematics and science.
C206.2-PO2	Medium correlation is given, since understanding and solving Gauss divergence theorem potential need better problem analysis skills and first principles of mathematics and science.
C206.3-PO2	Medium correlation is given, since understanding and solving the problems related to Laplace's equations and basic concepts of magnetic fields need better problem analysis skills and first principles of mathematics and science.
C206.4-PO2	Medium correlation is given, since understanding and solving problems related to stokes theorem and Magnetic forces need better problem analysis skills and first principles of mathematics and science.
C206.5-PO2	Medium correlation is given, since understanding and solving Maxwell's equations for varying fields and the wave propagation derivations need better problem analysis skills and first principles of mathematics and science.
C206.1 -PO3	Weak correlation is given, since explaining and solving Electric Field related problems in a given co-ordinate system require certain level of knowledge of designing solutions considering public safety and environmental issues.
C206.2 -PO3	Weak correlation is given, since explaining and solving Gauss divergence theorem and potential some problems require certain level of knowledge of designing solutions considering public safety and environmental issues.
C206.3 -PO3	Weak correlation since explaining and solving problems related to Laplace's equations and basic concepts of magnetic fields require certain level of knowledge of designing solutions considering public safety and environmental issues.
C206.4 -PO3	Weak correlation is given, since explaining and solving problems related to stokes theorem and Magnetic forces require certain level of knowledge of designing solutions considering public safety and environmental issues.
C206.5-PO3	Weak correlation is given, since explaining and solving some problems require certain level of knowledge of designing solutions considering public safety and environmental issues.
C206-PO8	A weak correlation is given, as we follow ethics in our behavior, while delivering the

	lecture, maintenance in classrooms conducing exams etc. so, definitely we cultivate professionalism indirectly.
C206-PO10	As communication in relation to complex engineering problems is done through exams and continuous evaluations of the course hence correlated to weak level as only syllabus related concepts are communicated.
C206-PO12	Weak correlation as one needs to have the knowledge of behavior of charges, fields and wave propagation.

VII. Justification of CO-PSO Mapping :

Mapping	Justification
C206.1-PSO1	A medium correlation is given, as understanding of concepts of charges, force and electric field and applying them to various areas like communication, Digital & analog devices will enhance the basics of Electronics & Communication Engineering.
C206.2-PSO1	A medium correlation is given, as to understand the concepts of gauss law, divergence of electrostatics and applying them to various areas like communication, Digital & analog devices will enhance the basics of Electronics & Communication Engineering.
C206.3-PSO1	A medium correlation is given, as to understand the concepts of potential, Laplace's equation, Poisson's equation and applying them to various areas like VLSI, communication, Digital & analog devices will enhance the basics of Electronics & Communication Engineering.
C206.4-PSO1	A medium correlation is given, as to understand the concepts of magnetostatics and forces applying them to various areas like communication, Digital & analog devices will enhance the basics of Electronics & Communication Engineering.
C206.5-PSO1	A medium correlation is given, as to understand the concepts of time varying fields and wave propagation and applying them to various areas like communication, Digital & analog devices will enhance the basics of Electronics & Communication Engineering.
C206.1-PSO2	A weak correlation is given, as understanding of concepts of charges, force and electric field and applying them to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions happens in some projects only.
C206.2-PSO2	A weak correlation is given, as to understand the concepts of gauss law, divergence of electrostatics and applying them to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions happens in some projects only.
C206.3-PSO2	A weak correlation is given, as to understand the concepts of potential, Laplace's equation, Poisson's equation and applying them to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions happens in some projects only.
C206.4-PSO2	A weak correlation is given, as to understand the concepts of magnetostatics and forces applying them to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions happens in some projects only.
C206.5-	A weak correlation is given, as to understand the concepts of time varying fields and

PSO2	wave propagation and applying them to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions happens in some projects only.

VIII. Bench Mark Setting

VTU Result(CIE+SEE)					
January/February 2013 Max. Marks:125		January/February 2014 Max. Marks: 125		January/February 2015 Max. Marks: 125	
USN	Marks Obtained	USN	Marks Obtained	USN	MARKS Obtained
2HN12EC002	50	2HN12EC010	43	2HN14EC001	49
2HN12EC003	68	2HN13EC001	77	2HN14EC002	87
2HN12EC004	52	2HN13EC002	61	2HN14EC003	65
2HN12EC005	65	2HN13EC003	83	2HN14EC004	71
2HN12EC006	71	2HN13EC004	76	2HN14EC006	67
2HN12EC007	59	2HN13EC005	99	2HN14EC007	91
2HN12EC008	58	2HN13EC006	72	2HN14EC008	88
2HN12EC009	78	2HN13EC007	110	2HN14EC009	66
2HN12EC011	67	2HN13EC008	60	2HN14EC010	115
2HN12EC012	61	2HN13EC009	55	2HN14EC011	77
2HN12EC013	50	2HN13EC010	83	2HN14EC012	87
2HN12EC014	50	2HN13EC011	87	2HN14EC013	99
2HN12EC015	54	2HN13EC012	97	2HN14EC014	80
2HN12EC016	42	2HN13EC013	100	2HN14EC017	57
2HN12EC017	52	2HN13EC014	97	2HN14EC018	39
2HN12EC018	50	2HN13EC015	81	2HN14EC019	69
2HN12EC019	41	2HN13EC016	65	2HN14EC020	50
2HN12EC020	59	2HN13EC017	71	2HN14EC021	58
2HN12EC021	38	2HN13EC018	60	2HN14EC022	85
2HN12EC022	26	2HN13EC019	52	2HN14EC023	58
2HN12EC023	40	2HN13EC020	37	2HN14EC024	41
2HN12EC024	57	2HN13EC021	57	2HN14EC025	76
2HN12EC025	61	2HN13EC022	62	2HN14EC026	53
2HN12EC026	50	2HN13EC023	66	2HN14EC027	92
2HN12EC027	76	2HN13EC024	67	2HN14EC028	84
2HN12EC028	50	2HN13EC025	53	2HN14EC030	53
2HN12EC029	43	2HN13EC026	101	2HN14EC031	107
2HN12EC030	42	2HN13EC027	79	2HN14EC032	66
2HN12EC031	51	2HN13EC028	86	2HN14EC033	88
2HN12EC032	40	2HN13EC029	51	2HN14EC034	50

2HN12EC033	82	2HN13EC030	67	2HN14EC035	73
2HN12EC034	42	2HN13EC031	83	2HN14EC036	56
2HN12EC035	50	2HN13EC032	61	2HN14EC037	87
2HN12EC036	47	2HN13EC033	75	2HN14EC038	80
2HN12EC037	61	2HN13EC034	63	2HN14EC039	56
2HN12EC038	53	2HN13EC035	58	2HN14EC040	51
2HN12EC039	33	2HN13EC036	83	2HN14EC041	65
2HN12EC040	50	2HN13EC037	58	2HN14EC042	50
2HN12EC041	41	2HN13EC038	75	2HN14EC043	50
2HN12EC042	51	2HN13EC039	80	2HN14EC044	83
2HN12EC043	32	2HN13EC040	53	2HN14EC045	58
2HN12EC045	62	2HN13EC041	53	2HN14EC046	72
2HN12EC046	39	2HN13EC042	68	2HN14EC047	87
2HN12EC047	70	2HN13EC043	61	2HN14EC048	90
2HN12EC048	77	2HN13EC044	70	2HN14EC049	56
2HN12EC049	47	2HN13EC045	58	2HN14EC050	54
2HN12EC050	42	2HN13EC046	53	2HN14EC051	80
2HN12EC051	78	2HN13EC047	75	2HN14EC052	82
2HN12EC052	57	2HN13EC048	90	2HN14EC053	82
2HN12EC053	86	2HN13EC049	95	2HN14EC054	80
2HN12EC054	74	2HN13EC050	80	2HN15EC400	40
2HN12EC055	55	2HN13EC051	103	2HN15EC401	50
2HN12EC056	85	2HN13EC052	73	2HN15EC402	50
2HN13EC400	38	2HN13EC053	90	2HN15EC403	50
2HN13EC402	42	2HN13EC054	98	2HN15EC404	56
2HN13EC404	57	2HN13EC056	84	2HN15EC405	56
2HN13EC405	50	2HN14EC400	63	2HN15EC406	24
2HN13EC406	51	2HN14EC401	36	2HN15EC407	25
2HN13EC407	58	2HN14EC402	25	2HN15EC408	36
2HN13EC408	52	2HN14EC404	15	2HN15EC409	88
2HN13EC409	61	2HN14EC405	50	2HN15EC410	65
2HN13EC410	39	2HN14EC406	70	2HN15EC411	58
2HN13EC411	58	2HN14EC407	57	2HN15EC412	53
2HN13EC412	39	2HN14EC408	53	2HN15EC413	28
2HN13EC413	40	2HN14EC409	60	2HN15EC414	53
2HN13EC415	34	2HN14EC410	69	2HN15EC415	50
2HN13EC416	43	2HN14EC411	54	2HN15EC416	15
2HN13EC418	39	2HN14EC412	42	2HN15EC417	77
2HN13EC403	39	2HN14EC413	34	2HN15EC418	52
2HN13EC401	53	2HN14EC414	35	2HN15EC419	36
		2HN14EC415	64	2HN15EC420	39
		2HN14EC416	47		
MEDIAN	**50.5**		**66.5**		**58**

Year	Median	Median of Medians	Initial Target Value ITV= (Median of Medians)*3/100
January/February 2015	50.5	58	1.74
January/February 2016	66.5		
January/February 2017	58		

IX. DIRECT ASSESSMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

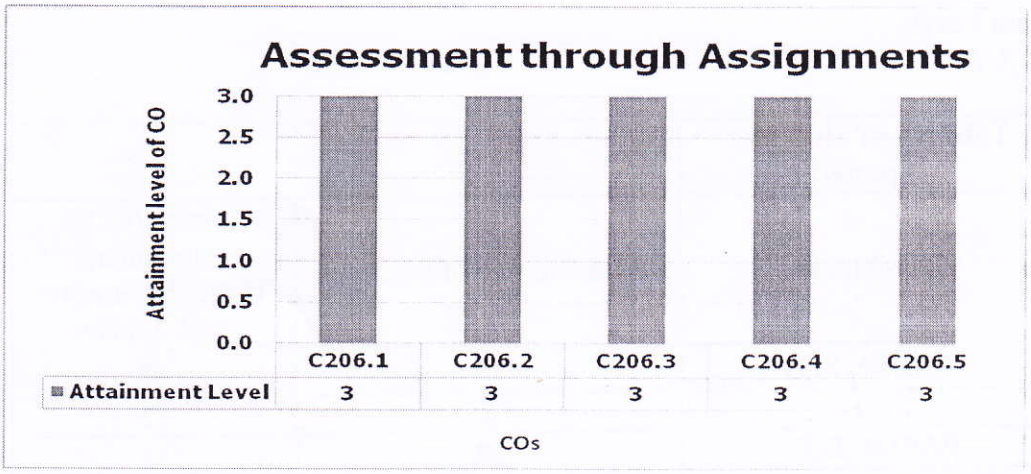
Assessment Tools:

- Continuous assessment
- Laboratory experiments
- End semester exam

1. Assessment through Assignment:

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

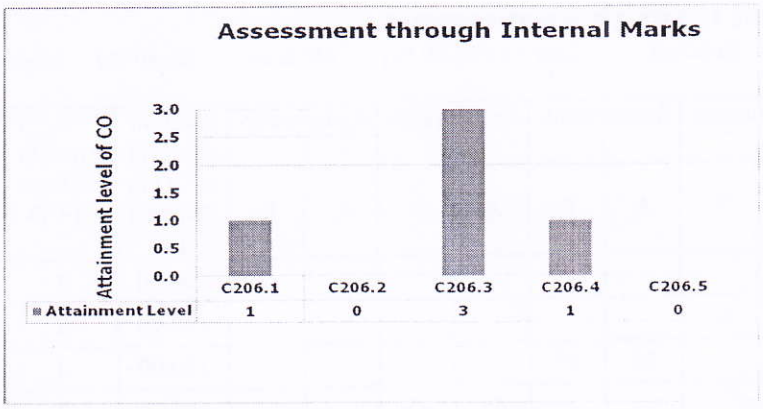
COs	Assignment -1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO	Mapped PSO
	A	R	A	R	A	R	A	R	A	R				
C206.1	65	65									100.00	3	1,2,3,6,8,10,12	1,2
C206.2			65	65							100.00	3	1,2,3,6,8,11,12	1,2
C206.3					65	65					100.00	3	1,2,3,6,8,11,12	1,2
C206.4							65	65			100.00	3	1,2,3,6,8,11,12	1,2
C206.5									65	65	100.00	3	1,2,3,6,8,11,12	1,2



2. Assessment through Internal Marks:

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

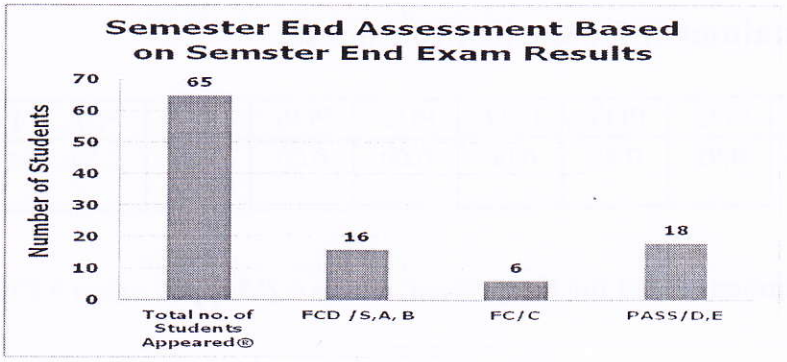
COs	IA Test-1				IA Test -2				IA Test -3				Attainment level of CO	Mapped PO	Mapped PSO
	Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4				
	A	R	A	R	A	R	A	R	A	R	A	R			
C206.1	62	29	59	32									1	1,2,3,6,8,10,12	1,2
C206.2					65	32							0	1,2,3,6,8,10,12	1,2
C206.3							30	19	54	50			3	1,2,3,6,8,10,12	1,2
C206.4											49	29	0	1,2,3,6,8,10,12	1,2
C206.5											4	1	0	1,2,3,6,8,10,12	1,2



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

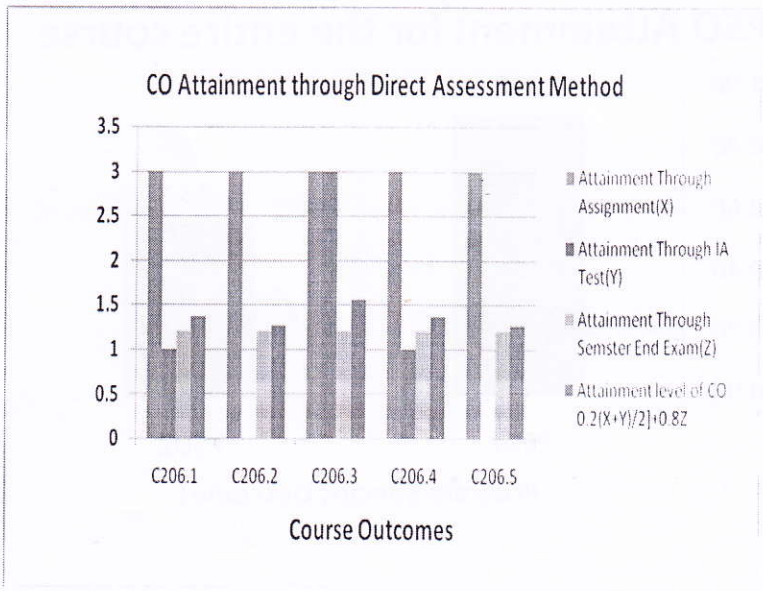
COs Attainment Levels:
FCD: S+, S, & A = 3; FC (B) = 2; Pass: C, D, & E = 1; Fail = 0

Total no. of Students Appeared	65	
Class/Grade	Total Number of Students	Course (COs) Attainment Through Semester End Exams
FCD/S+, S, A	16	48
FC/B	6	12
PASS/C,D,E	18	18
Total Percentage of Passing	61.54%	1.20



4. CO Attainment:

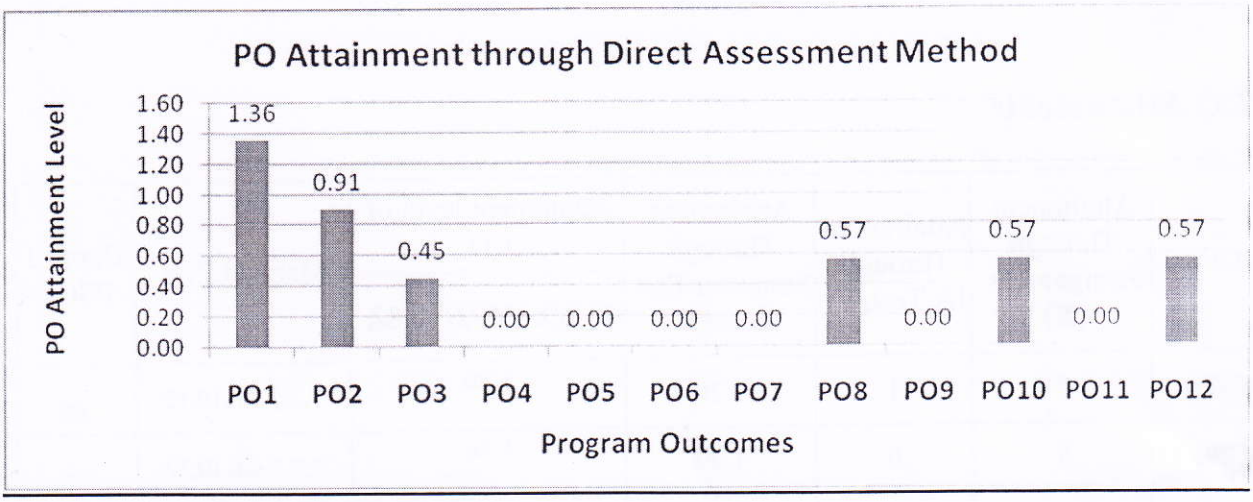
COs	Attainment Through Assignment (X)	Attainment Through IA Test(Y)	Attainment Through Semester End Exam(Z)	Attainment level of CO [0.2(X+Y)/2]+0.8Z	Mapped POs	Mapped PSOs
C206.1	3	1	1.20	1.36	1,2,3,6,8,10,12	1,2
C206.2	3	0	1.20	1.26	1,2,3,6,8,10,12	1,2
C206.3	3	3	1.20	1.56	1,2,3,6,8,10,12	1,2
C206.4	3	1	1.20	1.36	1,2,3,6,8,10,12	1,2
C206.5	3	0	1.20	1.26	1,2,3,6,8,10,12	1,2
Average				1.34		



5. PO Attainment for the Entire Course:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C206	1.36	0.91	0.45	0.00	0.00	0.00	0.00	0.57	0.00	0.57	0.00	0.57

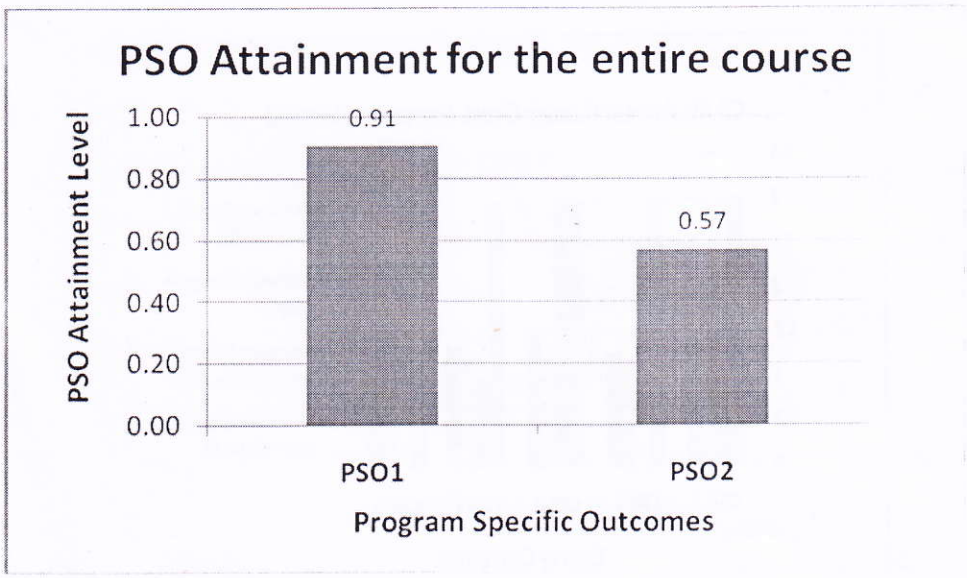
POs attainment value for the present course = (Mapped value * CO attainment average)/3



6. PSO Attainment for the Entire Course:

CO	PSO1	PSO2
Attainment Level	0.91	0.57

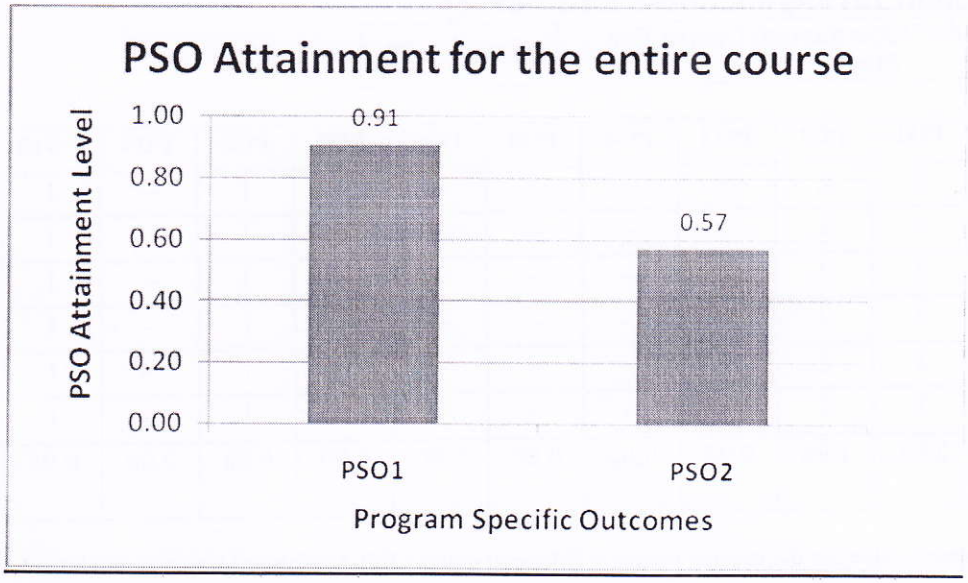
PSOs attainment value for the present course = **(Mapped value * CO attainment average)/3**



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)	1.74
Attained Value	1.36
New Target Level for the next Exam	1.74



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 is less than 2. To improve attainment level course outcomes 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**	To enhance the attainment below mentioned activities can be suggested. • Animated videos to clarify concepts of divergence, curl and wave propagation equation can be done. • Equations can be displayed in the class room in chart to help students to remember the concepts.
4	**Additional Comments (if any)**	--

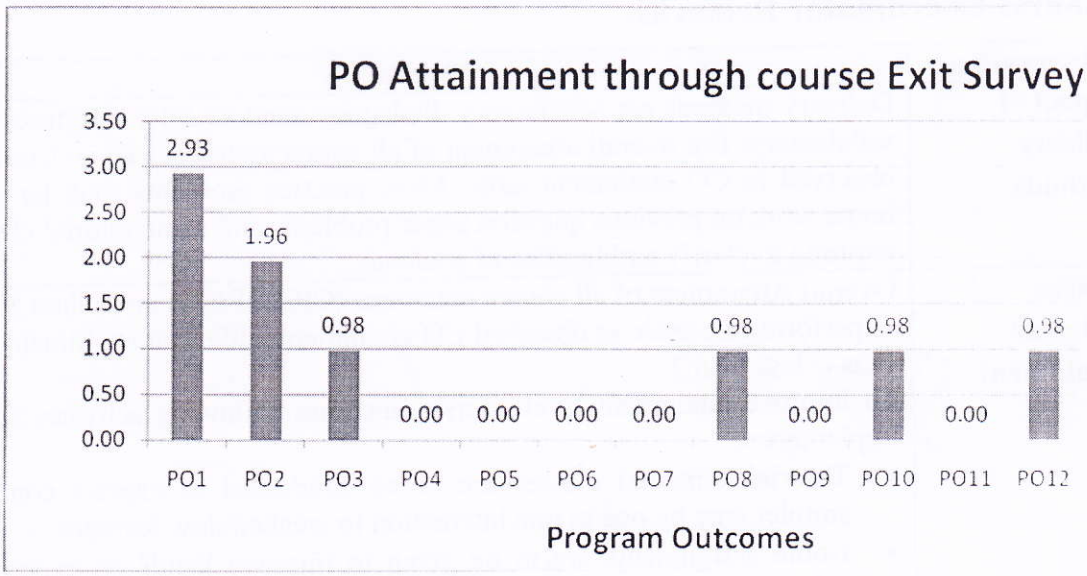
X. Attainment Through indirect Methods

PO Attainment through Course Exit Survey

CO Attainment Value through Course Exit Survey:	97.76	2.93

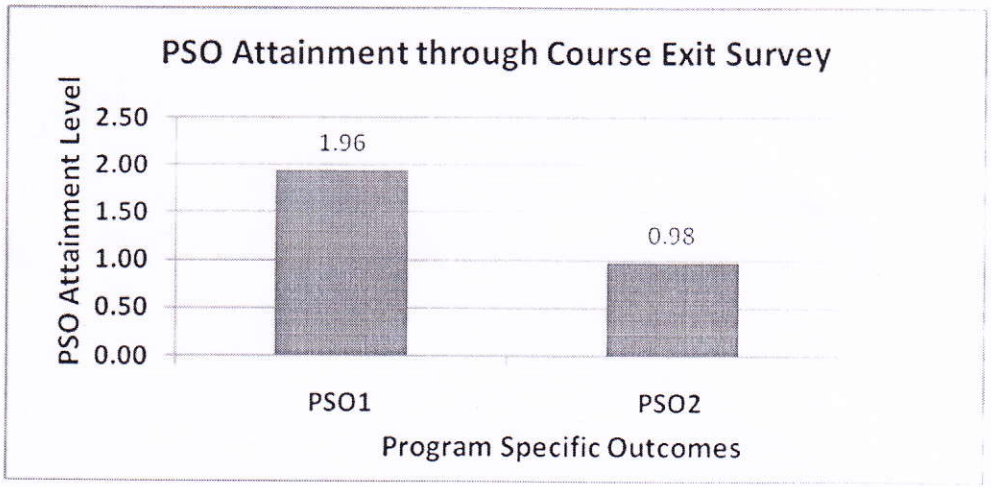
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C305.1	3	2	1	--	--	--	--	1	--	1	--	1
C305.2	3	2	1	--	--	--	--	1	--	1	--	1
C305.3	3	2	1	--	--	--	--	1	--	1	--	1
C305.4	3	2	1	--	--	--	--	1	--	1	--	1
C305.5	3	2	1	--	--	--	--	1	--	1	--	1
Average	3	2	1	--	--	--	--	1	--	1	--	1
CES Attainment	2.93	1.96	0.98	0.00	0.00	0.00	0.00	0.98	0.00	0.98	0.00	0.98

POs/PSOs attainment value for the present course = (Mapped value * CO Attainment Value through Course Exit Survey)/3



PSO Attainment through Course Exit Survey

CO	PSO 1	PSO 2
C305.1	2	1
C305.2	2	1
C305.3	2	1
C305.4	2	1
C305.5	2	1
Average	2	1
CES Attainment	1.96	0.98



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

HOD
Electronics & Communication Engg.
Hirasugar Institute of Technology,
Nidasoshi-591 236

Hirasugar Institute of Technology, Nidasoshi-591236

Course Outcome/Program Outcome Assesment

COURSE COORDINATOR: Mrs. S. S. KAMATE
A.Y: 2016-17 PROGRAM: ECE COURSE:ENGG. ELECTROMAGNETICS
SEM: III DIV: COURSE CODE:15EC36
CO Code: C206

Mapping of Course Outcomes (COs) to Program Outcomes (POs)

POs→ / COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C206.1	3	2	1	NA	NA	1	NA	1	NA	1	NA	1
C206.2	3	2	1	NA	NA	1	NA	1	NA	1	NA	1
C206.3	3	2	1	NA	NA	1	NA	1	NA	1	NA	1
C206.4	3	2	1	0	0	1	0	1	0	1	0	1
C206.5	3	2	1	NA	NA	1	NA	1	NA	1	NA	1
Average	3	2	1	0	0	1	0	1	0	1	0	1

Mapping of Course Outcomes (COs) to Program Specific Outcomes(PSOs)

PSOs / COs	PSO 1	PSO 2
C206.1	2	1
C206.2	2	1
C206.3	2	1
C206.4	2	1
C206.5	2	1
	2	1

Mapping of IA Questions to COs

IA Test-1		IA Test -2		IA Test -3		
Q.No.1 OR Q.No.2	Q.No.3 OR Q.No.4	Q.No.1 OR Q.No.2 and Q.No.3	Q.No.4	Q.No.1 OR Q.No.2	Q.No.3	OR Q.No.4
C206.1	C206.1	C206.2	C206.3	C206.3	CO206.4	C206.5
Maximum Marks for Each Question						
10	10	15	5	10	10	10

Target Level Set for the Attainment of Course:		1.74

Mapping of Assignment Questions to COs

ASSIGNMENTS				
ASSGN-1	ASSGN-2	ASSGN-3	ASSGN-4	ASSGN-5
C206.1	C206.2	C206.3	C206.4	C206.5
Maximum Marks for Each Assignment				
25	25	25	25	25

Instructions:

1. The course coordinator should manually enter correlated IA questions with mapped COs
2. The course coordinator should manually enter correlated assignments with mapped COs
3. Based on the previous three assessment years course coordinator/faculty has to set the target level for course attainment.
4. Mapped POs must be entered manually in IA Assessement Sheet, Assignment Assessement Sheet and CO Attainment Sheet

COURSE OUTCOME ASSESSMENT DATA ENTRY SHEET

Sl.No	Student Name		IA Test -1			IA Test -2			IA Test -3				Assigments					Semster End Exam
			Q.No.1 OR Q.No.2	Q.No.3 OR Q.No.4	Total Marks	Q.No.1 OR Q.No.2 and Q.No.3	Q.No.4	Total Marks	Q.No.1 OR Q.No.2	Q.No.3	OR Q.No.4	Total Marks	Assgn-1	Assgn-2	Assgn-3	Assgn-4	Assgn-5	PO1-PO4, PO8-PO9,PO12
		MAX MARKS→	10	10	20	15	5	20	10	10	10	20	25	25	25	25	25	GRADES
		COs→	C206.1	C206.1		C206.2	C206.3		C206.3	CO202.4	C206.5		C206.1	C206.2	C206.3	C206.4	C206.5	CO1-CO8
		USN↓																
1	JYOTI BANAHATTI	2HN14EC403	4	4	8	6	0	6	8	5		13	5	5	5	5	5	F
2	AKSHATA B. NANDAGANVI	2HN15EC001	9	9	18	15		15	AB	AB	AB	AB	5	5	5	5	5	F
3	AKSHATA JAMAKHANDI	2HN15EC002	8	9	17	15		15	AB	AB	AB	AB	5	5	5	5	5	F
4	AMRUTHA S. M.	2HN15EC003	5	5	10	12		12	9	8		17	5	5	5	5	5	E
5	ANURADHA KAREPPAGOL	2HN15EC004	10	5	15	15	5	20	8	4		12	5	5	5	5	5	F
6	ARJEVI A.PATIL	2HN15EC005	10	10	20	15	4	19	7	5	5	17	5	5	5	5	5	B
7	ARUNA CHOUGALA	2HN15EC006	10	10	20	14	3	17	10	10		20	5	5	5	5	5	A
8	BHAVANI SHIRALKAR	2HN15EC007	7	9	16	6	2	8	5	8		13	5	5	5	5	5	E
9	CHAITRA ANGADI	2HN15EC008	10	8	18	4	5	9	10	7		17	5	5	5	5	5	F
10	GAYATRI GHARABUDE	2HN15EC009	7	10	17	15	2	17	AB	AB	AB	AB	5	5	5	5	5	C
11	JAGADEESH MANAGANVI	2HN15EC010	4	8	12	13		13	6			6	5	5	5	5	5	F
12	JAYASHRI MADANNAVAR	2HN15EC011	10	9	19	12		12	10	10		20	5	5	5	5	5	B
13	JYOTI CHOUGALA	2HN15EC012	6	10	16	10		10	10	10		20	5	5	5	5	5	B
14	KHATKALLI MAHESHWARI	2HN15EC013	9	10	19	15		15	8	8		16	5	5	5	5	5	B
15	KOMAL RANBHARE	2HN15EC014	10	8	18	15		15	7				5	5	5	5	5	B
16	KUSHAL BARAGI	2HN15EC015	5	2	7	9	2	11	9	1		10	5	5	5	5	5	F
17	LALITA AMBALAZERI	2HN15EC016	7	8	15	4	5	5	10	6	2	18	5	5	5	5	5	D
18	LAXMI MANNIKERI	2HN15EC017	8	10	18	12		12	7			7	5	5	5	5	5	B
19	MOHAN BASSAPURI	2HN15EC018	4	5	9	9		9	10	7		17	5	5	5	5	5	E
20	MUSALE SHREYA RAVINDRA	2HN15EC019	9	10	19	9		13	10	5		15	5	5	5	5	5	B
21	MUSTAKIM NIJAM PENDARI	2HN15EC020	7	5	12	6		6	10	10		20	5	5	5	5	5	D
22	PATIL RUTUJA	2HN15EC023	9	10	19	14		14	8	5		13	5	5	5	5	5	B
23	POOJA PATIL	2HN15EC024	10	10	20	14		14	AB	AB	AB	AB	5	5	5	5	5	B
24	PRAVEEN POTARADDI	2HN15EC025	3	1	4	3	7	10	13			13	5	5	5	5	5	E
25	RAGHAVENDRA MUSHANAGOL	2HN15EC026	5	5	10	4	5	9	5	5		10	5	5	5	5	5	D
26	RAMESH HUDDAR	2HN15EC027	5	5	10	5	2.5	7.5	10	6		16	5	5	5	5	5	B
27	REKHA DHARMATTI	2HN15EC028	10	10	20	12		12	10	10		20	5	5	5	5	5	A
28	SAMMED HULIKOPPE	2HN15EC029	4	1	5	11		11	10	5		15	5	5	5	5	5	E
29	SANIYA RAFIK JAGADAL	2HN15EC030	8	10	18	8	0	8	AB	AB	AB	AB	5	5	5	5	5	D
30	SAVITA DASANGALI	2HN15EC032	10	10	20	12	0	12	AB	AB	AB	AB	5	5	5	5	5	C
31	SHIVAKUMAR PUJARI	2HN15EC034	3	2	5	6		6	6	5		11	5	5	5	5	5	C
32	SHIVANGI S.SINGH	2HN15EC035	8	10	18	12	5	17	AB	AB	AB	AB	5	5	5	5	5	F
33	SHRADDHA KATTI	2HN15EC036	5	7	12	5		5	10	5	8	23	5	5	5	5	5	D
34	SHWETA NAIK	2HN15EC037	5	9	14	10		10	5	10		15	5	5	5	5	5	E
35	SHWETA S.PARULEKAR	2HN15EC038	8	9	17	8	3	11	AB	AB	AB	AB	5	5	5	5	5	F
36	SNEHA M. MAGADUM	2HN15EC039	7	7	14	12		12	AB	AB	AB	AB	5	5	5	5	5	E
37	SULOCHANA B.BELAVI	2HN15EC040	10	10	20	15		15	AB	AB	AB	AB	5	5	5	5	5	B
38	SUVARNA SANGAVE	2HN15EC043	10	10	20	10		10	10	9		19	5	5	5	5	5	B
39	SWATI RAJU BOGALKAR	2HN15EC044	4	2	6	6	5	11	10	4		14	5	5	5	5	5	E
40	TEJASHWINI DIGGEWADI	2HN15EC045	10	10	20	13		13	10	9		19	5	5	5	5	5	A
41	UDAGERI S.SHIVAPPA	2HN15EC046	10	10	20	15		15	7	5		12	5	5	5	5	5	S
42	VINOD JADHAV	2HN15EC047	10	10	20	14		14	8	3			5	5	5	5	5	C
43	SOURABH LOHAR SURESH	2HN15EC048	4	5	9	9		9	10	1		11	5	5	5	5	5	F
44	ANUJA T.MANE	2HN16EC400	3	2	5	4	0	4	10	8		18	5	5	5	5	5	F
45	BALESHI NANDER	2HN16EC401	5	8	13	3		3	6	5	3	14	5	5	5	5	5	C
46	CHANDRAKALA BASAPPA TELI	2HN16EC402	5	5	10	4		4	10	5		15	5	5	5	5	5	F
47	DEEPAK D KARNE	2HN16EC403	0		0	2		2	10	5		15	5	5	5	5	5	F
48	KAVITA SUBBANNAVAR	2HN16EC404	0		0	4		4	10	10		20	5	5	5	5	5	F
49	LINGANAGOUDA PATIL	2HN16EC405	3		3	4	3	7	8	8		16	5	5	5	5	5	F
50	MANJUNATH ALAGUNDI	2HN16EC406	5	6	11	5	4	9	AB	AB	AB	AB	5	5	5	5	5	E
51	PADMAJA BHUPAL SHETTI	2HN16EC407	5	3	8	7	3	10	10	3		13	5	5	5	5	5	E
52	PRIYANKA MAGADUM	2HN16EC408	5	4	9	10	5	15	10	6		16	5	5	5	5	5	D
53	PRIYANKA PATIL	2HN16EC409	2	5	7	4	2	6	8	6		14	5	5	5	5	5	C
54	RANI JOGUR	2HN16EC410	AB	AB	AB	4	2	6	6	6		12	5	5	5	5	5	F
55	REVANASIDDAYYA MATHAPATI	2HN16EC411	3	1	4	5		5	10	8		18	5	5	5	5	5	F
56	SABA SANADI	2HN16EC412	AB	AB	AB	4		4	10	4		14	5	5	5	5	5	F
57	SANGAMESH KODEKALMATH	2HN16EC413	4	2	6	5	2	7	10	7		17	5	5	5	5	5	F

58	SANKALP G.PATIL	2HN16EC414		2	2	2	3	5	10	8		18	5	5	5	5	5	F
59	SANTOSH SHEDABAL	2HN16EC415	3	[illegible]	6	3	3	6	10	8		[illegible]	5	5	5	5	5	F
60	SHITAL KHEMANNAVAR	2HN16EC416	1			5		5	7	10		[illegible]	5	5	5	5	5	F
61	SUPREEYA BHIMAPPA HUDDAR	2HN16EC417	5	1	6	4			8	5		13	5	5	5	5	5	F
62	VARADA PRAKASH JOSHI	2HN16EC418	5	4	9	10	6	16	8			8	5	5	5	5	5	F
63	VEENA BAMANALE	2HN16EC419	1	1	2	5	4	9	4	7		11	5	5	5	5	5	E
64	VISHAL HIREMATH	2HN16EC420	2	2	4	5	3	8	10	9		19	5	5	5	5	5	E
65	VRUSHALI MALI	2HN16EC421	1		1	5		5	10	7		17	5	5	5	5	5	F
***	END OF RECORDS***																	
	Apeared		62	59		65	30		54	49	4		65	65	65	65	65	65
	Absent		2	2		0	0		11	11	11		0	0	0	0	0	0
	Reached		29	32		32	19		50	29	1		0	0	0	0	0	16
	Attainment level of CO in Percentage		46.77	54.24		49.23	63.33		92.59	38.67	25.00		0.00	0.00	0.00	0.00	0.00	6
	Attainment level of CO		0	1		0	2		3		0		0	0	0	0	0	18
																		0.62

Attainment Level set for IA Tests

Attainment Level 1: Students scoring more than 60% of maximum marks allotted to each question.

Attainment Level set for Semester End Examination(SEE)

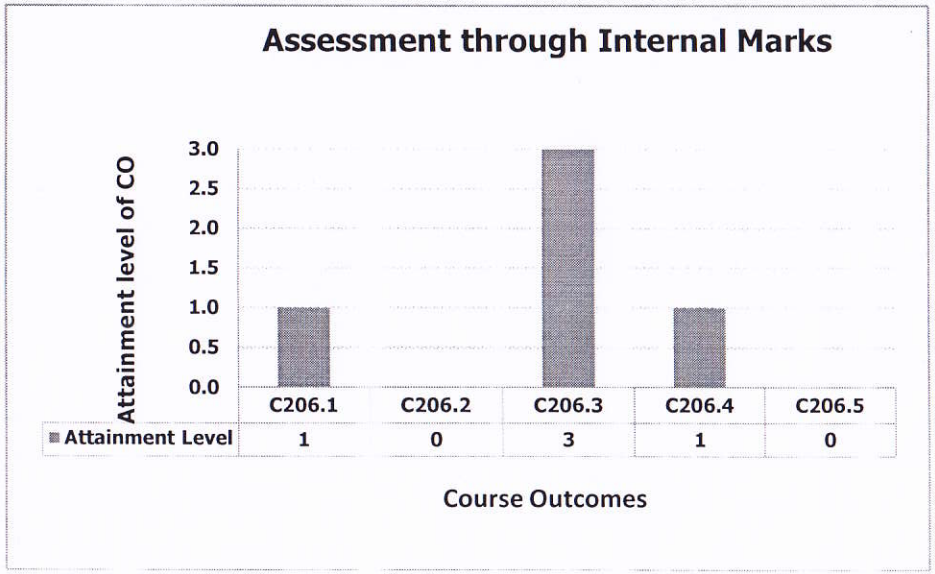
1. **Attainment Level 1**: students scoring more than 70% marks
2. **Attainment Level 2**: students scoring more than or equal to 60% to less than 70% Marks
3. **Attainment Level 3**: students scoring more than or equal to 50% to less than 35% Marks

Assessment through Internal Marks

Calculate

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

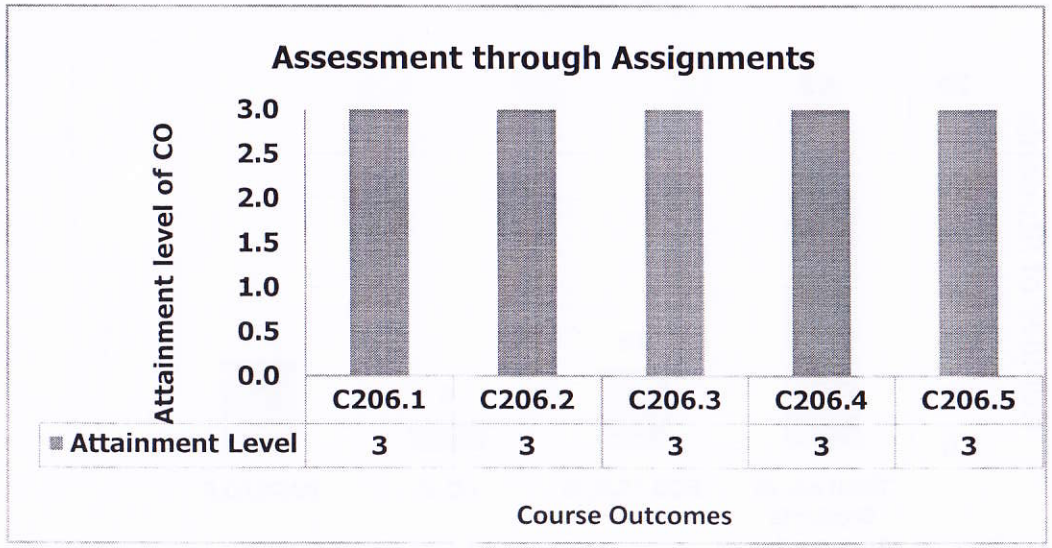
COs	IA Test-1				IA Test -2				IA Test -3				Attainment level of CO	Mapped PO	Mapped PSO
	Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4				
	A	R	A	R	A	R	A	R	A	R	A	R			
C206.1	62	29	59	32									1	PO1 -PO3, PO8,PO10, PO12	1,2
C206.2					65	32							0	PO1 -PO3, PO8,PO10, PO12	1,2
C206.3							30	19	54	50			3	PO1 -PO3, PO8,PO10, PO12	1,2
C206.4											49	29	1	PO1 -PO3, PO8,PO10, PO12	1,2
C206.5											4	1	0	PO1 -PO3, PO8,PO10, PO12	1,2



Assessment through Assignment

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

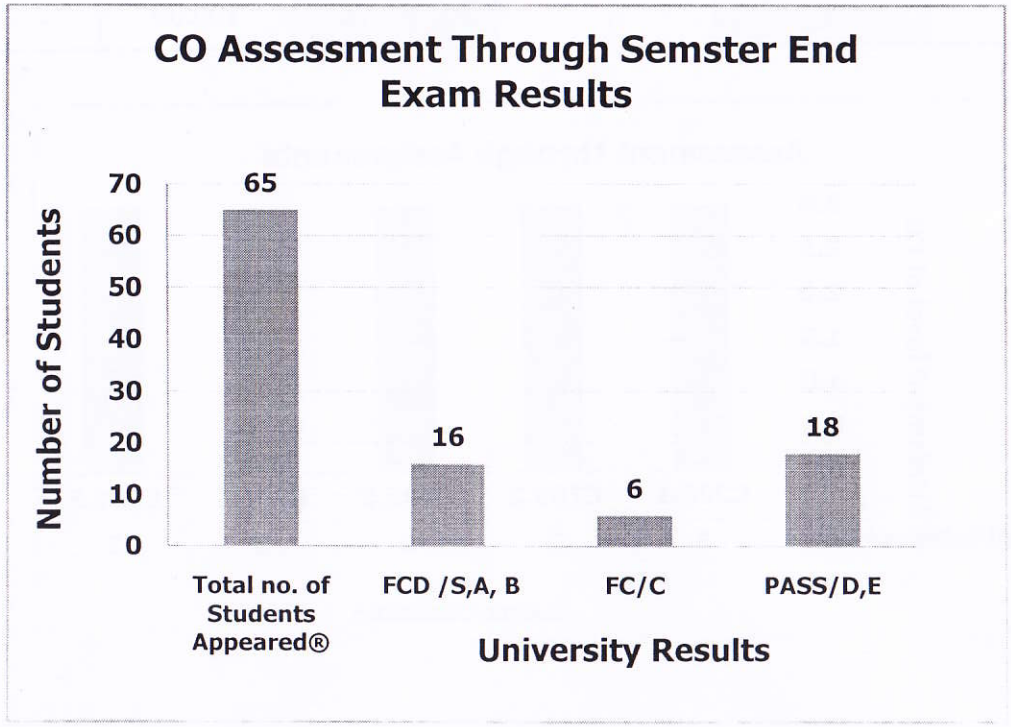
COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO	Mapped PSO
	A	R	A	R	A	R	A	R	A	R				
C206.1	65	65									100.00	3	PO1 -PO3, PO8,PO10, PO12	1,2
C206.2			65	65							100.00	3	PO1 -PO3, PO8,PO10, PO12	1,2
C206.3					65	65					100.00	3	PO1 -PO3, PO8,PO10, PO12	1,2
C206.4							65	65			100.00	3	PO1 -PO3, PO8,PO10, PO12	1,2
C206.5									65	65	100.00	3	PO1 -PO3, PO8,PO10, PO12	1,2



Semester End Assessment Based on Semster End Exam Results

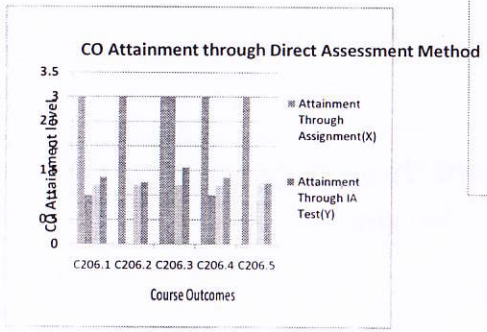
(COs Attainment Levels for: FCD (S,A,B) = 3, FC (C) = 2, SC(D,E) = 1 and Fail = 0)

Total no. of Students Appeared→	65	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semster End Exams
FCD /S,A, B	16	48
FC/C	6	12
PASS/D,E	18	18
Total Percentage of Passing	61.54%	1.20

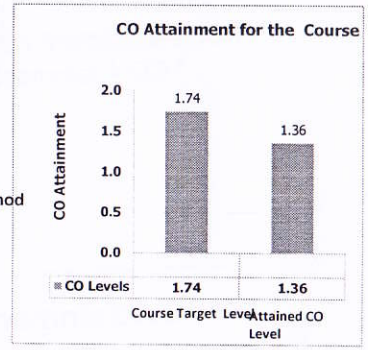


CO Attainment Through Direct Assessment Method

COs	Attainment Through Assignment(X)	Attainment Through IA Test(Y)	Attainment Through Semster End Exam(Z)	Attainment level of CO 0.2(X+Y)/2]+ 0.8Z	Mapped POs	Mapped PSOs
C206.1	3	1	1.20	1.36	PO1 -PO3, PO8, PO10,PO12	1,2
C206.2	3	0	1.20	1.26	PO1 -PO3,PO8, PO10,PO12	1,2
C206.3	3	3	1.20	1.56	PO1 -PO3,PO8, PO10,PO12	1,2
C206.4	3	1	1.20	1.36	PO1 -PO3,PO8, PO10,PO12	1,2
C206.5	3	0	1.20	1.26	PO1 -PO3,PO8, PO10,PO12	1,2
CO Attainment through Direct Assessment Method				1.36		



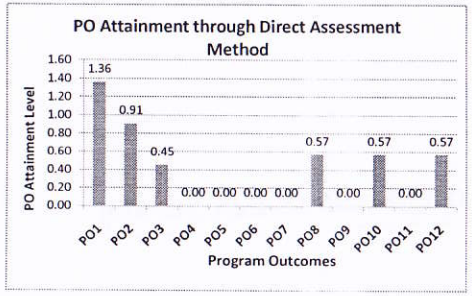
CO Attainment for the Course	
Target CO Level	1.74
Attained CO Level	1.36



PO Attainment through Direct Assessment Method

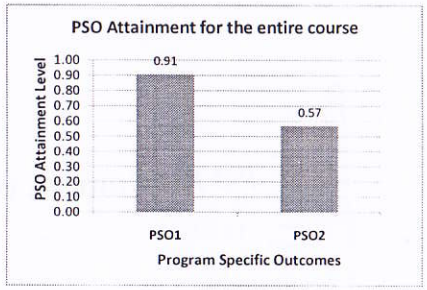
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C206	1.36	0.91	0.45	0.00	0.00	0.00	0.00	0.57	0.00	0.57	0.00	0.57

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



PSO Attainment for the entire course

CO	PSO1	PSO2
C206	0.91	0.57

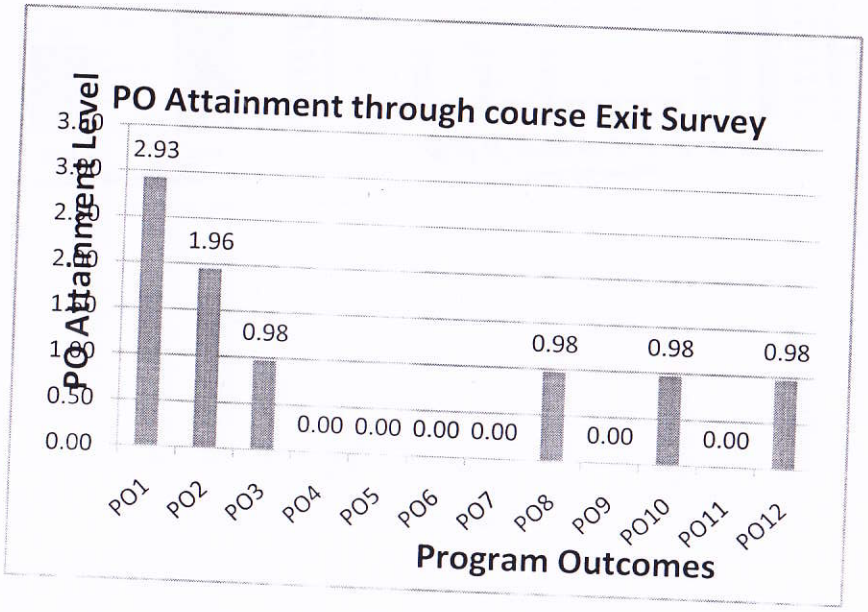


PO/PSO Attainment through Course Exit Survey

CO Attainment Value through	97.76	2.933

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C206	2.93	1.96	0.98	0.00	0.00	0.00	0.00	0.98	0.00	0.98	0.00	0.98

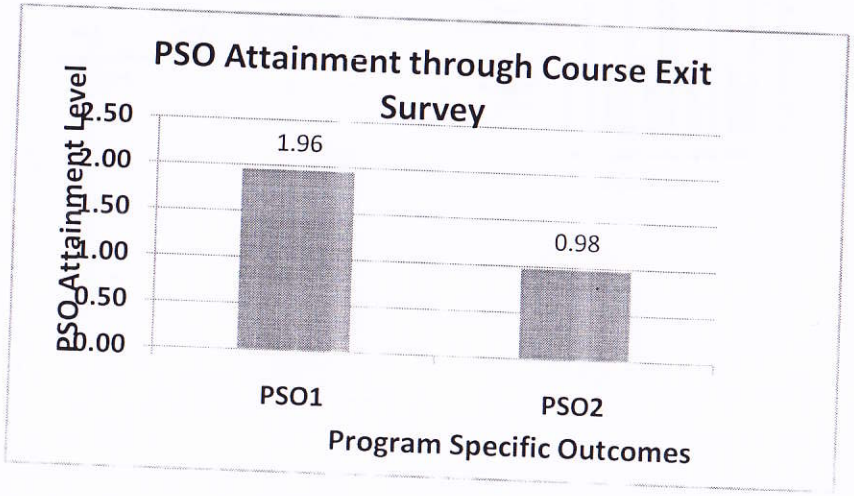
POs attainment value for the present course = (Mapped value * CO



PSO Attainment through Course Exit Survey

CO/PSO	PSO1	PSO2
C206	1.96	0.98

PSOs attainment value for the present course = (Mapped value * CO Attainment Value through Course Exit Survey)/3



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Electronics & Communication Engg.
Hirasugar Institute of Technology,
Nidasoshi-591 236

3.3.1 Provide results of evaluation of each PO & PSO (40)

The result of evaluation of each PO for the assessment years 2020-21 is as shown in table below

Attainment of POs through Indirect Method

Survey Forms	Weightage in %	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Employer Survey	5	3.00	2.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00
Alumni Survey	15	2.40	2.80	2.60	2.60	2.00	2.60	2.60	2.30	2.70	2.65	3.00	2.00
Senior Exit Survey	15	1.14	1.09	1.07	1.02	1.00	1.07	1.11	1.02	1.11	1.05	1.07	1.14
Activity Feedback	35	3.00	-	-	-	-	3.00	3.00	3.00	3.00	3.00	-	3.00
Course Exit Survey	15	2.58	2.24	1.79	1.82	1.80	1.85	1.57	1.46	1.67	1.45	1.52	1.48
Placement, Higher Education & Entrepreneurship (PHE)	15	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Total →		**2.26**	**1.16**	**1.11**	**1.06**	**1.01**	**2.17**	**2.14**	**2.06**	**2.17**	**2.12**	**1.08**	**2.04**

Attainment of PO through Direct Method

Sl. No	Course	Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
1	Engg. Mathematics-I	C101	1.72	1.15	0.57	-	-	-	-	-	-	-	-	0.57
2	Engg. Physics	C102	1.77	-	1.18	-	0.59	-	-	0.59	-	0.59	-	0.59
3	ECE. & Engg. Mech.	C103	1.38	1.38	0.92	0.92	-	0.46	-	0.46	-	-	0.46	0.92
4	EME	C104	2.23	1.49	-	-	-	-	0.74	-	-	-	-	-
5	Basic Electrical Engg.	C105	0.84	0.84	-	-	-	-	-	-	-	-	-	-
6	Workshop Lab	C106	2.66	1.66	3.00	1.33	-	3.00	-	3.00	2.00	2.00	3.00	2.50
7	Engg. Physics Lab	C107	2.91	-	-	-	0.97	-	-	0.97	1.94	1.94	-	0.97
8	Engg. Mathematics-II	C109	1.23	0.82	0.41	-	-	-	-	-	-	-	-	0.41
9	Engineering Chemistry	C110	1.32	1.05	0.88	0.44	-	0.79	-	-	0.88	0.88	-	0.44
10	Prog. in C & Data Str.	C111	1.10	0.88	0.95	-	-	-	-	-	-	-	-	0.37
11	CAED	C112	0.69	-	-	-	1.37	-	-	0.69	-	2.06	-	-
12	Basic Electronics Engg.	C113	1.43	1.43	1.43	0.95	-	0.48	-	-	-	-	-	0.95
13	Computer Prog. Lab	C114	2.61	2.61	2.61	-	-	-	-	0.87	1.74	1.74	-	0.87
14	Engg. Chemistry Lab	C115	2.93	2.93	2.93	-	-	1.95	-	-	-	-	-	0.98
15	Environmental Studies	C116	3.00	2.00	2.00	-	-	2.00	2.00	1.00	-	-	1.00	1.00
16	Engg. Mathematics-III	C201	1.03	0.68	0.34	-	-	-	-	-	-	-	-	0.34
17	Electric Circuit Analysis	C202	1.19	1.19	0.40	-	-	-	-	0.79	-	-	-	0.40
18	Transformer & Generators	C203	0.92	0.92	0.92	-	-	-	0.46	0.46	-	0.46	0.46	0.92
19	Analog Electronic Ckts	C204	1.37	1.37	0.91	0.91	0.91	-	-	0.46	-	-	-	-
20	Digital System Design	C205	1.11	1.11	-	-	0.37	-	0.37	0.37	0.37	-	-	0.37

Sl. No	Course	Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
21	Electr. & Eclectrn Measure.	C206	1.24	0.58	-	-	-	-	-	0.83	-	-	-	-
22	Electrical Machines Laboratory -1	C207	2.65	1.77	1.77	-	-	-	0.88	0.88	-	0.88	0.88	1.77
23	Electronics Laboratory	C208	2.93	2.93	1.95	-	-	-	-	0.98	0.98	-	-	-
24	Engineering Maths IV	C211	1.91	1.28	0.64	-	-	-	-	-	-	-	-	0.64
25	Power Generation and Economics	C212	1.38	0.92	-	-	-	1.38	1.38	-	-	-	-	-
26	Transmission and distribution	C213	1.23	0.82	0.41	-	-	0.41	0.41	0.41	0.41	0.41	0.41	-
27	Electric Motors	C214	1.06	1.06	1.06	-	-	-	-	0.53	-	-	-	0.53
28	Electromagnetic Theory	C215	1.54	1.54	1.03	-	-	-	0.51	0.51	-	0.51	0.51	1.03
29	Operational amplifier and Linear ICs	C216	0.95	1.43	1.43	-	-	0.48	0.48	0.48	-	0.48	0.48	-
30	Electric machine lab II	C217	2.81	1.87	1.87	-	-	-	0.94	0.94	-	0.94	0.94	1.87
31	Operational amplifier and Linear ICs Lab	C218	2.50	2.50	1.67	-	0.83	-	-	-	1.67	1.67	0.83	0.83
32	Management & Entrepreneurship	C301	0.88	-	-	-	-	-	-	0.88	0.88	0.88	0.88	0.88
33	Microcontroller	C302	1.63	1.09	0.54	-	-	-	-	0.54	-	0.54	-	0.54
34	Power Electronics	C303	1.67	1.56	1.11	-	-	-	-	1.11	-	-	-	1.11
35	Signals & Systems	C304	1.43	0.95	0.48	-	0.48	-	-	0.48	-	-	-	-
36	Estimating and Costing	C307	1.79	1.79	1.79	-	-	1.79	-	1.79	1.20	1.20	1.79	1.20
37	Programmable Logic Controllers	C310	2.29	1.53	1.53	-	2.29	1.53	-	1.53	0.76	1.53	-	1.53
38	Microcontroller Lab	C313	2.92	1.95	-	-	0.97	-	-	0.97	1.95	0.97	-	0.97
39	Power Electronics Lab	C314	3.00	2.00	2.00	-	-	2.00	-	2.00	2.00	2.00	-	2.00
40	Control System	C315	2.46	2.46	-	-	-	-	0.82	0.82	0.82	-	-	0.82
41	Power System Analysis-I	C316	2.83	2.83	1.89	-	-	-	-	0.94	-	-	-	0.94
42	Electrical Machine Design	C318	2.97	2.97	2.97	-	-	1.98	-	2.97	1.98	1.98	-	1.98
43	Computer Aided Electrical Drawing	C319	2.32	2.32	1.55	-	1.55	-	-	0.77	0.77	-	0.77	1.39
44	Sensors &Transducers	C324	2.97	1.98	1.98	-	-	1.98	-	1.98	-	-	-	1.98
45	Control System Lab	C327	2.69	1.79	0.90	-	0.90	-	-	0.90	1.79	0.90	-	0.90
46	Digital Signal Processing Lab	C328	2.86	1.90	-	-	-	-	-	-	1.90	0.95	-	-
47	Power System Analysis-II	C401	2.37	2.37	1.58	-	1.58	0.79	-	1.58	1.58	0.79	-	1.58
48	Power System Protection	C402	2.33	1.40	1.55	-	-	-	-	1.24	-	1.55	-	1.55
49	High Voltage Engineering	C403	2.58	2.58	1.72	-	-	1.72	-	1.72	-	-	-	1.72
50	Power System Planning	C407	2.31	2.31	1.54	-	-	-	-	0.77	-	-	-	0.77
51	Testing & Commissioning of Power System Apparatus	C409	2.03	1.35	1.35	-	-	1.35	-	1.35	1.35	1.35	-	0.68

Sl. No	Course	Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
52	Power System Simulation Laboratory	C412	2.90	2.90	1.93	-	1.93	1.93	-	1.93	1.93	1.93	-	1.93
53	Relay & High Voltage Laboratory	C413	2.95	1.97	-	-	-	-	-	0.98	1.97	0.98	-	-
54	Project Phase I + Seminar	C414	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
55	Power System Operation and Control	C415	1.90	1.90	1.27	0.63	1.27	-	-	1.27	-	1.27	-	0.63
56	Industrial Drives and Applications	C416	2.28	2.28	1.52	-	-	1.52	-	1.52	-	-	-	1.52
57	Smart Grid	C417	2.92	2.92	1.95	1.95	1.95	0.97	-	0.97	0.97	0.97	-	0.97
58	Internship/ Professional Practice	C421	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99
59	Project Work-II	C422	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
60	Seminar	C423	3.00	3.00	3.00	2.00	3.00	2.00	3.00	3.00	3.00	2.00	2.00	2.00
Direct Attainment (A)			**2.08**	**1.81**	**1.55**	**1.65**	**1.58**	**1.65**	**1.40**	**1.24**	**1.62**	**1.37**	**1.38**	**1.21**
Indirect Attainment (B)			**2.26**	**1.16**	**1.11**	**1.06**	**1.01**	**2.17**	**2.14**	**2.06**	**2.17**	**2.12**	**1.08**	**2.04**
Average (0.8A+0.2B)			**2.12**	**1.68**	**1.46**	**1.53**	**1.46**	**1.75**	**1.55**	**1.40**	**1.73**	**1.52**	**1.32**	**1.37**

Criteria Coordinator

Program Coordinator

HOD

The result of evaluation of each PSO for the assessment years 2020-21 is as shown in table below

Attainment of PSOs through Indirect Method

Survey Forms	Weightage in %	PSO1	PSO2
Employer Survey	5	3.00	3.00
Alumni Survey	15	-	-
Senior Exit Survey	15	1.07	1.05
Activity Feedback	35	3.00	-
Course Exit Survey	15	2.46	2.00
Placement, Higher Education & Entrepreneurship (PHE)	15	0.96	0.96
	Total →	**1.87**	**0.75**

Attainment of PSO through Direct Method

Sl. No	Course	Code	PSO1	PSO2
1	Engg. Mathematics-III	C201	-	-
2	Electric Circuit Analysis	C202	1.19	-
3	Transformer & Generators	C203	1.38	-
4	Analog Electronic Ckts	C204	1.37	-
5	Digital System Design	C205	0.74	-
6	Electr. & Eclectrn Measure.	C206	0.83	-
7	Electrical Machines Laboratory -1	C207	2.65	1.77
8	Electronics Laboratory	C208	2.93	1.95
9	Engineering Maths IV	C211	-	-
10	Power Generation and Economics	C212	1.38	-
11	Transmission and distribution	C213	0.82	-
12	Electric Motors	C214	1.59	-
13	Electromagnetic Theory	C215	1.54	-
14	Operational amplifier and Linear ICs	C216	1.43	-
15	Electric machine lab II	C217	1.92	2.88
16	Operational amplifier and Linear ICs Lab	C218	2.50	0.83
17	Management & Entrepreneurship	C301	0.44	-
18	Microcontroller	C302	1.63	-
19	Power Electronics	C303	1.67	-
20	Signals & Systems	C304	0.95	-
21	Estimating and Costing	C307	1.79	-
22	Programmable Logic Controllers	C310	1.53	1.53

Sl. No	Course	Code	PSO1	PSO2
23	Microcontroller Lab	C313	2.92	1.95
24	Power Electronics Lab	C314	3.00	3.00
25	Control System	C315	2.46	-
26	Power System Analysis-I	C316	1.89	-
27	Electrical Machine Design	C318	2.97	-
28	Computer Aided Electrical Drawing	C319	2.32	2.32
29	Sensors &Transducers	C324	2.97	-
30	Control System Lab	C327	2.63	2.63
31	Digital Signal Processing Lab	C328	2.92	1.95
32	Power System Analysis-II	C401	2.37	0.79
33	Power System Protection	C402	2.33	-
34	High Voltage Engineering	C403	2.58	-
35	Power System Planning	C407	1.54	-
36	Testing & Commissioning of Power System Apparatus	C409	2.03	-
37	Power System Simulation Laboratory	C412	2.90	1.93
38	Relay & High Voltage Laboratory	C413	1.97	2.95
39	Project Phase I + Seminar	C414	3.00	3.00
40	Power System Operation and Control	C415	1.90	0.63
41	Industrial Drives and Applications	C416	2.28	-
42	Smart Grid	C417	2.92	-
43	Internship/ Professional Practice	C421	3.00	3.00
44	Project Work-II	C422	3.00	3.00
45	Seminar	C423	3.00	1.00
	Average		**2.07**	**2.06**
	Indirect Attainment (B)		**1.87**	**0.75**
	Average (0.8A+0.2B)		**2.03**	**1.80**

Criteria Coordinator Program Coordinator HOD

FACULTY COURSE ASSESSEMENT REPORT(FCAR)

Course Coordinator: **Prof. M. P. Yanagimath** **Class Strength:23**

Semester: V **Subject: Microcontroller** **Code: 17EE52**

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	Apply knowledge & competencies to analyze & design electrical & electronics circuits, control and power systems, machines & industrial drives.
PSO2	Use software/hardware tools for the design, simulation and analysis of electrical and electronics systems.

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

CO	Description	Mapped POs	RBTL
C302.1	Discuss the history, features, internal architecture and addressing modes of 8051.	1.2.3.8.10.12	L1,L2,L3,L4
C302.2	Write assembly level program using arithmetic, logic, jump and call instructions.	1.2.3.8.10.12	L1,L2,L3,L4
C302.3	Develop 8051C programs for time delay, I/O, logic, data conversion/serialization and timer operation.	1.2.3.8.10.12	L1,L2,L3,L4
C302.4	Develop 8051 serial port and interrupt programming in assembly and C.	1.2.3.8.10.12	L1,L2,L3,L4
C302.5	Interface 8051 with real-world devices such as LCD's, keyboards, ADC, DAC chips, sensors, motor control devices and with 8255.	1.2.3.8.10.12	L1,L2,L3,L4

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

POs / Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302.1	3	2	-	-	-	-	-	1	-	1	-	1
C302.2	3	2	1	-	-	-	-	1	-	1	-	1
C302.3	3	2	1	-	-	-	-	1	-	1	-	1
C302.4	3	2	1	-	-	-	-	1	-	1	-	1
C302.5	3	2	1	-	-	-	-	1	-	1	-	1
AVG	3	2	1	-	-	-	-	1	-	1	-	1

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

PSOs COs	PSO1	PSO2
C302.1	3	-
C302.2	3	-
C302.3	3	-
C302.4	3	-
C302.5	3	-
AVG	3	-

VI. Justification of CO-PO Mapping:

Mapping	Justification
C302.1-PO1	A strong correlation since explaining pin configuration and memory organization requires a certain level of knowledge of mathematics and engineering sciences.
C302.1-PO2	A medium correlation since to identify the use of microcontroller to solve complex engineering problem student require a certain level of problem analysis skills.
C302.1-PO8	A low correlation since to program microcontroller for various applications it is necessary to follow norms of engineering practice.
C302.1-PO10	A low correlation since to explain the use of microcontroller for various applications by interfacing different peripherals to the community it is necessary to write effective reports.
C302.1-PO12	A low correlation since programming skills of microcontroller will make students to engage in independent and life-long learning in the broadest context of technological change.
C302.2-PO1	A strong correlation since programming arithmetic and logical instructions microcontroller will make students to engage in independent and life-long learning in the broadest context of technological change.
C302.2-PO2	A medium correlation since to identify type of instruction used arithmetic and logical operations based on addressing modes requires a certain level of problem analysis skills.
C302.2-PO3	A low correlation since to solve complex engineering problem using arithmetic and logical instructions microcontroller student must correct program that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
C302.2-PO8	A low correlation since to program microcontroller for various applications it is necessary to follow norms of engineering practice.
C302.2-PO10	A low correlation since programming skills of microcontroller will make students to engage in independent and life-long learning in the broadest context of technological change.
C302.2-PO12	A low correlation since programming skills of microcontroller will make students to engage in independent and life-long learning in the broadest context of technological change.
C302.3-PO1	A strong correlation since explaining the concept of delay and timer requires a certain level of knowledge of mathematics and engineering sciences.

C302.3-PO2	A medium correlation since to identify type of pins those are used for timer delay microcontroller requires a certain level of problem analysis skills.
C302.3-PO3	A low correlation since to solve complex engineering problem using microcontroller student must choose the required hardware to meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
C302.3-PO8	A low correlation since to program microcontroller for various applications by interfacing different peripherals it is necessary to follow norms of engineering practice.
C302.3-PO10	A low correlation since to explain the use of microcontroller for various applications by interfacing different peripherals to the community it is necessary to write effective reports.
C302.3-PO12	A low correlation since programming skills of microcontroller with delay will make students to engage in independent and life-long learning in the broadest context of technological change.
C302.4-PO1	A strong correlation since explaining the concept interrupts and serial communication requires a certain level of knowledge of mathematics and engineering sciences.
C302.4-PO2	A medium correlation since to write source code for applications that use I/O ports, timer and interrupts requires a certain level of problem analysis skills.
C302.4-PO3	A low correlation since to solve complex engineering problem using interfacing student must choose the required hardware to meet the specified needs timer and interrupts with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
C302.4-PO8	A low correlation since to program microcontroller for various applications using timer by interfacing different peripherals it is necessary to follow norms of engineering practice.
C302.4-PO10	A low correlation since to explain the use of timer and I/O ports of microcontroller for various applications by interfacing different peripherals to the community it is necessary to write effective reports.
C302.4-PO12	A low correlation since programming skills of microcontroller with timer and interrupt students will engage in independent and life-long learning in the broadest context of technological change.
C302.5-PO1	A strong correlation since to explain concept of microcontroller interfacing applications students requires a certain level of knowledge of mathematics and engineering sciences.
C302.5-PO2	A medium correlation since to write source code for LCD,DAC and ADC interfacing with microcontroller students requires a certain level of problem analysis skills.
C302.5-PO8	A low correlation since to program 8051 microcontroller for different applications using different interfacing devices it is necessary to follow norms of engineering practice.
C302.5-PO10	A low correlation since to explain the 8051microcontroller for various applications by interfacing different peripherals to the community it is necessary to write effective reports.
C302.5-PO12	A low correlation since programming 8051 microcontroller for different applications students will engage in independent and life-long learning in the broadest context of technological change.

VII. Justification of CO-PSO Mapping :

Mapping	Justification
C302.1-PSO1	A strong correlation since the knowledge of programming using microcontroller is very much essential electronics systems..
C302.2-PSO1	A strong correlation since the knowledge of different type of instructions to write program using microcontroller is very much essential electronics systems..
C302.3-PSO1	A strong correlation since the knowledge of I/O operation in microcontroller is very much essential electronics systems.
C302.4-PSO1	A strong correlation since the knowledge of serial communication and interrupt in microcontroller is very much essential electronics systems.
C302.5-PSO1	A strong correlation since the knowledge of interfacing in microcontroller is very much essential electronics systems.

VIII. Bench Mark Setting

As the course is revised, CO attainment target is taken as 1.5.

IX. DIRECT ASSESSMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

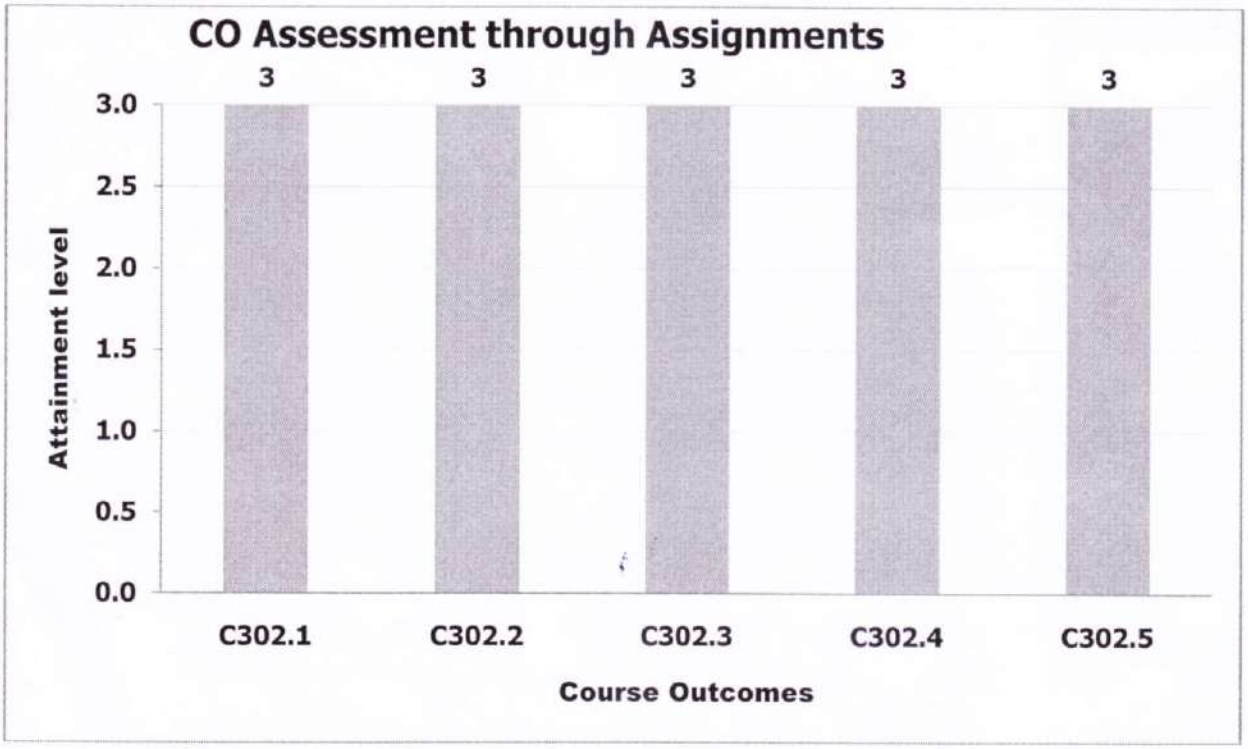
Assessment Tools:

- Continuous assessment
- Laboratory experiments
- End semester exam

1. Assessment through Assignment:

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

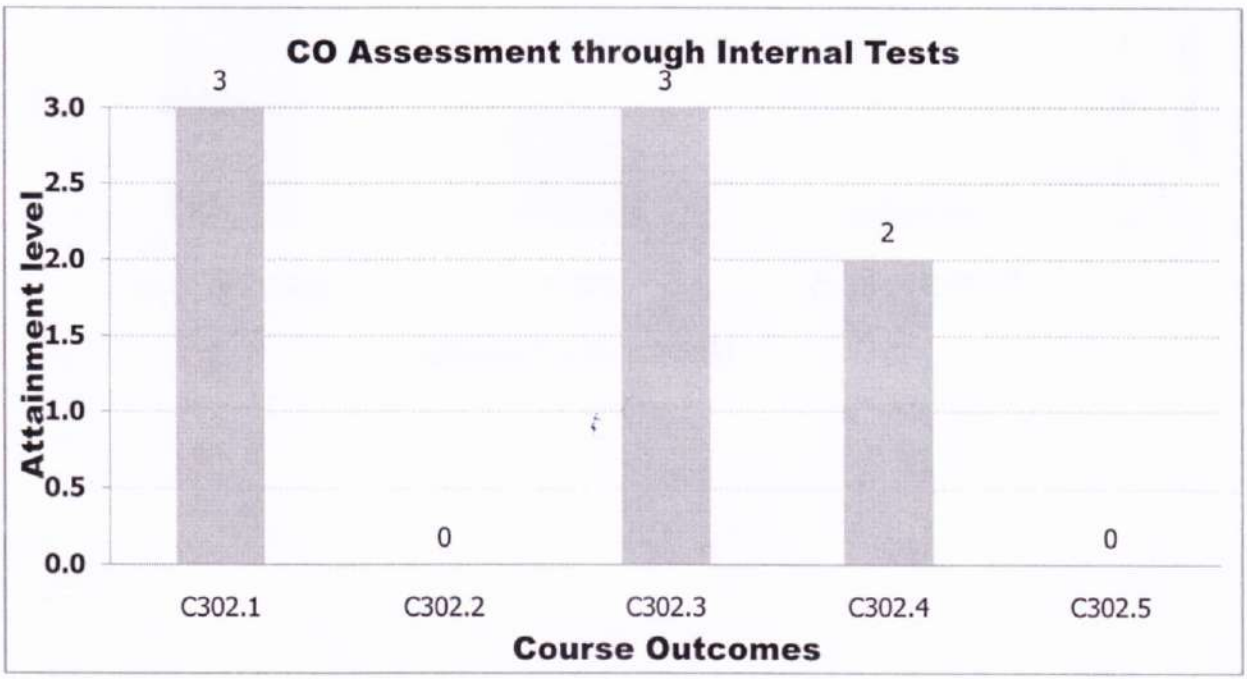
COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO
	A	R	A	R	A	R	A	R	A	R			
C302.1	23	23									100.00	3	1,2,3,8,10,12
C302.2			23	23							100.00	3	1,2,3,8,10,12
C302.3					23	23					100.00	3	1,2,3,8,10,12
C302.4							23	23			100.00	3	1,2,3,8,10,12
C302.5									23	23	100.00	3	1,2,3,8,10,12



2. Assessment through Internal Marks:

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

COs	IA-1				IA-2				IA-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		
C302.1	22	18											3	1,2,3,8,10,12
C302.2			22	5									0	1,2,3,8,10,12
C302.3					23	20	23	13					3	1,2,3,8,10,12
C302.4									23	14			2	1,2,3,8,10,12
C302.5											23	6	0	1,2,3,8,10,12

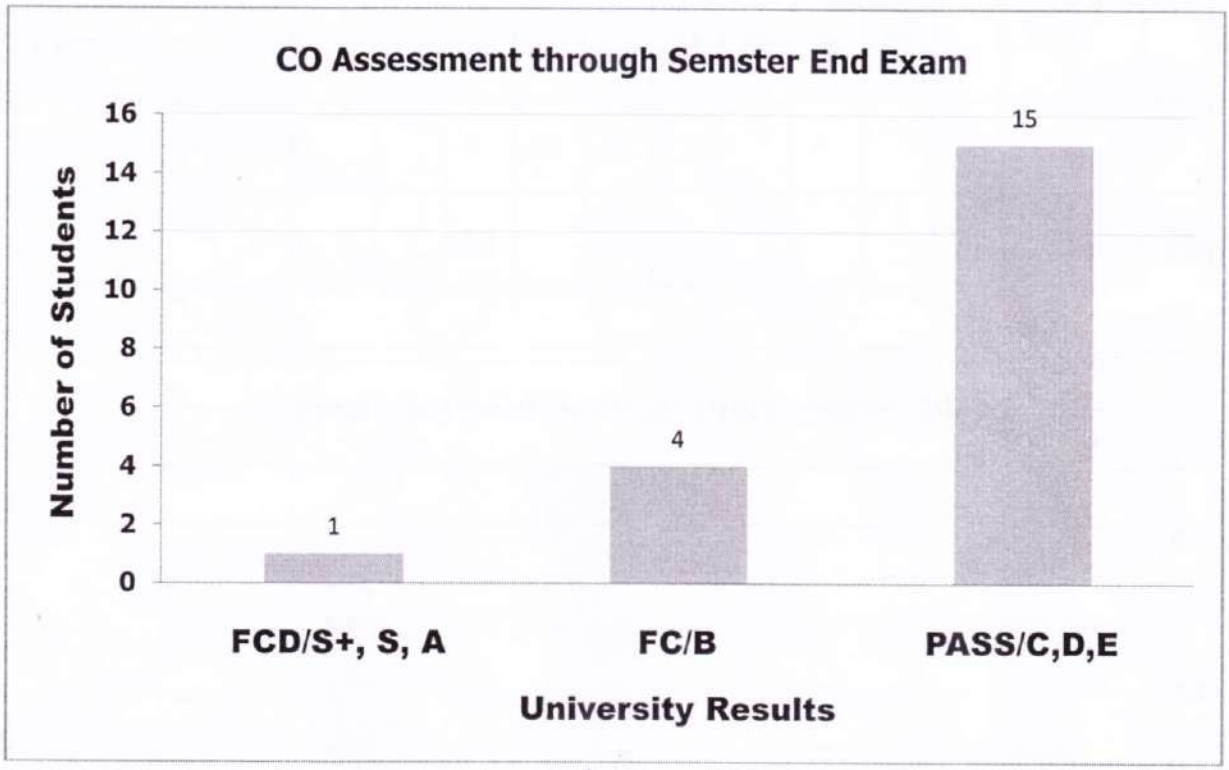


3. Semester End Exam Assessment Based on VTU Exam Results:

COs Attainment Levels:

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

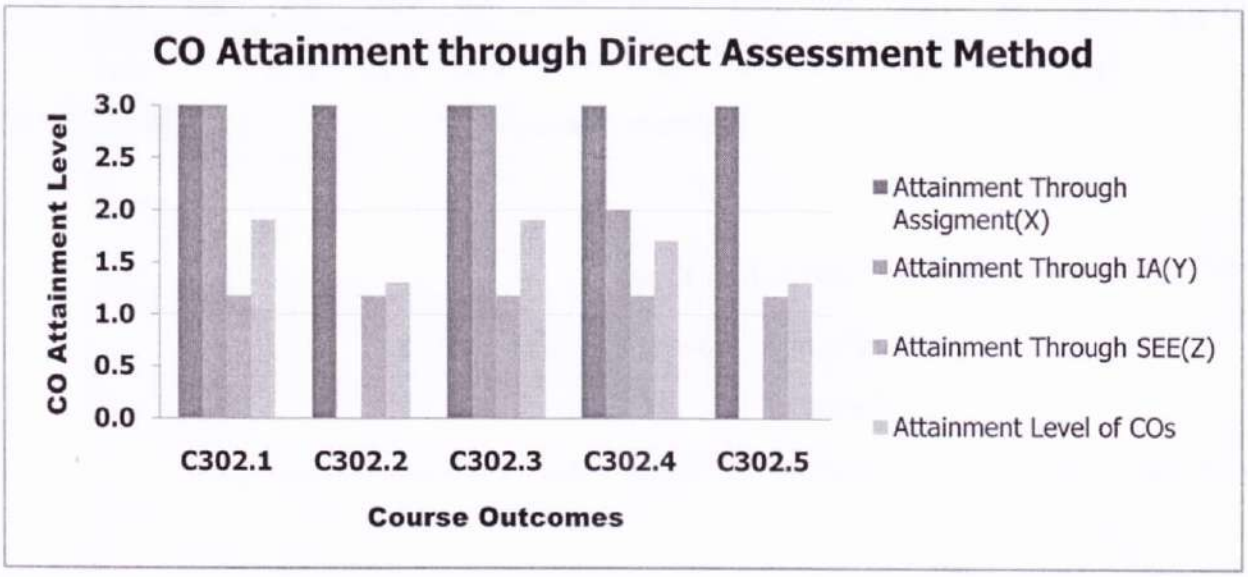
Total no. of Students Appeared	22	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semster End Exams
FCD/S+, S, A	1	3
FC/B	4	8
PASS/C,D,E	15	15
Total Percentage of Passing	90.91%	1.18



4. CO Attainment:

CO Attainment through Direct Assessment Method

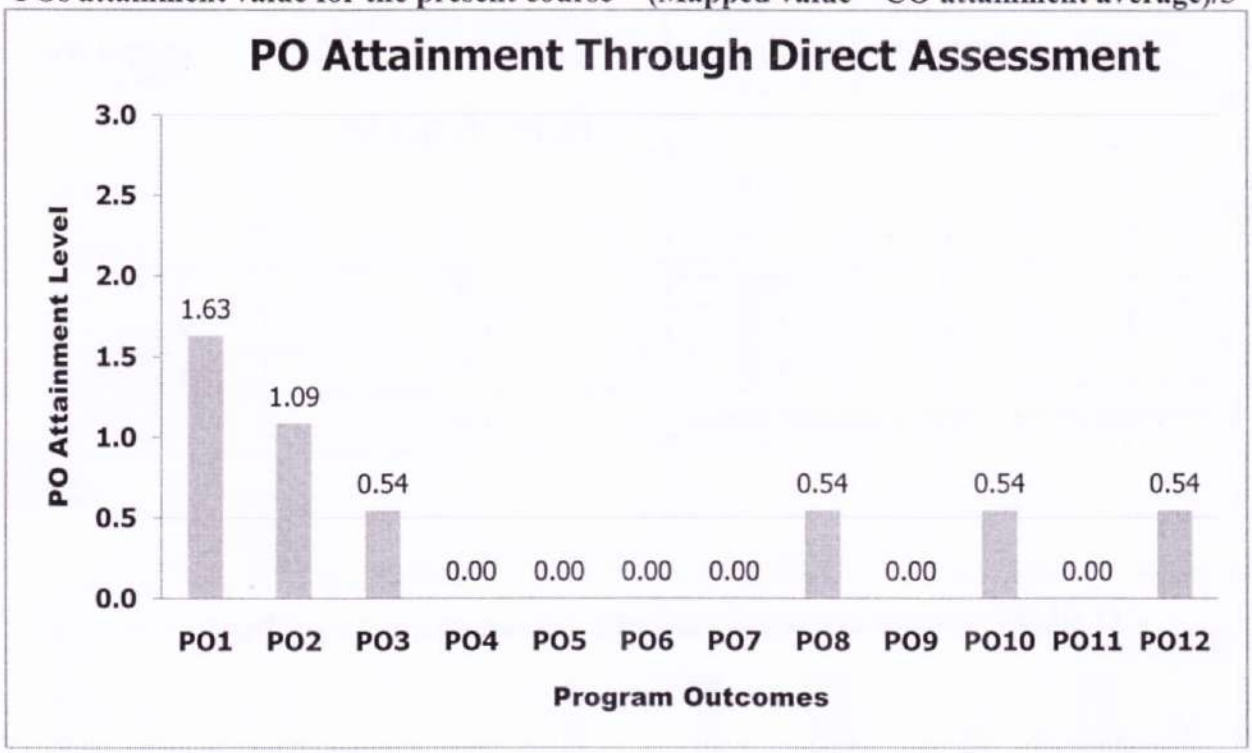
COs	Attainment Through Assignment(X)	Attainment Through IA Test(Y)	Attainment Through Semester End Exam(Z)	Attainment level of CO [0.4(X+Y)/2]+0.6Z	Mapped POs
C302.1	3	3	1.18	1.91	1,2,3,8,10,12
C302.2	3	0	1.18	1.31	1,2,3,8,10,12
C302.3	3	3	1.18	1.91	1,2,3,8,10,12
C302.4	3	2	1.18	1.71	1,2,3,8,10,12
C302.5	3	0	1.18	1.31	1,2,3,8,10,12
CO Attainment through Direct Assessment Method				1.63	



5. PO Attainment for the Entire Course:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302	1.63	1.09	0.54	-	-	-	-	0.54	-	0.54	-	0.54

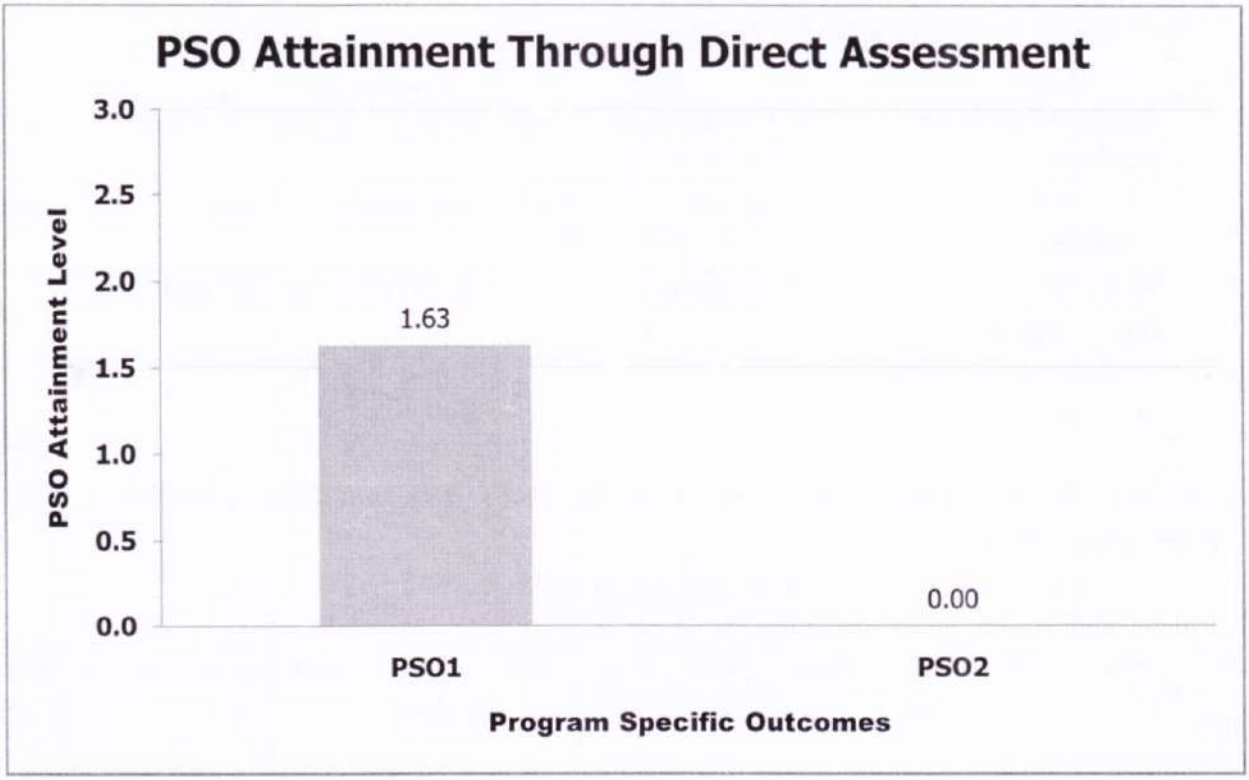
POs attainment value for the present course = (Mapped value * CO attainment average)/3



6. PSO Attainment for the Entire Course:

CO/PSO	PSO1	PSO2
C302	1.63	-

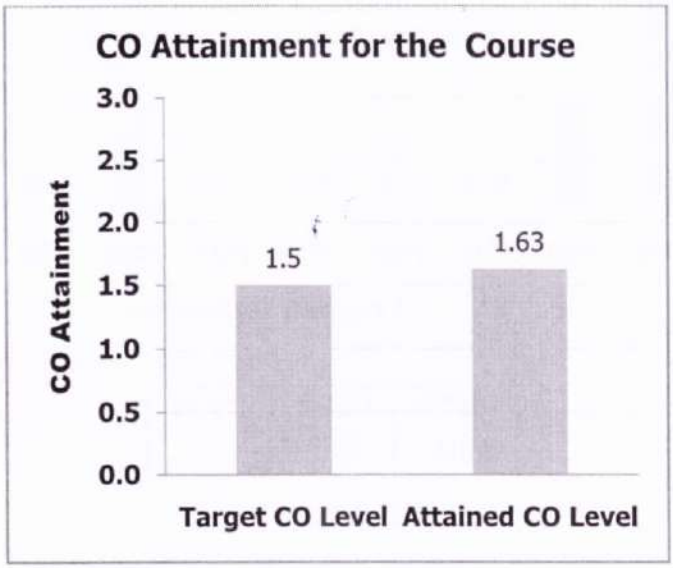
PSOs attainment value for the present course = **(Mapped value * CO attainment average)/3**



7. Target Attainment:

As the course is revised, CO attainment target is taken as 2

Set Target Value (ITV)	1.5
Attained Value	1.63
New Target Level for the next Exam	1.63



8. Course Coordinator Remarks:

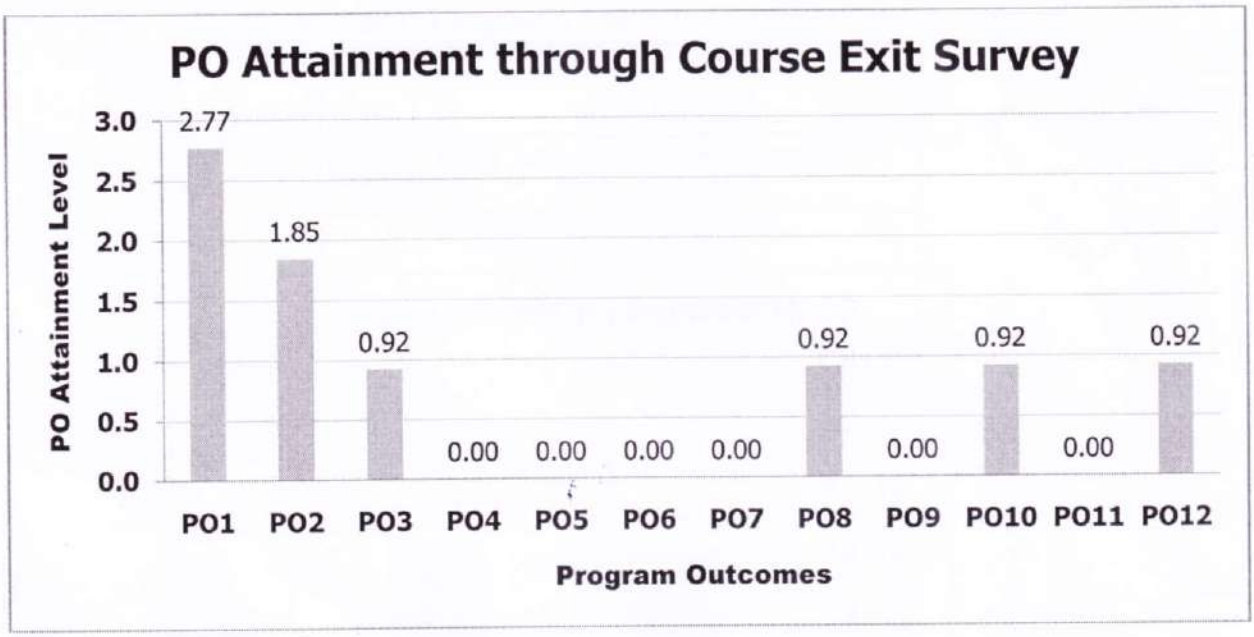
S. No.	Observations	Comments
1	Impact of Delivery Methods	Delivery methods are satisfactory. Pedagogy used to deliver lectures is quite satisfactory.
2	Course Outcome Attainment	Overall attainment of all course outcomes is moderate as it is observed in CO attainment table.
3	Scope for Improvement	Attainment of CO2, 3, 8,10 & CO12 need to be improved.
4	Additional comments (if any)	Nil

X. INDIRECT ASSESSMENT OF PO & PSO THROUGH COURSE EXIT SURVEY (CES)

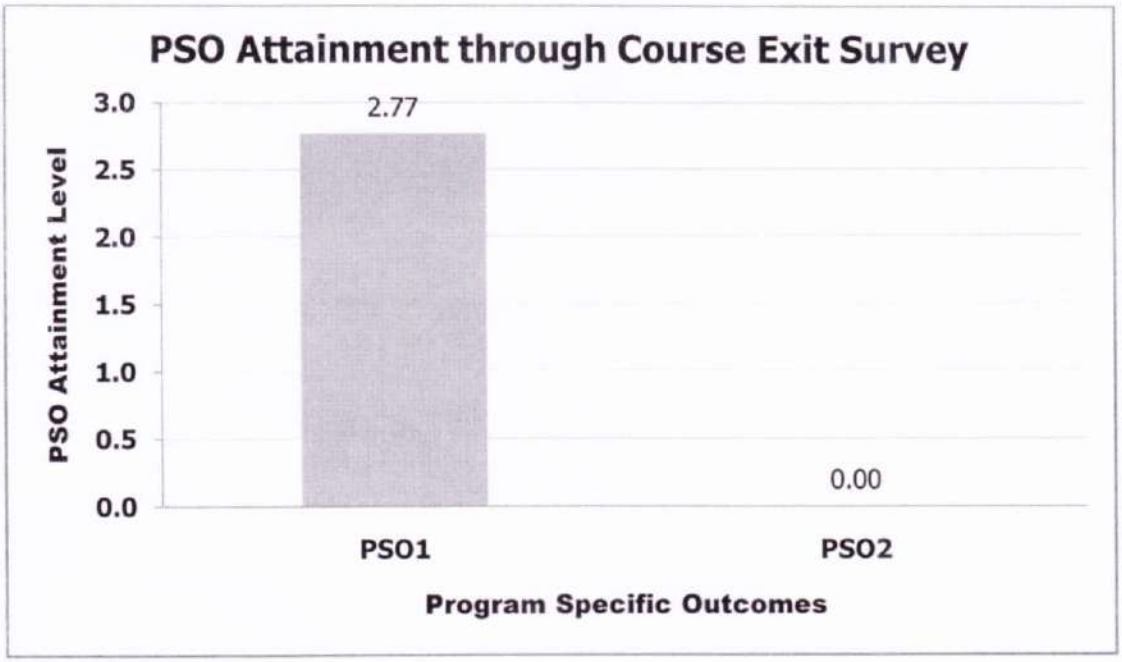
PO Attainment = (Mapped value * CES attainment value)/3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302	2.77	1.85	0.92	-	-	-	-	0.92	-	0.92	-	0.92

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



CO/PSO	PSO1	PSO2
C302	2.77	-



Prof M. P Yanagimath
Name & Signature of Course Coordinator

Name & Signature of Module Coordinator

6/7/22
HOD

3.3.1 Provide results of evaluation of each PO & PSO (40)

The result of evaluation of each PO for the assessment years 2019-20 is as shown in table below

Attainment of POs through Indirect Method

Survey Forms	Weightage in %	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Employer Survey	5	3.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	2.00
Alumni Survey	15	2.00	2.30	1.70	1.75	0.80	1.80	1.80	1.70	1.40	1.70	-	0.70
Senior Exit Survey	15	2.82	2.80	2.79	2.61	2.77	2.79	2.86	2.77	2.79	2.86	2.73	2.79
Activity Feedback	35	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Course Exit Survey	15	2.55	2.21	1.88	1.95	1.85	1.94	1.70	1.48	1.64	1.64	1.84	1.37
Placement, Higher Education & Entrepreneurship (PHE)	15	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
Total →		**2.49**	**2.48**	**2.29**	**2.28**	**2.20**	**2.36**	**2.34**	**2.28**	**2.26**	**2.26**	**2.02**	**2.06**

Attainment of PO through Direct Method

Sl. No	Course	Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
1	Engg. Mathematics-I	C101	1.93	1.29	-	-	-	-	-	-	-	-	-	0.64
2	Engg. Physics	C102	1.99	-	1.33	-	0.66	-	-	0.66	-	0.66	-	0.66
3	ECE. & Engg. Mech.	C103	1.34	1.34	0.89	0.89	-	0.45	-	0.45	-	-	0.45	0.89
4	EME	C104	1.56	1.56	-	-	-	0.78		-	-	-	-	2.34
5	Basic Electrical Engg.	C105	0.94	0.94	-	-	-	-	-	-	-	-	-	-
6	Workshop Lab	C106	2.55	1.59	2.87	1.27	-	2.87	-	2.87	1.91	1.91	2.87	2.39
7	Engg. Physics Lab	C107	2.57	--	--	--	0.86		-	0.86	1.71	1.71	-	0.86
8	CIP and Prof. Ethics	C108	--	--	--	--	--	1.12	--	0.75	--	--	--	--
9	Engg. Mathematics-II	C109	1.23	0.82	-	-	-	-	-	-	-	-	-	0.41
10	Engineering Chemistry	C110	1.36	1.09	0.91	-	-	0.82	-	-	-	-	-	0.45
11	Prog. in C & Data Str.	C111	1.62	1.29	1.40	-	-	-	-	0.54	-	0.54	-	0.54
12	CAED	C112	0.84	-	-	-	1.69	-	-	0.28	-	2.53	-	-
13	Basic Electronics Engg.	C113	1.86	1.86	1.86	1.24	-	0.62	-	-	-	-	-	1.37
14	Computer Prog. Lab	C114	2.57	2.57	2.57	-	-	-	-	0.86	1.71	1.71	-	0.86
15	Engg. Chemistry Lab	C115	2.68	2.68	2.68	-	-	1.79	-	-	-	-	-	0.89
16	Environmental Studies	C116	2.44	1.63	1.63	-	-	1.63	1.63	0.81	-	-	0.81	0.81
17	Engg. Mathematics-III	C201	1.99	1.32	0.66	-	-	-	-	-	-	-	-	0.66
18	Electric Circuit Analysis	C202	1.36	1.36	0.45	-	-	-	-	0.91	-	-	-	0.45
19	Transfrs & Generators	C203	0.56	0.56	0.56	-	-	-	-	0.28	-	-	-	0.28
20	Analog Electronic Ckts	C204	0.56	0.56	0.56	-	-	-	-	0.28	-	-	-	0.28

Sl. No	Course	Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
21	Digital System Design	C205	1.21	1.21	-	-	0.40	-	0.40	0.40	0.40	-	-	0.40
22	Electr. & Eclectrn Measure.	C206	1.42	0.47	-	-	-	-	-	0.95	-	-	-	-
23	Electrical Machines Lab-I	C207	2.78	1.85	1.85	-	-	-	0.93	0.93	-	0.93	0.93	1.85
24	Electronics Laboratory	C208	2.73	2.73	1.82	-	-	1.82	-	0.91	0.91	-	-	1.82
25	Engineering Maths IV	C209	1.57	1.04	0.52	--	--	--	--	--	--	--	--	0.52
26	Power Generation and Economics	C210	1.86	1.24	-	-	-	1.86	1.86	-	-	-	-	-
27	Transmission and Distribution	C211	1.39	0.93	0.93	0.93	-	-	-	0.93	-	-	-	0.46
28	Electric Motors	C212	0.92	0.92	0.92	-	-	-	-	0.46	-	-	-	0.46
29	Electromagnetic Theory	C213	0.92	0.92	0.62	-	-	-	-	0.31	-	-	-	-
30	Operational Amplifier and Linear ICs	C214	0.97	0.64	0.97	0.97	-	-	0.32	0.32	0.32	-	0.32	0.32
31	Electric Machine Lab II	C215	2.50	1.67	1.67	-	-	-	0.83	0.83	-	0.83	0.83	1.67
32	Operational Amplifier and Linear ICs Lab	C216	0.97	0.64	0.97	0.97	-	-	0.32	0.32	0.32	-	0.32	0.32
33	Management & Entrepreneurship	C301	1.56	-	-	-	-	-	-	1.56	1.56	1.56	1.56	1.56
34	Microcontroller	C302	1.21	0.80	0.40	-	-	-	-	0.40	-	0.40	-	0.40
35	Power Electronics	C303	1.69	1.57	1.12	-	-	-	-	1.12	-	-	-	1.12
36	Signals & Systems	C304	1.14	1.14	1.14	-	-	-	-	0.57	-	-	-	0.57
37	Electrical Engineering Materials	C30	2.19	2.19	1.46	-	-	0.73	-	0.73	0.73	-	-	1.46
38	Estimating & Costing	C307	1.74	1.74	1.74	-	-	1.74	-	1.74	1.16	1.16	1.74	1.16
39	Programmable Logic Controllers	C310	1.56	1.04	1.04	-	1.56	1.04	-	1.04	0.52	1.04	-	1.04
40	Renewable energy sources	C311	1.19	1.19	-	-	0.60	-	-	1.19	-	-	-	-
41	Microcontroller Lab	C313	3.00	2.00	-	-	1.00	-	-	1.00	2.00	1.00	-	1.00
42	Power Electronics Lab	C314	1.98	1.98	0.99	-	-	-	-	0.99	1.98	1.98	-	-
43	Control System	C315	1.54	1.54	-	-	-	-	0.51	0.51	0.51	-	-	0.51
44	Power System Analysis-I	C316	1.64	1.64	1.09	1.09	-	-	-	1.09	-	-	-	0.55
45	Digital Signal Processing	C317	0.89	0.89	0.89	-	-	-	-	0.45	-	-	-	0.45
46	Electrical Machine Design	C318	1.93	1.93	1.93	-	-	1.29	-	1.93	1.29	1.29	-	1.29
47	Computer Aided Electrical Drawing	C319	1.54	1.54	1.54	-	-	-	-	0.77	-	-	-	0.77
48	Sensors &Transducers	C324	1.72	1.15	1.15	-	-	1.15	-	1.15	-	-	-	1.15
49	Control System Lab	C327	2.94	1.96	1.96	-	1.96	-	-	1.96	1.96	1.96	-	1.96
50	Digital Signal Processing Lab	C328	2.98	1.99	-	-	-	-	-	-	1.99	0.99	-	-
51	Power System Analysis-II	C401	1.91	1.91	1.28	1.28	1.28	0.64	-	1.28	1.28	0.64	-	1.28
52	Power System Protection	C402	2.50	1.50	1.67	-	-	-	-	1.33	-	1.67	-	1.67

Sl. No	Course	Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
53	High Voltage Engineering	C403	2.11	2.11	1.40	-	-	1.40	-	1.40	1.40	1.40	-	0.70
54	Utilization of Electrical Power	C405	1.48	1.48	1.36	-	-	0.99	0.99	0.99	0.99	-	-	0.99
55	Power System Planning	C407	1.89	1.89	-	-	-	-	-	1.26	-	-	-	0.63
56	FACTS & HVDC Transmission	C408	2.20	2.20	1.47	0.73	0.73	-	-	0.73	0.73	-	-	0.73
57	Testing & Commissioning of Power System Apparatus	C409	1.49	0.99	0.99	0.50	-	0.99	-	0.99	0.99	0.99	-	0.50
58	Power System Simulation Laboratory	C412	3.00	3.00	2.00	2.00	2.00	2.00	-	2.00	2.00	2.00	-	2.00
59	Relay & High Voltage Laboratory	C413	3.00	2.00	-	-	-	-	-	1.00	2.00	1.00	-	-
60	Project Phase I + Seminar	C414	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
61	Power System Operation & Control	C415	1.55	1.55	1.04	0.52	1.04	-	-	1.04	-	1.04	-	0.52
62	Industrial Drives & Applications	C416	2.37	2.37	1.58	-	0.79	-	-	-	-	-	-	-
63	Smart Grid	C417	1.72	1.72	1.15	1.15	1.15	0.57	-	0.57	0.57	0.57	-	0.57
64	Integration of Distributed Generation	C419	1.37	1.37	-	-	-	-	0.46	0.46	0.46	-	-	0.46
65	Internship	C421	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
66	Project Work Phase - II	C422	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
67	Seminar	C423	2.40	2.40	2.40	1.60	2.40	1.60	2.40	2.40	2.40	1.60	1.60	1.60
Direct Attainment (A)			**1.82**	**1.56**	**1.40**	**1.24**	**1.33**	**1.35**	**1.19**	**1.03**	**1.32**	**1.34**	**1.33**	**1.01**
Indirect Attainment (B)			**2.49**	**2.48**	**2.29**	**2.28**	**2.20**	**2.36**	**2.34**	**2.28**	**2.26**	**2.26**	**2.02**	**2.06**
Average (0.8A+0.2B)			**1.95**	**1.74**	**1.58**	**1.45**	**1.51**	**1.55**	**1.42**	**1.28**	**1.51**	**1.53**	**1.47**	**1.22**

Criteria Coordinator | Program Coordinator | HOD

The result of evaluation of each PSO for the assessment years 2019-20 is as shown in table below

Attainment of PSOs through Indirect Method

Survey Forms	Weightage in %	PSO1	PSO2
Employer Survey	5	-	-
Alumni Survey	15	-	-
Senior Exit Survey	15	2.84	2.82
Activity Feedback	35	-	-
Course Exit Survey	15	2.44	1.94
Placement, Higher Education & Entrepreneurship (PHE)	15	1.22	1.22
	Total →	**0.97**	**0.90**

Attainment of PSO through Direct Method

Sl. No	Course	Code	PSO1	PSO2
1	Engg. Mathematics-III	C201	-	-
2	Electric Circuit Analysis	C202	0.91	-
3	Transfrs & Generators	C203	0.83	-
4	Analog Electronic Ckts	C204	0.83	-
5	Digital System Design	C205	0.81	-
6	Electr. & Eclectrn Measure.	C206	0.95	-
7	Electrical Machines Laboratory -1	C207	1.55	2.33
8	Electronics Laboratory	C208	2.73	1.82
9	Engineering Maths IV	C209	-	-
10	Power generation and economics	C210	0.88	-
11	Transmission and distribution	C211	0.93	-
12	Electric Motors	C212	1.38	-
13	Electromagnetic Theory	C213	0.92	-
14	Operational amplifier and linear Integrated Circuits	C214	0.97	-
15	Electric machine lab II	C215	1.71	2.57
16	Operational amplifier and linear ICs Lab	C216	0.97	-
17	Management & Entrepreneurship	C301	0.78	-
18	Microcontroller	C302	1.21	-
19	Power Electronics	C303	1.69	-
20	Signals & Systems	C304	1.70	-
21	Electrical Engineering Materials	C306	2.19	-

Sl. No	Course	Code	PSO1	PSO2
22	Estimating & Costing	C307	1.74	-
23	Programmable Logic Controllers	C310	1.04	1.04
24	Renewable energy sources	C311	1.79	-
25	Microcontroller Lab	C313	3.00	2.00
26	Power Electronics Lab	C314	1.98	0.99
27	Control System	C315	1.54	-
28	Power System Analysis-I	C316	1.09	-
29	Digital Signal Processing	C317	1.34	-
30	Electrical Machine Design	C318	1.93	-
31	Computer Aided Electrical Drawing	C319	2.32	-
32	Sensors &Transducers	C324	1.72	-
33	Control System Lab	C327	2.94	2.94
34	Digital Signal Processing Lab	C328	2.99	1.99
35	Power System Analysis-II	C401	1.91	0.64
36	Power System Protection	C402	2.50	-
37	High Voltage Engineering	C403	2.11	-
38	Utilization of Electrical Power	C405	1.48	
39	Power System Planning	C407	1.26	-
40	FACTS & HVDC Transmission	C408	1.47	-
41	Testing & Commissioning of Power System Apparatus	C409	1.49	-
42	Power System Simulation Laboratory	C412	3.00	2.00
43	Relay & High Voltage Laboratory	C413	1.50	1.00
44	Project Phase I + Seminar	C414	2.40	2.40
45	Power System Operation & Control	C415	1.55	0.52
46	Industrial Drives & Applications	C416	1.58	-
47	Smart Grid	C417	1.72	-
48	Integration of Distributed Generation	C419	1.37	-
49	Internship	C421	2.40	2.40
50	Project Work Phase - II	C422	2.40	2.40
51	Seminar	C423	2.40	0.80
	Average		**1.67**	**1.59**
	Indirect Attainment (B)		**0.97**	**0.90**
	Average (0.8A+0.2B)		**1.53**	**1.46**

Criteria Coordinator | Program Coordinator | HOD

FACULTY COURSE ASSESSEMENT REPORT(FCAR)

Course Coordinator: **Prof: Amit. U. Neshti** **Class Strength: 59**

Semester: V **Subject: Renewable energy sources** **Code: 15EE563**

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	Apply knowledge & competencies to analyze & design electrical & electronics circuits, control and power systems, machines & industrial drives.
PSO2	Use software/hardware tools for the design, simulation and analysis of electrical and electronics systems.

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

CO	Description	Mapped POs	RBTL
C311.1:	Discuss causes of energy scarcity and its solution, Development, Classification and Availability of Renewable Energy and also Brief the Energy from sun.	PO1,PO2,PO5,PO8	L4
C311.2:	Discuss types of solar collectors, their configurations, solar cell system, its characteristics and their applications.	PO1,PO2,PO5,PO8	L3,L4
C311.3:	Discuss generation of energy from hydrogen, wind, geothermal system, solid waste and agriculture refuse .	PO1,PO2,PO5,PO8	L2
C311.4:	Discuss production of energy from biomass, biogas and Tidal energy .	PO1,PO2,PO5,PO8	L3,L4
C311.5:	Discuss power generation from sea wave energy and ocean thermal energy .	PO1,PO2,PO5,PO8	L3,L4

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

POs→ COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311.1	2	2	NA	NA	1	NA	NA	2	NA	NA	NA	NA
C311.2	2	2	NA	NA	1	NA	NA	2	NA	NA	NA	NA
C311.3	2	2	NA	NA	1	NA	NA	2	NA	NA	NA	NA
C311.4	2	2	NA	NA	1	NA	NA	2	NA	NA	NA	NA
C311.5	2	2	0	0	1	0	0	2	0	0	0	0
Average	2	2	0	0	1	0	0	2	0	0	0	0

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

PSOs	PSO 1	PSO 2
COs		
C311.1	3	NA
C311.2	3	NA
C311.3	3	NA
C311.4	3	NA
C311.5	3	0
Average	3	0

VI. Justification of CO-PO Mapping:

Mapping	Justification
C311.1-PO1	A medium correlation because able to extract science and engg science but not able to engg specialization (Engineering knowledge) to solve Complex engg problem.
C311.1-PO2	A medium correlation because able to extract science and engg science but not able to engg specialization (Engineering knowledge) to solve Complex engg problem.
C311.1-PO5	A low correlation because difficulty in prediction and modeling to complex engineering activities with an understanding of the limitations.
C311.1-PO8	A medium correlation because not able to commit to professional ethics and responsibilities and norms ofthe engineering practice.
C311.2-PO1	A medium correlation because able to discuss applications of Transformers but not able to apply Engineering knowledge to solve Complex engg problem.
C311.2-PO2	A medium correlation since because able to discuss applications of Transformers but not able to analyze problem to solve Complex engg problem.
C311.2-PO5	A low correlation because difficulty in prediction and modeling to complex engineering activities with an understanding of the limitations.
C311.2-PO8	A medium correlation because not able to commit to professional ethics and responsibilities and norms ofthe engineering practice.
C311.3-PO1	A medium correlation because able to explain fundaments of DC and AC Generators but not able to apply Engineering knowledge to solve Complex engg problem..
C311.3-PO2	A medium correlation since because able to explain fundaments of DC and AC Generators but not able to analyze problem to solve Complex engg problem
C311.3-PO5	A low correlation because difficulty in prediction and modeling to complex engineering activities with an understanding of the limitations.
C311.3-PO8	A medium correlation because not able to commit to professional ethics and responsibilities and norms ofthe engineering practice.
C311.4-PO1	A High correlation since able to apply Engineering knowledge to solve Complex engg problem
C311.4-PO2	A High correlation since able to analyze problem to solve Complex engg problem
C311.4-PO5	A low correlation because difficulty in prediction and modeling to complex engineering activities with an understanding of the limitations.
C311.4-PO8	A medium correlation because not able to commit to professional ethics and responsibilities and norms ofthe engineering practice.
C311.5-PO1	A High correlation since able to apply Engineering knowledge to solve Complex engg problem
C311.5-PO2	A High correlation able to analyze problem to solve Complex engg problem
C311.5-PO5	A low correlation because difficulty in prediction and modeling to complex engineering activities with an understanding of the limitations.
C311.5-PO8	A medium correlation because not able to commit to professional ethics and responsibilities and norms ofthe engineering practice.

VII. Justification of CO-PSO Mapping :

Mapping	Justification
(C311.1 - C311.5)-PSO1	A high correlation because able to demonstrate the knowledge of renewable energy source.

VIII. Bench Mark Setting

NIL

IX. DIRECT ASSESSMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

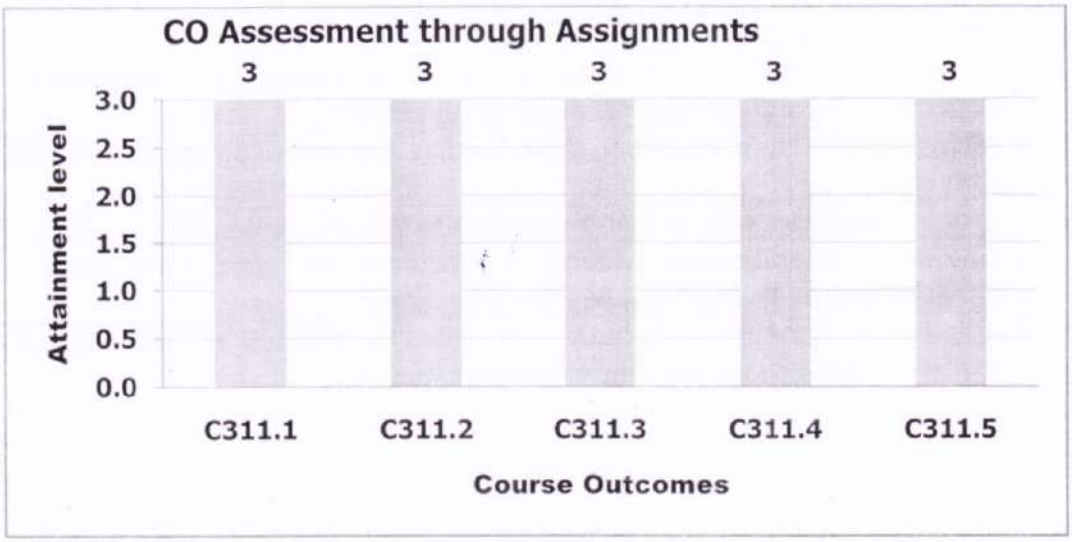
Assessment Tools:

- Continuous assessment
- Laboratory experiments
- End semester exam

1. Assessment through Assignment:

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

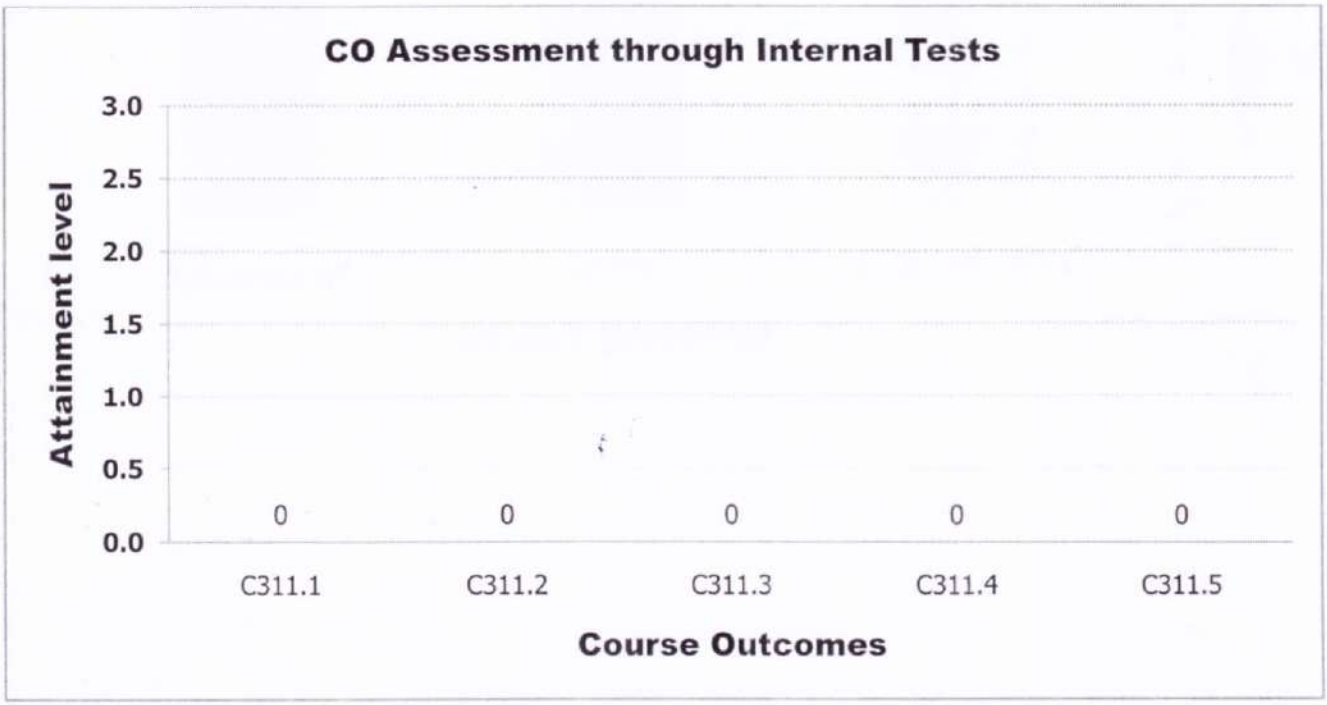
COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO
	A	R	A	R	A	R	A	R	A	R			
C311.1	43	43									100.00	3	PO1,PO2,PO5,PO8
C311.2			43	43							100.00	3	PO1,PO2,PO5,PO8
C311.3					43	43					100.00	3	PO1,PO2,PO5,PO8
C311.4							43	43			100.00	3	PO1,PO2,PO5,PO8
C311.5									43	43	100.00	3	PO1,PO2,PO5,PO8



2. Assessment through Internal Marks:

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

COs	IA-1				IA-2				IA-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		
C311.1	37	20	49	2									0	PO1,PO2,PO5,PO8
C311.2					45	8							0	PO1,PO2,PO5,PO8
C311.3							45	12					0	PO1,PO2,PO5,PO8
C311.4									38	10			0	PO1,PO2,PO5,PO8
C311.5											38	9	0	PO1,PO2,PO5,PO8

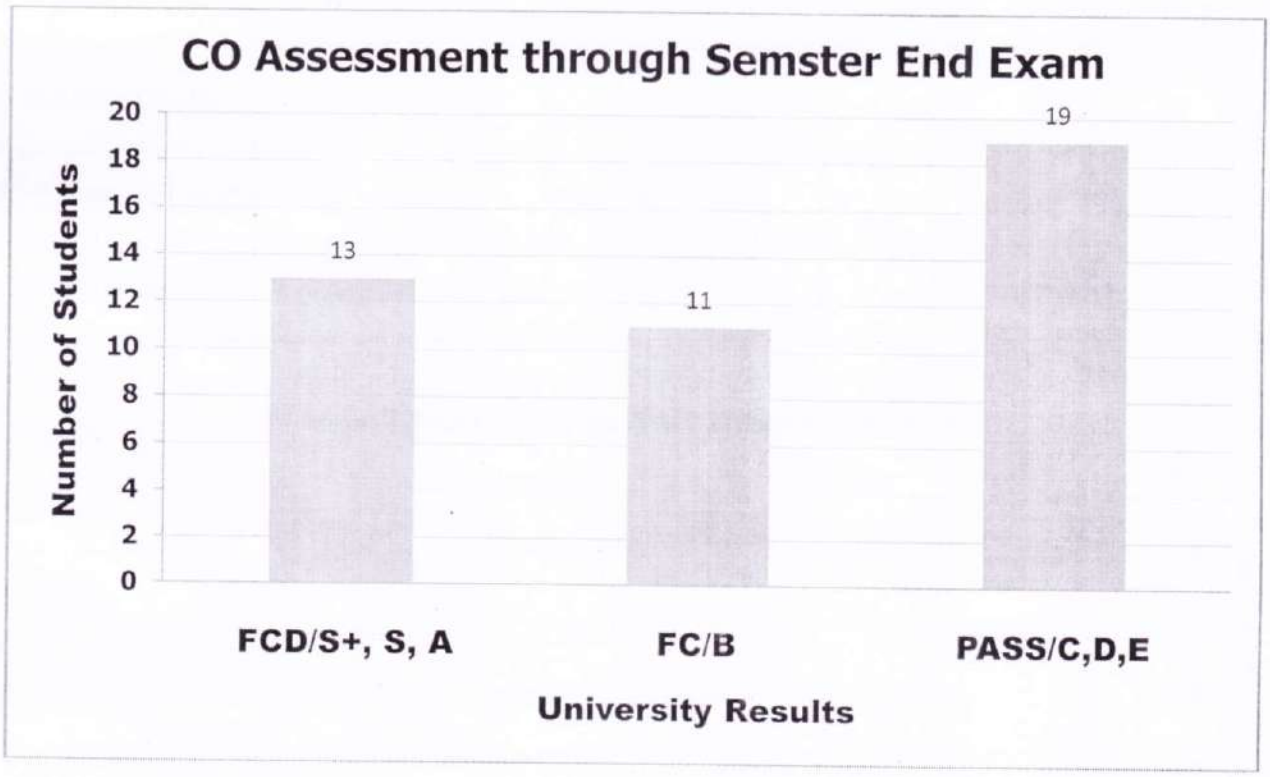


3. Semester End Exam Assessment Based on VTU Exam Results:

COs Attainment Levels:

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

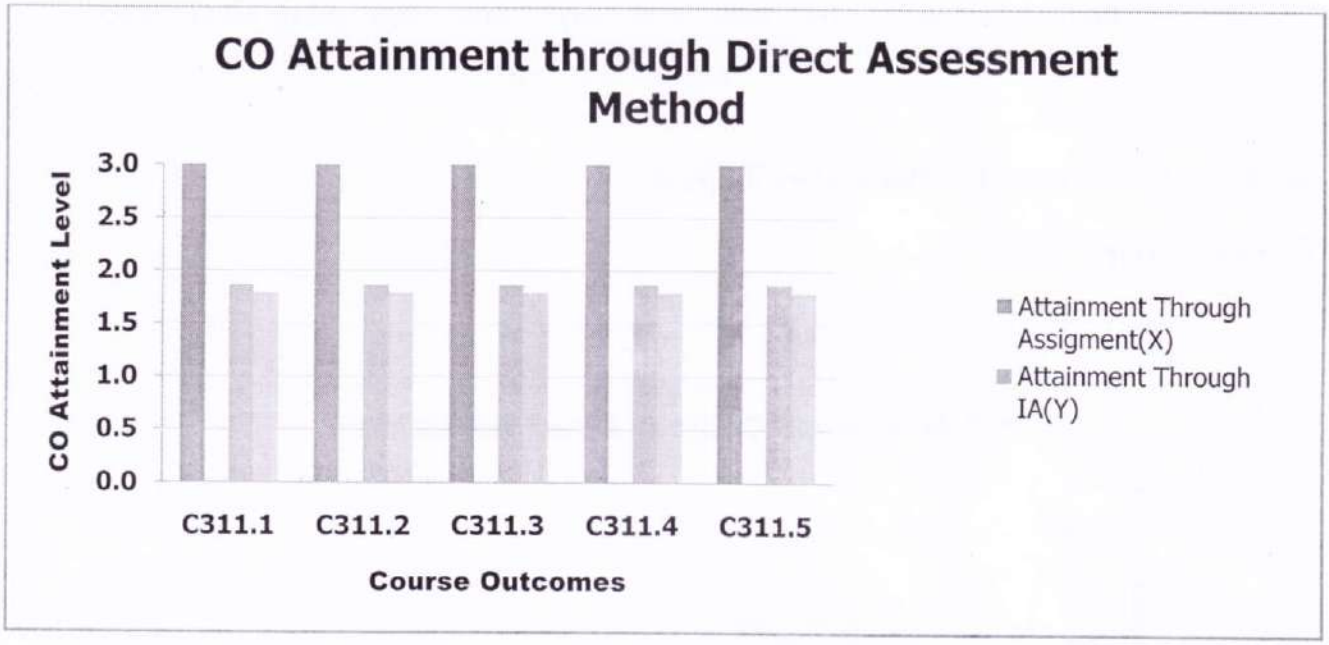
Total no. of Students Appeared	43	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semester End Exams
FCD/S+, S, A	13	39
FC/B	11	22
PASS/C,D,E	19	19
Total Percentage of Passing	100.00%	1.86



4. CO Attainment:

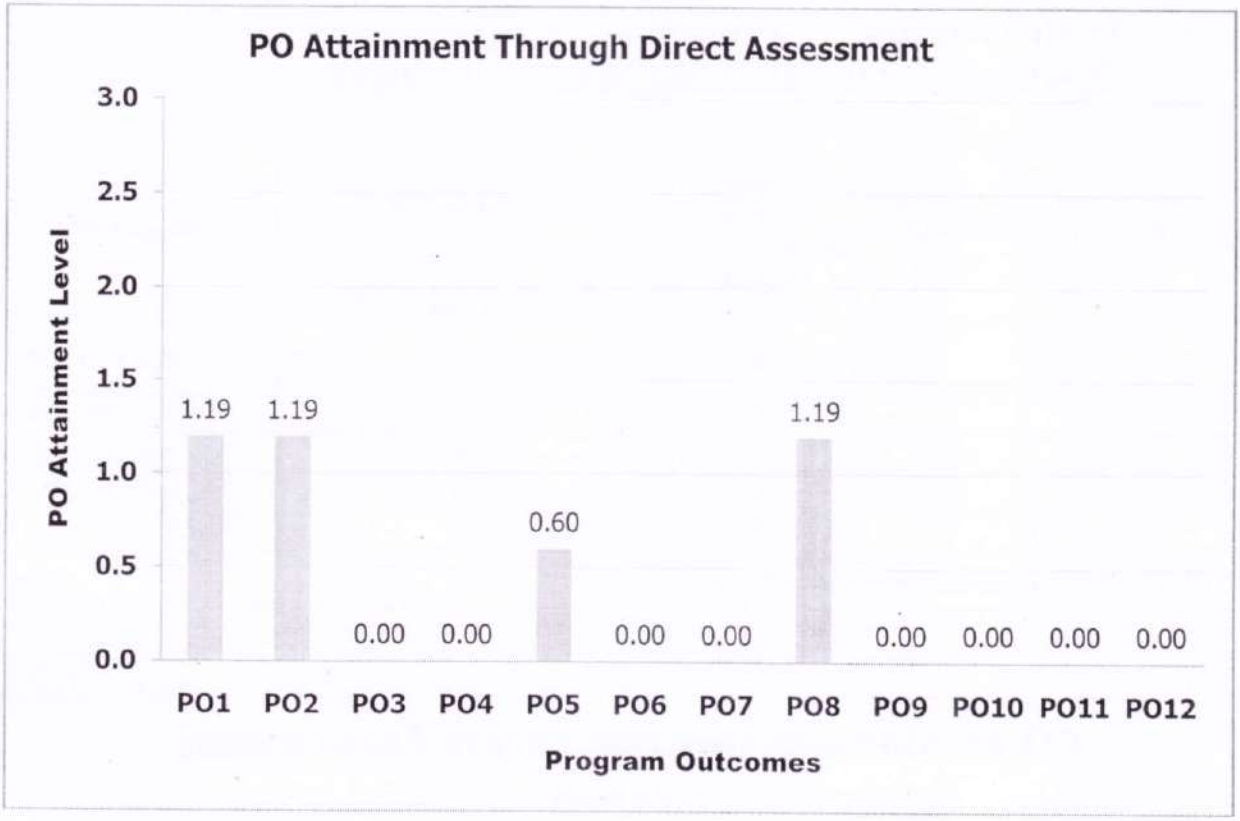
CO Attainment through Direct Assessment Method

COs	Attainment Through Assignment(X)	Attainment Through IA Test(Y)	Attainment Through Semster End Exam(Z)	Attainment level of CO	Mapped POs
				[0.2(X+Y)/2]+0.8Z	
C311.1	3	0	1.86	1.79	PO1,PO2,PO5,PO8
C311.2	3	0	1.86	1.79	PO1,PO2,PO5,PO8
C311.3	3	0	1.86	1.79	PO1,PO2,PO5,PO8
C311.4	3	0	1.86	1.79	PO1,PO2,PO5,PO8
C311.5	3	0	1.86	1.79	PO1,PO2,PO5,PO8
CO Attainment through Direct Assessment Method				1.79	



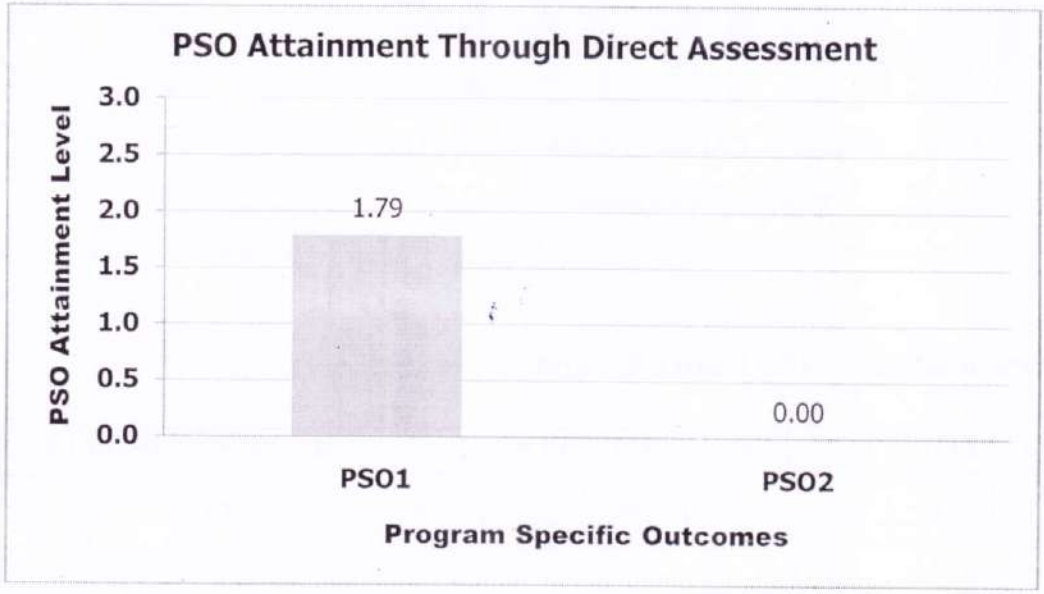
5. PO Attainment for the Entire Course:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311	1.19	1.19	0.00	0.00	0.60	0.00	0.00	1.19	0.00	0.00	0.00	0.00



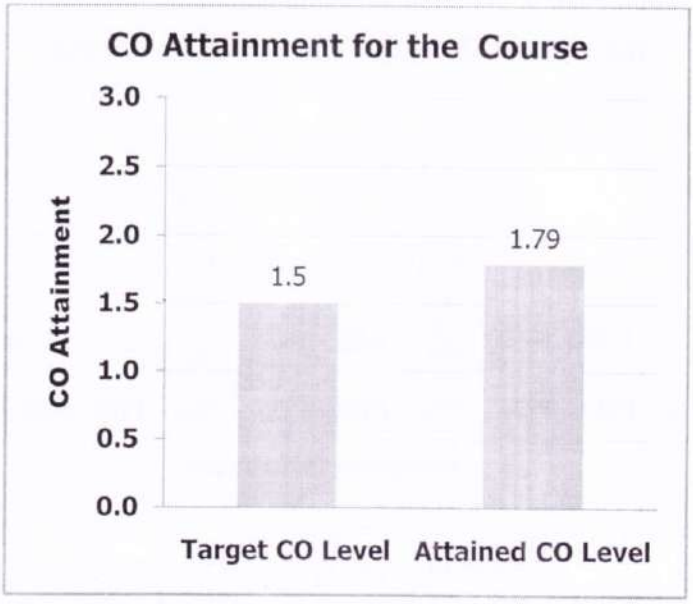
6. PSO Attainment for the Entire Course:

CO/PSO	PSO1	PSO2
C311	1.79	0.00



7. Target Attainment:

Set Target Value (ITV)	1.5
Attained Value	1.79
New Target Level for the next exam	1.79



8. Course Coordinator Remarks:

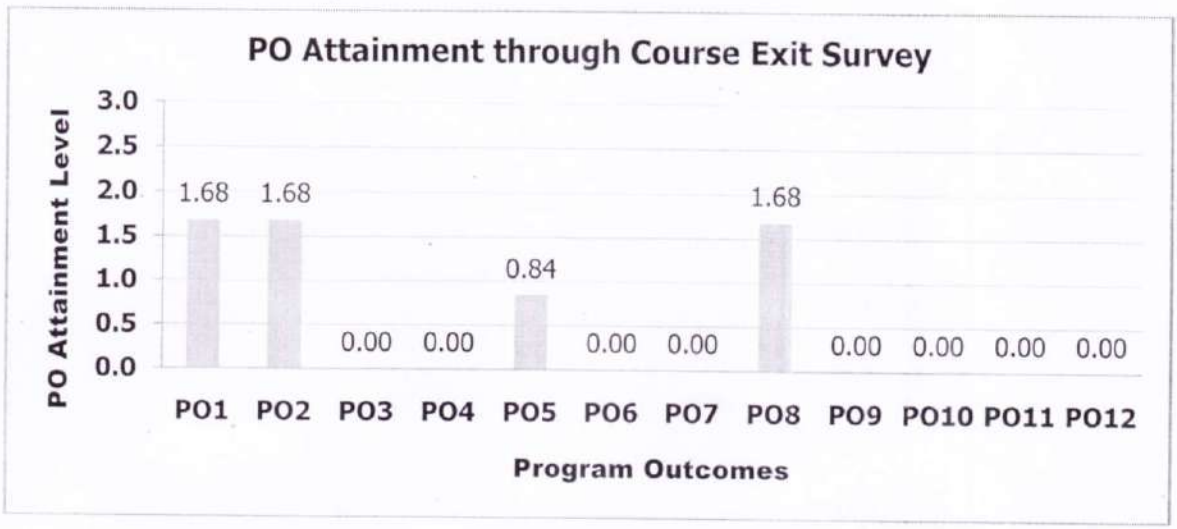
S. No.	Observations	Comments
1	Impact of Delivery Methods	Delivery methods are satisfactory. Pedagogy used to deliver lectures is quite satisfactory.
2	Course Outcome Attainment	Overall attainment of all course outcomes is moderate as it is observed in CO attainment table.
3	Scope for Improvement	Attainment of all need to be improved.
4	Additional comments (if any)	Nil

X. INDIRECT ASSESSMENT OF PO & PSO THROUGH COURSE EXIT SURVEY (CES)

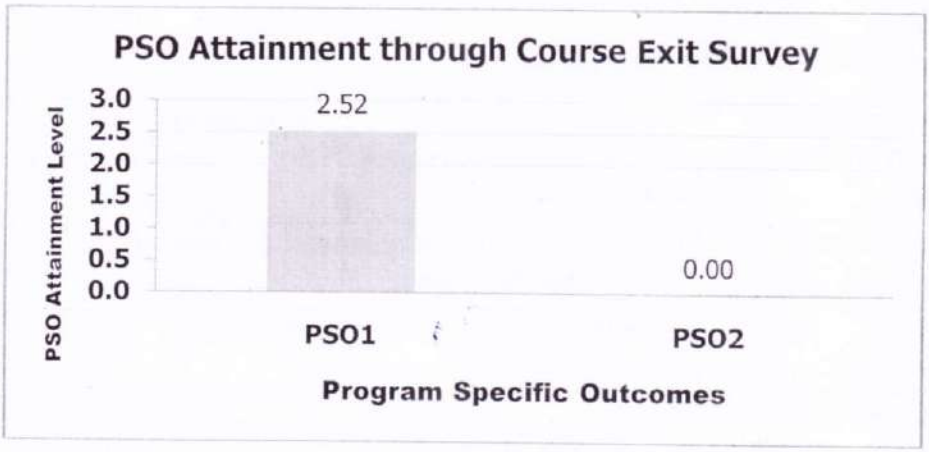
PO Attainment = (Mapped value * CES attainment value)/3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C311	1.68	1.68	0.00	0.00	0.84	0.00	0.00	1.68	0.00	0.00	0.00	0.00

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



CO/PSO	PSO1	PSO2
C311	2.52	0.00



Prof A. U. Neshti	Prof. M. R. Zinage	
Name & Signature of Course Coordinator	Name & Signature of Module Coordinator	HOD

3.3.1 Provide results of evaluation of each PO & PSO (40)

The result of evaluation of each PO for the assessment years 2018-19 is as shown in table below

Attainment of POs through Indirect Method

Survey Forms	Weightage in %	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Employer Survey	5	3.00	3.00	2.67	2.67	3.00	3.00	3.00	3.00	3.00	2.67	2.67	2.67
Alumni Survey	15	2.40	2.80	2.60	2.60	2.00	2.60	2.60	2.30	2.70	2.65	3.00	2.00
Senior Exit Survey	15	2.79	2.64	2.64	2.62	2.66	2.77	2.77	2.77	2.74	2.70	2.79	2.79
Activity Feedback	35	3.00	3.00	-	-	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Course Exit Survey	15	2.50	2.17	1.80	1.81	1.83	1.99	2.22	1.59	1.73	1.72	2.17	1.32
Placement, Higher Education & Entrepreneurship (PHE)	15	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Total →		**2.45**	**2.44**	**1.29**	**1.29**	**2.28**	**2.41**	**2.44**	**2.30**	**2.38**	**2.35**	**2.48**	**2.20**

Attainment of PO through Direct Method

Sl. No	Course	Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
1	Engg. Mathematics-I	C101	1.20	0.80	-	-	-	-	-	-	-	-	-	0.40
2	Engg. Physics	C102	1.40	-	0.93	-	0.47	-	-	0.47	-	0.47	-	0.47
3	ECE. & Engg. Mech.	C103	0.72	0.72	0.48	0.48	-	0.24	-	0.24	-	-	0.24	0.48
4	EME	C104	1.65	1.10	-	-	-	-	0.55	-	-	-	-	-
5	Basic Electrical Engg.	C105	0.81	0.81	-	-	-	-	-	-	-	-	-	-
6	Workshop Lab	C106	2.67	1.67	3.00	1.33	-	3.00	-	3.00	2.00	2.00	3.00	2.50
7	Engg. Physics Lab	C107	2.67	-	-	-	0.89	-	-	0.89	1.78	1.78	-	-
8	CIP and Prof. Ethics	C108	-	-	-	-	-	1.07	-	0.72	-	-	-	-
9	Engg. Mathematics-II	C109	1.05	0.70	-	-	-	-	-	-	-	-	-	0.35
10	Engineering Chemistry	C110	1.35	1.08	0.90	-	-	0.81	-	-	-	-	-	0.45
11	Prog. in C & Data Str.	C111	0.86	0.68	0.74	-	-	-	-	0.29	-	0.29	-	0.29
12	CAED	C112	0.69	-	-	-	1.37	-	-	0.69	-	2.06	-	-
13	Basic Electronics Engg.	C113	1.10	1.10	0.74	0.74	-	0.37	-	0.37	-	-	0.37	0.74
14	Computer Prog. Lab	C114	2.66	2.66	2.66	-	-	-	-	0.89	1.77	1.77	--	0.89
15	Engg. Chemistry Lab	C115	2.52	2.52	2.52	-	-	1.68	-	-	-	-	-	0.84
16	Environmental Studies	C116	2.24	1.49	1.49	-	-	1.49	1.49	0.75	-	-	0.75	0.75
17	Engg. Mathematics-III	C201	1.46	0.97	0.49	-	-	-	-	-	-	-	-	0.49
18	Electric Circuit Analysis	C202	1.01	1.01	0.34	-	-	-	-	0.68	-	-	-	0.34
19	Transfrs & Generators	C203	0.52	0.52	0.52	-	-	-	-	0.26	-	-	-	0.26
20	Analog Electronic Ckts	C204	1.00	1.00	0.67	-	0.67	-	-	0.33	-	-	-	-

Sl. No	Course	Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
21	Digital System Design	C205	0.88	0.88	-	-	0.29	-	0.29	0.29	0.29	-	-	0.29
22	Electr. & Eclectrn Measure.	C206	1.16	0.62	-	-	-	-	-	0.89	-	-	-	-
23	Electronics Laboratory	C207	2.84	2.84	1.89	-	-	1.89	-	0.95	0.95	-	-	1.89
24	Electrical Machines Lab-I	C208	2.96	1.98	1.98	-	-	-	0.99	0.99	-	0.99	0.99	1.98
25	Engineering Maths IV	C209	1.89	1.26	0.63	-	-	-	-	-	-	-	-	0.63
26	Power Generation and Economics	C210	1.78	1.19	-	-	-	1.78	1.78	-	-	-	-	-
27	Transmission and distribution	C211	1.55	1.03	1.03	1.03	-	-	-	1.03	-	-	-	0.52
28	Electric Motors	C212	0.96	0.96	0.96	-	-	-	-	0.48	-	-	-	0.48
29	Electromagnetic Theory	C213	1.33	1.33	0.89	-	-	-	-	0.44	-	-	-	-
30	Operational amplifier and Linear ICs	C214	0.99	-	0.99	0.99	-	-	-	-	-	-	-	-
31	Electric machine Lab II	C215	2.67	1.78	1.78	-	-	-	0.89	0.89	-	0.89	0.89	1.78
32	Operational Amplifier and Linear ICs Lab	C216	2.76	2.76	-	-	-	-	-	-	2.76	2.76	-	-
33	Management & Entrepreneurship	C301	1.60	-	-	-	-	-	-	1.60	1.60	1.60	1.60	1.60
34	Microcontroller	C302	1.62	1.08	0.54	-	-	-	-	0.54	-	0.54	-	0.54
35	Power Electronics	C303	1.31	1.22	0.87	-	-	-	-	0.87	-	-	-	0.87
36	Signals & Systems	C304	1.03	1.03	1.03	-	-	-	-	0.52	-	-	-	0.52
37	Estimating & Costing	C307	1.50	1.07	1.61	-	-	1.61	1.07	1.61	1.07	1.07	1.61	-
38	Programmable Logic Controllers	C310	1.90	-	-	-	1.90	-	-	-	-	-	-	-
39	Renewable energy sources	C311	0.76	0.76	-	-	0.38	-	-	0.76	-	-	-	-
40	Microcontroller Lab	C313	2.95	1.97	-	-	0.98	-	-	0.98	1.97	0.98	-	0.98
41	Power Electronics Lab	C314	1.97	1.97	0.98	-	-	-	-	0.98	1.97	1.97	-	-
42	Control System	C315	1.83	1.83	-	-	-	-	0.61	0.61	0.61	-	-	0.61
43	Power System Analysis-I	C316	1.70	1.70	1.13	1.13	-	-	-	1.13	-	-	-	0.57
44	Digital Signal Processing	C317	1.06	0.71	0.71	-	0.35	-	-	0.35	-	-	-	0.35
45	Electrical Machine Design	C318	1.83	1.83	1.22	-	-	-	-	1.83	-	-	-	-
46	Computer Aided Electrical Drawing	C319	1.41	1.41	1.41	-	-	-	-	0.70	-	-	-	0.70
47	Sensors &Transducers	C324	1.75	1.17	1.17	-	-	1.17	-	1.17	-	-	-	1.17
48	Control System Lab	C327	2.95	1.96	0.98	-	0.98	-	-	0.98	1.96	0.98	-	0.98
49	Digital Signal Processing Lab	C328	1.91	0.95	-	-	-	-	-	-	1.91	0.95	-	-
50	Power System Analysis-II	C401	2.00	2.00	1.34	1.34	1.34	0.67	-	1.34	1.34	0.67	-	1.34
51	Power System Protection	C402	2.17	1.30	1.45	-	-	-	-	1.16	-	1.45	-	1.45
52	High Voltage Engineering	C403	1.94	1.94	1.29	-	-	1.29	-	1.29	1.29	1.29	-	0.65

Sl. No	Course	Code	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
53	Utilization of Electrical Power	C405	1.81	1.81	1.66	-	-	1.21	1.21	1.21	1.21	-	-	1.21
54	Testing & Commissioning Of Power System Appartus	C409	1.15	1.15	1.15	-	-	-	-	0.58	-	-	-	0.58
55	Power System Simulation Laboratory	C412	2.95	2.95	1.97	1.97	1.97	1.97	-	1.97	1.97	1.97	-	1.97
56	Relay & High Voltgae Laboratory	C413	3.00	2.00	-	-	-	-	-	1.00	2.00	1.00	-	-
57	Project Phase I + Seminar	C414	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
58	Power System Operation & Control	C415	1.44	1.44	0.96	0.48	0.96	-	-	0.96	-	0.96	-	0.48
59	Industrial Drives & Applications	C416	2.11	2.11	1.41	-	0.70	-	-	-	-	-	-	-
60	Smart Grid	C417	1.80	1.80	1.20	1.20	1.20	0.60	-	0.60	0.60	0.60	-	0.60
61	Internship	C421	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
62	Project Work Phase - II	C422	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
63	Seminar	C423	2.37	2.37	2.37	1.58	2.37	1.58	2.37	2.37	2.37	1.58	-	-
Direct Attainment (A)			**1.75**	**1.50**	**1.32**	**1.39**	**1.26**	**1.48**	**1.42**	**1.02**	**1.68**	**1.40**	**1.51**	**0.96**
Indirect Attainment (B)			**2.45**	**2.44**	**1.29**	**1.29**	**2.28**	**2.41**	**2.41**	**2.29**	**2.38**	**2.34**	**2.43**	**2.21**
Average (0.8A+0.2B)			**1.89**	**1.69**	**1.31**	**1.37**	**1.47**	**1.67**	**1.62**	**1.27**	**1.82**	**1.59**	**1.70**	**1.21**

Criteria Coordinator | Program Coordinator | HOD

The result of evaluation of each PSO for the assessment years 2018-19 is as shown in table below

Attainment of PSOs through Indirect Method

Survey Forms	Weightage in %	PSO1	PSO2
Employer Survey	5	3.00	3.00
Alumni Survey	15	-	-
Senior Exit Survey	15	2.81	2.70
Activity Feedback	35	3.00	3.00
Course Exit Survey	15	2.24	2.19
Placement, Higher Education & Entrepreneurship (PHE)	15	0.68	0.68
Total →		**2.06**	**2.04**

Attainment of PSO through Direct Method

Sl. No	Course	Code	PSO1	PSO2
1	Engg. Mathematics-III	C201	-	-
2	Electric Circuit Analysis	C202	0.68	-
3	Transfrs & Generators	C203	0.78	-
4	Analog Electronic Ckts	C204	0.67	-
5	Digital System Design	C205	0.88	-
6	Electr. & Eclectrn Measure.	C206	0.88	-
7	Electronics Laboratory	C207	2.84	1.89
8	Electrical Machines Laboratory -1	C208	2.96	1.98
9	Engineering Maths Iv	C209	-	-
10	Power Generation And Economics	C210	0.88	-
11	Transmission And Distribution	C211	1.03	-
12	Electric Motors	C212	1.44	-
13	Electromagnetic Theory	C213	1.33	-
14	Operational Amplifier And Linear ICs	C214	0.99	-
15	Electric Machine Lab II	C215	1.51	2.27
16	Operational Amplifier And Linear ICs Lab	C216	2.76	1.84
17	Management & Entrepreneurship	C301	0.80	-
18	Microcontroller	C302	1.62	-

Sl. No	Course	Code	PSO1	PSO2
19	Power Electronics	C303	1.31	-
20	Signals & Systems	C304	1.55	-
21	Estimating & Costing	C307	1.50	-
22	Programmable Logic Controllers	C310	-	1.90
23	Renewable energy sources	C311	1.14	-
24	Microcontroller Lab	C313	2.95	1.97
25	Power Electronics Lab	C314	1.97	0.98
26	Control System	C315	1.83	-
27	Power System Analysis-I	C316	1.13	-
28	Digital Signal Processing	C317	0.71	-
29	Electrical Machine Design	C318	1.83	-
30	Computer Aided Electrical Drawing	C319	2.11	-
31	Sensors &Transducers	C324	1.75	-
32	Control System Lab	C327	2.95	2.95
33	Digital Signal Processing Lab	C328	1.90	2.85
34	Power System Analysis-II	C401	2.00	0.67
35	Power System Protection	C402	2.17	-
36	High Voltage Engineering	C403	1.94	-
37	Utilization of Electrical Power	C405	1.81	-
38	Testing & Commissioning of Power System Apparatus	C409	1.73	-
39	Power System Simulation Laboratory	C412	2.95	1.97
40	Relay & High Voltage Laboratory	C413	1.50	1.00
41	Project Phase I + Seminar	C414	2.40	2.40
42	Power System Operation & Control	C415	1.44	0.48
43	Industrial Drives & Applications	C416	2.11	-
44	Smart Grid	C417	1.80	-
45	Internship	C421	2.40	2.40
46	Project Work Phase - II	C422	2.40	2.40
47	Seminar	C423	2.37	0.79
	Average		**1.72**	**1.81**
	Indirect Attainment (B)		**2.06**	**2.04**
	Average (0.8A+0.2B)		**1.79**	**1.85**

Criteria Coordinator | Program Coordinator | HOD

FACULTY COURSE ASSESSEMENT REPORT(FCAR)

Course Coordinator: **Prof. Hemalata R Zinage** **Class Strength:47**

Semester: VIII **Subject: Power System Operation &Control** **Code: 15EE81**

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	Apply knowledge & competencies to analyze & design electrical & electronics circuits, control and power systems, machines & industrial drives.
PSO2	Use software/hardware tools for the design, simulation and analysis of electrical and electronics systems.

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

CO	Description	Mapped POs	RBTL
C415.1	Describe various levels of controls in power systems, the vulnerability of the system, components, architecture and configuration of SCADA and solve unit commitment problems	PO1,PO2,PO3,PO4,PO5 PO8,PO10,PO12	L3
C415.2	Explain issues of hydrothermal scheduling and solutions to hydro thermal problems	PO1,PO2,PO3,PO4,PO5 PO8,PO10,PO12	L3,L4
C415.3	Explain basic generator control loops, and develop & analyze mathematical models of Automatic Load Frequency Control	PO1,PO2,PO3,PO4,PO5 PO8,PO10,PO12	L3,L4
C415.4	Explain automatic generation control, voltage and reactive power control in an interconnected power system.	PO1,PO2,PO3,PO4,PO5 PO8,PO10,PO12	L3,L4
C415.5	Explain reliability, security, contingency analysis, state estimation and related issues of power systems.	PO1,PO2,PO3,PO4,PO5 PO8,PO10,PO12	L3,L4

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

POs→ / COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C415.1	3	3	2	1	2	-	-	2	-	2	-	1
C415.2	3	3	2	1	2	-	-	2	-	2	-	1
C415.3	3	3	2	1	2	-	-	2	-	2	-	1
C415.4	3	3	2	1	2	-	-	2	-	2	-	1
C415.5	3	3	2	1	2	-	-	2	-	2	-	1
Average	3	3	2	1	2	-	-	2	-	2	-	1

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

PSOs	PSO 1	PSO 2
COs		
C415.1	3	1
C415.2	3	1
C415.3	3	1
C415.4	3	1
C415.5	3	1
Average	3	1

VI. Justification of CO-PO Mapping:

Mapping	Justification
C415.1-PO1	A strong correlation since explaining the concept of mathematical modeling of AVR & ALFC loops requires the knowledge of mathematics and electrical engineering sciences.
C415.1-PO2	A strong correlation forming the mathematical modeling of AVR & ALFC loops requires a certain level of problem analysis skills based on literature research. However, first principles of mathematics, science are required.
C415.1-PO3	A medium correlation since forming the mathematical models of AVR & ALFC loops requires knowledge on designing/developing solutions considering public safety and environmental issues.
C415.1-PO4	A low correlation since explaining the concept requires design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
C415.1-PO5	A low correlation since explaining the concept requires knowledge about usage of modern engineering /software tools.
C415.1-PO8	A medium correlation since after studying these concept students require to apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
C415.1-PO10	A moderate correlation since the study of various levels of controls in power systems, the vulnerability of the system, components, architecture and configuration of SCADA and solve unit commitment problems may contribute for improvement of Verbal/Non-Verbal communication.
C415.1-PO12	A low correlation since understanding various levels of controls in power systems, the vulnerability of the system, components, architecture and configuration of SCADA and solve unit commitment problems will help to continue the learning process.
C 415.2-PO1	A strong correlation since explaining the concept of controlling voltage and reactive power requires the knowledge of mathematics and electrical engineering sciences.
C415.2-PO2	A medium correlation since explaining the concept requires a certain level of problem analysis skills based on literature research. However, first principles of mathematics, science are required.
C415.2-PO3	A medium correlation since explaining the concept require a certain level of knowledge on designing / developing solutions considering public safety and environmental issues
C415.2-PO4	A low correlation since explaining the concept requires design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
C415.2-PO5	A low correlation since explaining the concept requires knowledge about usage of modern engineering /software tools.

C415.2-PO8	A medium correlation since after studying these concept students require to apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
C415.2-PO10	A moderate correlation since the study of issues of hydrothermal scheduling and solutions to hydro thermal problems may contribute for improvement of Verbal/Non-Verbal communication.
C415.2-PO12	A low correlation since understanding issues of hydrothermal scheduling and solutions to hydro thermal problems will help to continue the learning process.
C415.3-PO1	A strong correlation since explaining the concept requires the knowledge of mathematics and electrical engineering sciences.
C415.3-PO2	A medium correlation since explaining the concept requires a certain level of problem analysis skills based on literature research. However, first principles of mathematics, science are required.
C415.3-PO3	A medium correlation since explaining the concept require a certain level of knowledge on designing / developing solutions considering public safety and environmental issues
C415.3-PO4	A low correlation since explaining the concept requires design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
C415.3-PO5	A low correlation since explaining the concept requires knowledge about usage of modern engineering /software tools.
C415.3-PO8	A medium correlation since after studying these concept students require to apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
C415.3-PO10	A moderate correlation since the study of basic generator control loops, and develop & analyze mathematical models of Automatic Load Frequency Control systems may contribute for improvement of Verbal/Non-Verbal communication.
C415.3-PO12	A low correlation since understanding basic generator control loops, and develop & analyze mathematical models of Automatic Load Frequency Control will help to continue the learning process.
C415.4-PO1	A strong correlation since explaining the concept require the knowledge of mathematics and electrical engineering sciences
C415.4-PO2	A medium correlation since explaining the concept requires a certain level of problem analysis skills based on literature research. However, first principles of mathematics, science are required.
C415.4- PO3	A medium correlation since explaining the concept require a certain level of knowledge on designing / developing solutions considering public safety and environmental issues
C415.4- PO4	A low correlation since explaining the concept requires design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
C415.4-PO5	A low correlation since explaining the concept requires knowledge about usage of modern engineering /software tools.
C415.4-PO8	A medium correlation since after studying these concept students require to apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
C415.4-PO10	A moderate correlation since the automatic generation control, voltage and reactive power control in an interconnected power may contribute for improvement of Verbal/Non-Verbal communication.

C415.4-PO12	A low correlation since understanding automatic generation control, voltage and reactive power control in an interconnected power will help to continue the learning process.
C415.5- PO1	A strong correlation since explaining the concept require the knowledge of mathematics and electrical engineering sciences.
C415.5- PO2	A medium correlation since explaining the concept requires a certain level of problem analysis skills based on literature research. However, first principles of mathematics, science are required
C415.5- PO3	A medium correlation since explaining the concept require a certain level of knowledge on designing / developing solutions considering public safety and environmental issues.
C415.5- PO4	A low correlation since explaining the concept requires design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
C415.5-PO5	A low correlation since explaining the concept requires knowledge about usage of modern engineering /software tools.
C415.5-PO8	A medium correlation since after studying these concept students require to apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
C415.5-PO10	A moderate correlation since the study of reliability, security, contingency analysis, state estimation and related issues of power systems may contribute for improvement of Verbal/Non-Verbal communication.
C415.5-PO12	A low correlation since understanding reliability, security, contingency analysis, state estimation and related issues of power systems will help to continue the learning process.

VII. Justification of CO-PSO Mapping :

Mapping	Justification
C415-PSO1	A strong correlation since after studying power system operation & control students will develop an ability to demonstrate knowledge & competencies to analyze & design electrical power systems.
C415-PSO2	A low correlation since after studying the various concepts of power system operation and control students will develop an ability to use software tools for the design, simulation and analysis of electrical power systems to some extent.

VIII. Bench Mark Setting

As the course is revised, CO attainment target is taken as 2.

IX. DIRECT ASSESSMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

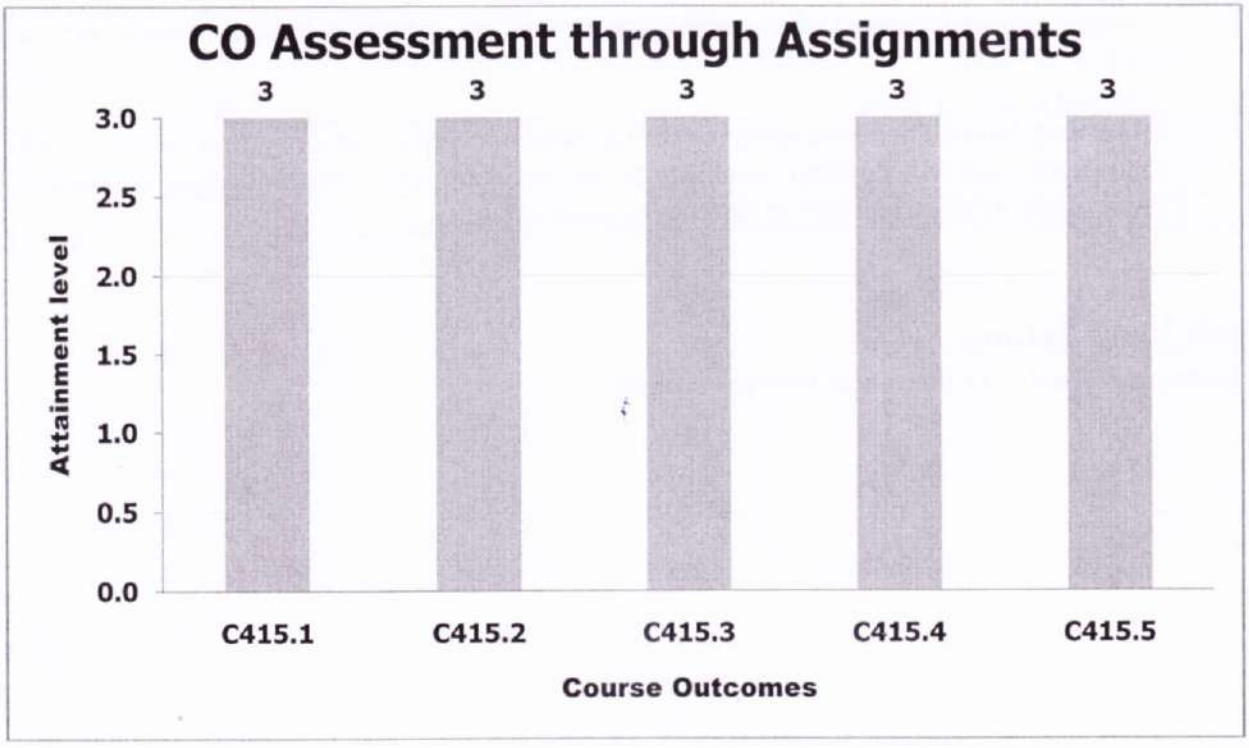
Assessment Tools:

- Continuous assessment
- Laboratory experiments
- End semester exam

1. Assessment through Assignment:

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

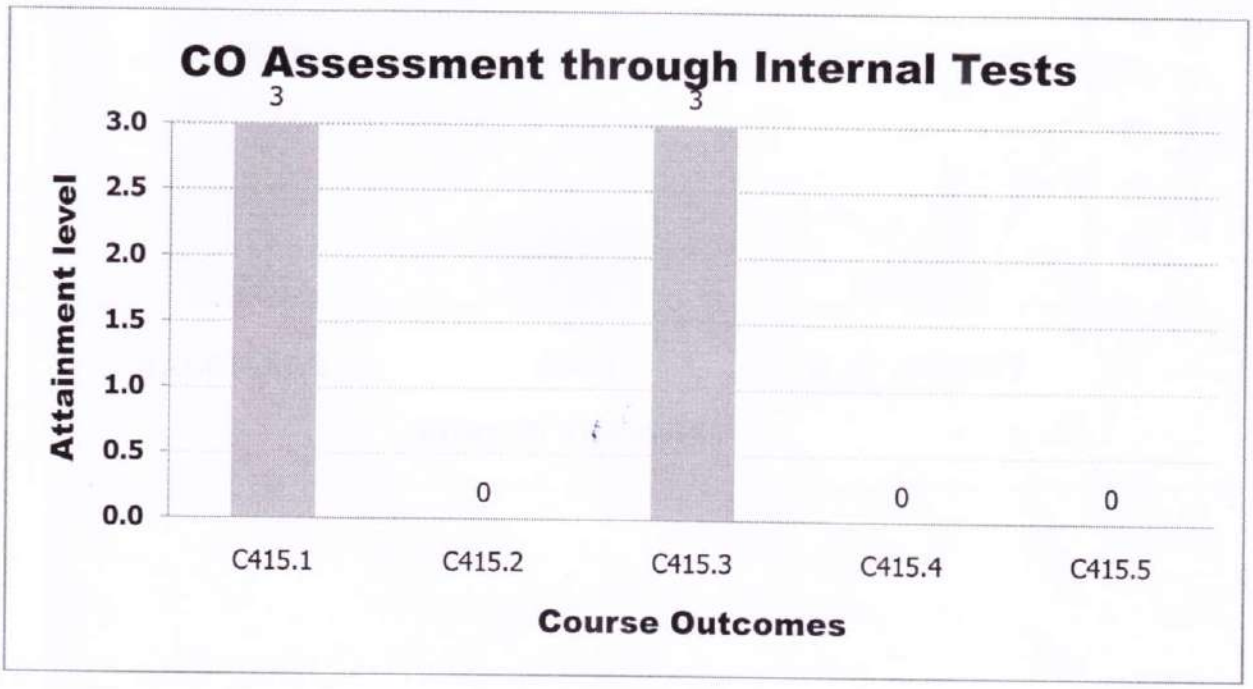
COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO
	A	R	A	R	A	R	A	R	A	R			
C415.1	47	47									100.00	3	1,2,3,4,5,8,10
C415.2			47	47							100.00	3	1,2,3,4,5,8,10,12
C415.3					47	47					100.00	3	1,2,3,4,5,8,10,12
C415.4							47	47			100.00	3	1,2,3,4,5,8,10,12
C415.5									47	47	100.00	3	1,2,3,4,5,8,10,12



2. Assessment through Internal Marks:

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

COs	IA-1				IA-2				IA-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		
C415.1	41	27	37	30									3	1,2,3,4,5,8,10,12
C415.2					36	9							0	1,2,3,4,5,8,10,12
C415.3							38	28					3	1,2,3,4,5,8,10,12
C415.4									37	4			0	1,2,3,4,5,8,10,12
C415.5											30	8	0	1,2,3,4,5,8,10,12

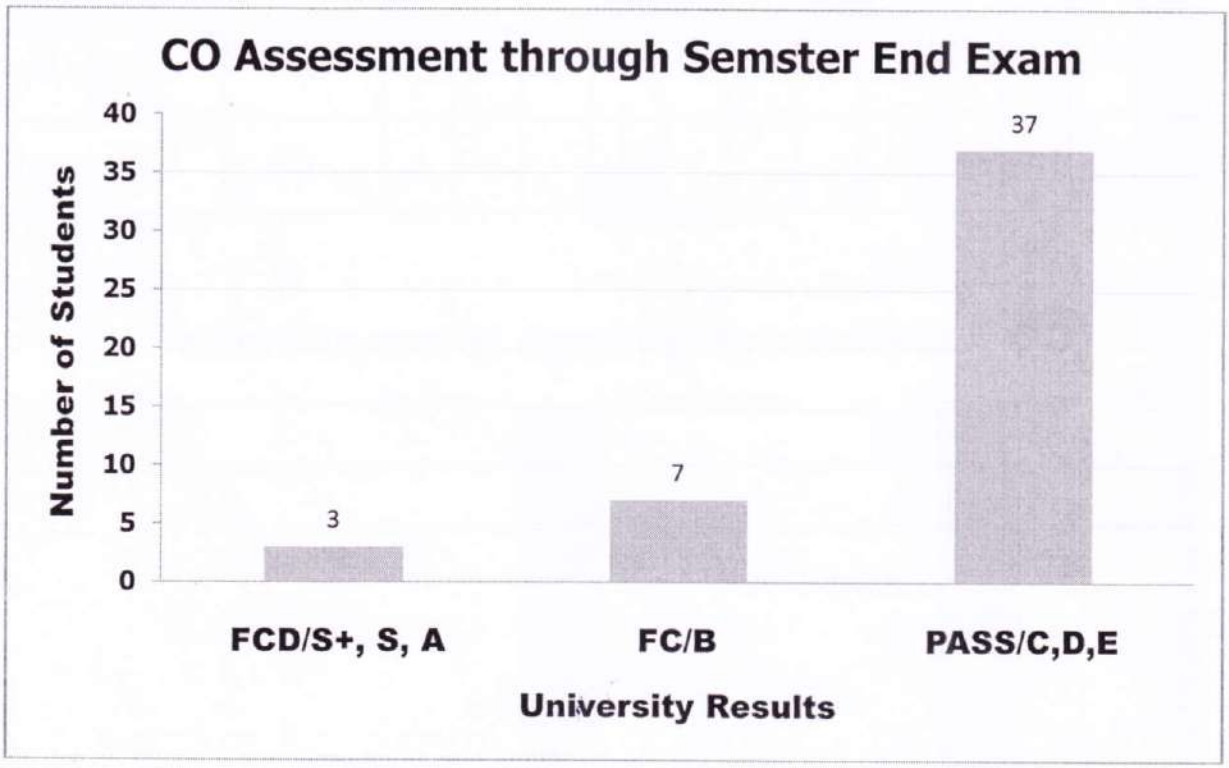


3. Semester End Exam Assessment Based on VTU Exam Results:

COs Attainment Levels:

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

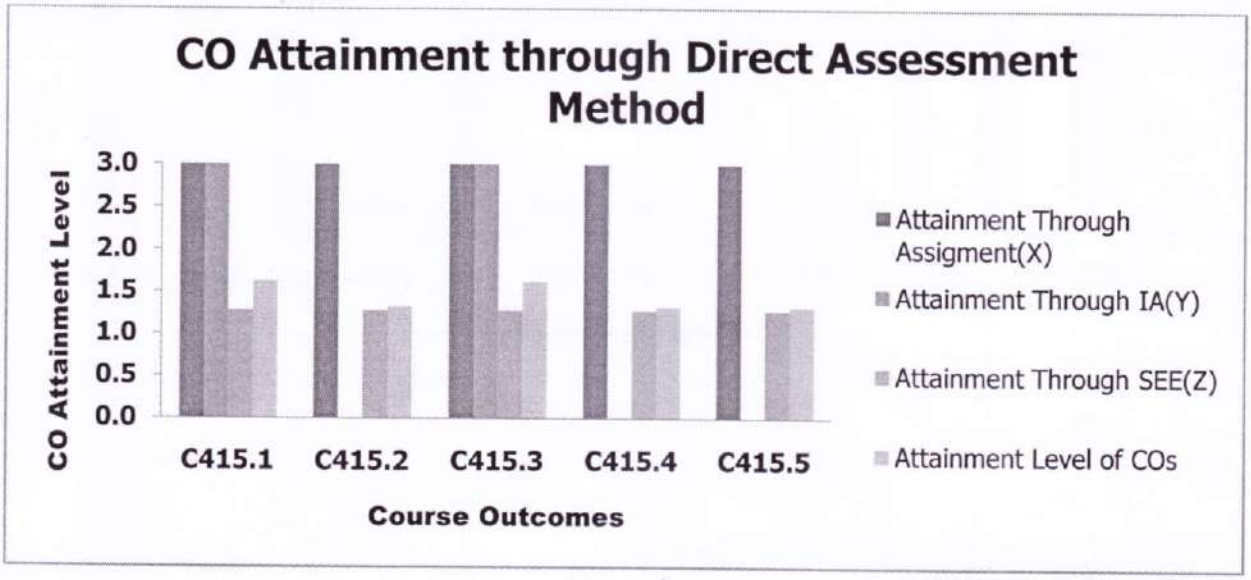
Total no. of Students Appeared	47	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semster End Exams
FCD/S+, S, A	3	9
FC/B	7	14
PASS/C,D,E	37	37
Total Percentage of Passing	100.00%	1.28



4. CO Attainment:

CO Attainment through Direct Assessment Method

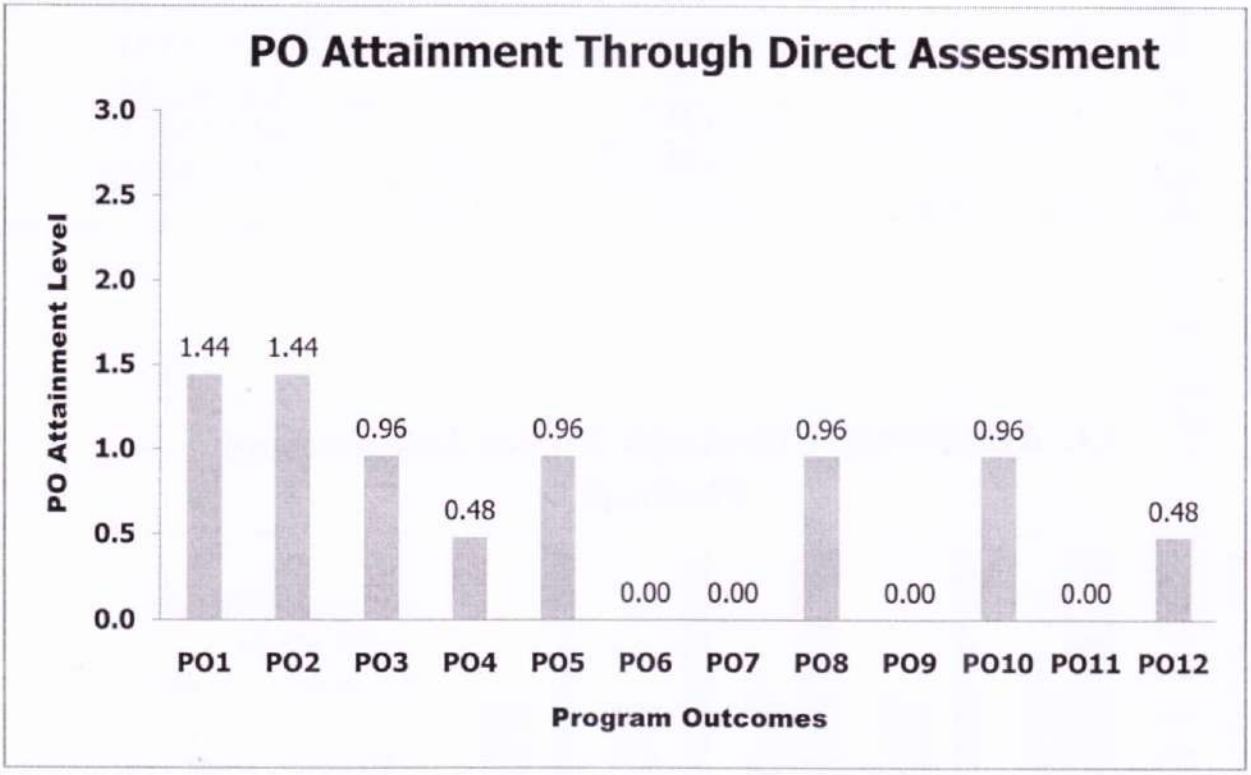
COs	Attainment Through Assignment (X)	Attainment Through IA Test(Y)	Attainment Through Semester End Exam(Z)	Attainment level of CO [0.2(X+Y)/2]+0.8Z	Mapped POs	Mapped PSOs
C415.1	3	3	1.28	1.62	1,2,3,4,5,8,10,12	1,2
C415.2	3	0	1.28	1.32	1,2,3,4,5,8,10,12	1,2
C415.3	3	3	1.28	1.62	1,2,3,4,5,8,10,12	1,2
C415.4	3	0	1.28	1.32	1,2,3,4,5,8,10,12	1,2
C415.5	3	0	1.28	1.32	1,2,3,4,5,8,10,12	1,2
Average				1.44		



5. PO Attainment for the Entire Course:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C415	1.44	1.44	0.96	0.48	0.96	0.00	0.00	0.96	0.00	0.96	0.00	0.48

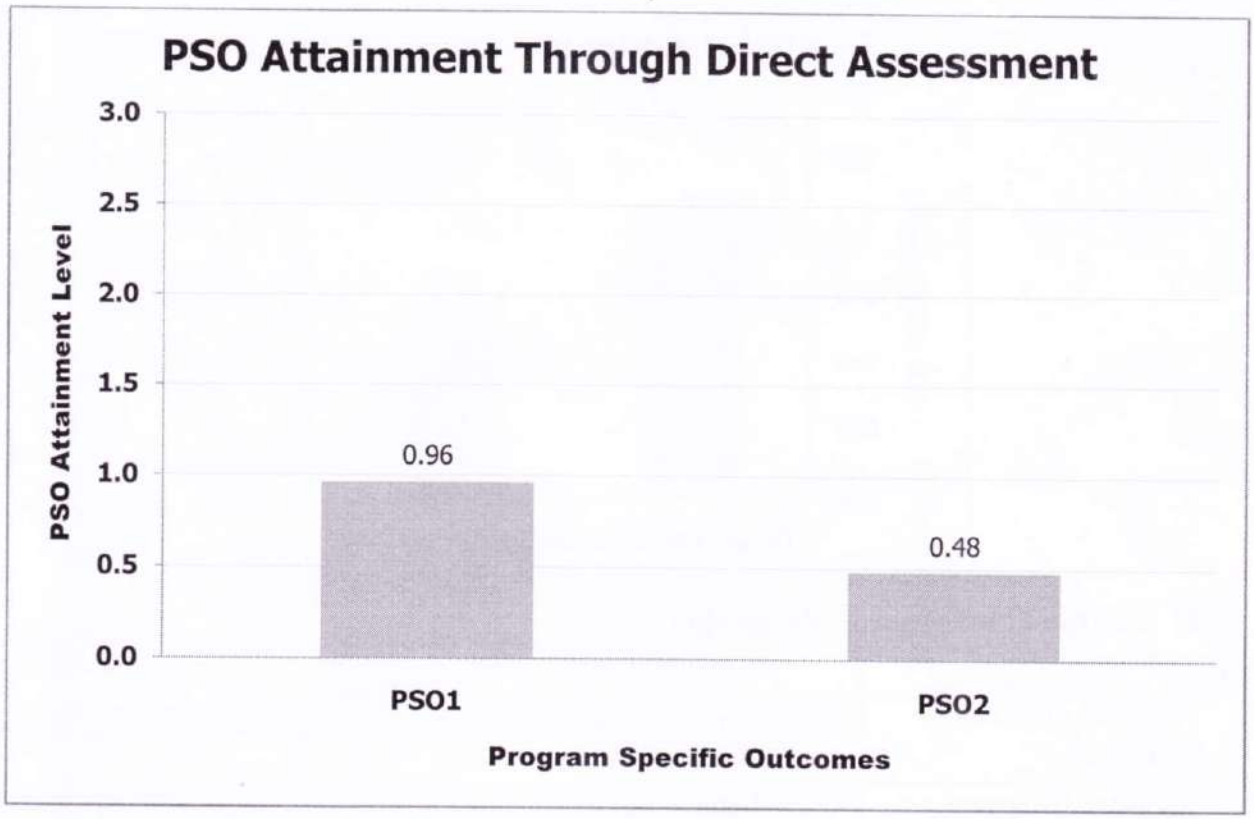
POs attainment value for the present course = (Mapped value * CO attainment average)/3



6. PSO Attainment for the Entire Course:

CO/PSO	PSO1	PSO2
C415	0.96	0.48

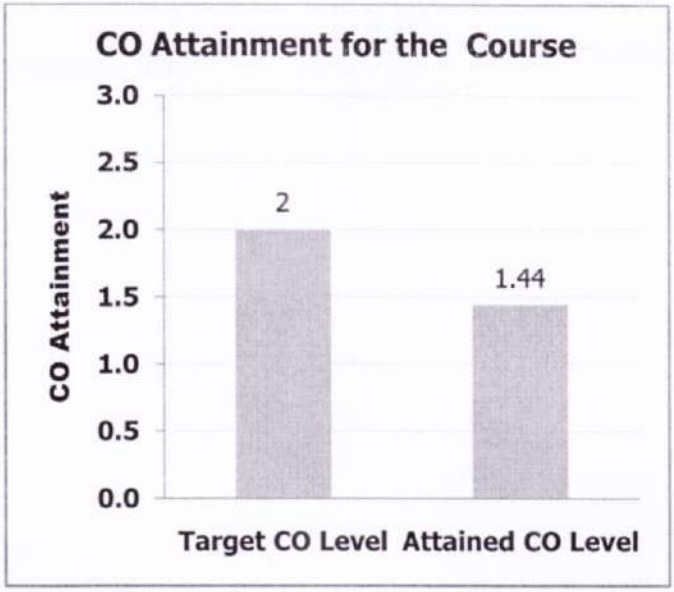
PSOs attainment value for the present course = **(Mapped value * CO attainment average)/3**



7. Target Attainment:

As the course is revised, CO attainment target is taken as 2

Set Target Value (ITV)	2
Attained Value	1.44
New Target Level for the next Exam	2



8. Course Coordinator Remarks:

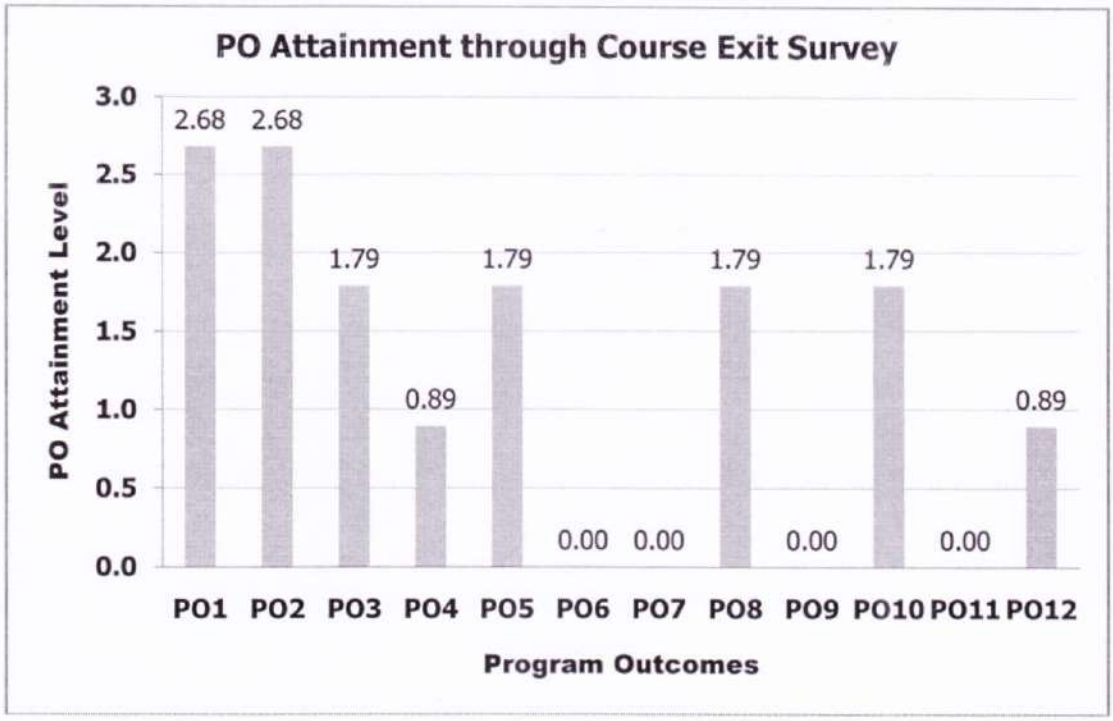
S. No.	Observations	Comments
1	**Impact of Delivery Methods**	Delivery methods are satisfactory. Pedagogy used to deliver lectures is quite satisfactory.
2	**Course Outcome Attainment**	Overall attainment of all course outcomes is moderate as it is observed in CO attainment table.
3	**Scope for Improvement**	Attainment of CO2, CO4 & CO5 need to be improved.
4	**Additional comments (if any)**	Nil

X. INDIRECT ASSESSMENT OF PO & PSO THROUGH COURSE EXIT SURVEY (CES)

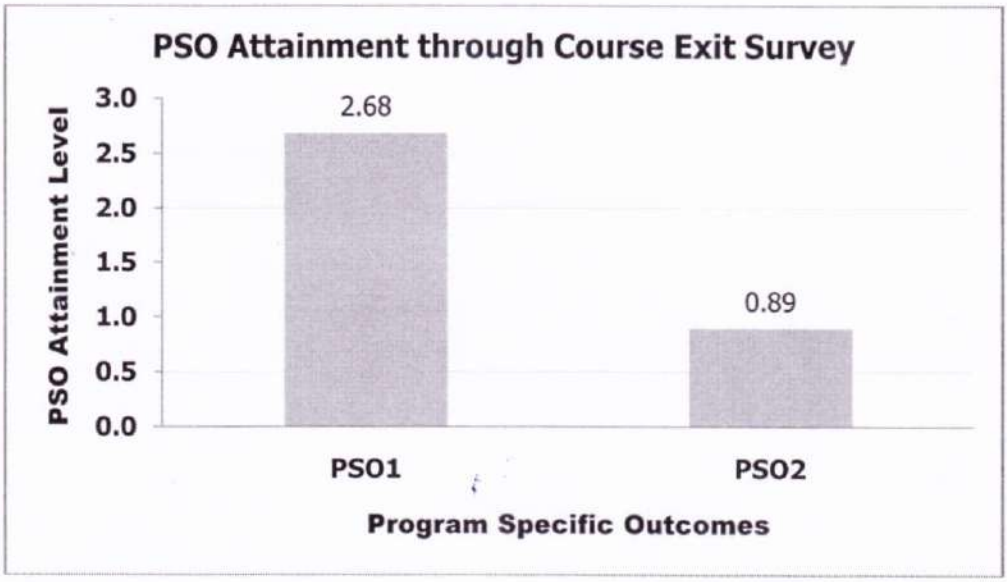
PO Attainment = (Mapped value * CES attainment value)/3

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C415	2.68	2.68	1.79	0.89	1.79	0.00	0.00	1.79	0.00	1.79	0.00	0.89

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



CO/PSO	PSO1	PSO2
C415	2.68	0.89



Prof H. R. Zinage
Name & Signature of Course Coordinator

Prof H. R. Zinage
Name & Signature of Module Coordinator

6/5/22
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

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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**

Prof. S. A. Goudadi
Dept. NBA Coordinator

Hirasugar Institute of Technology NIDASOSHI. 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.

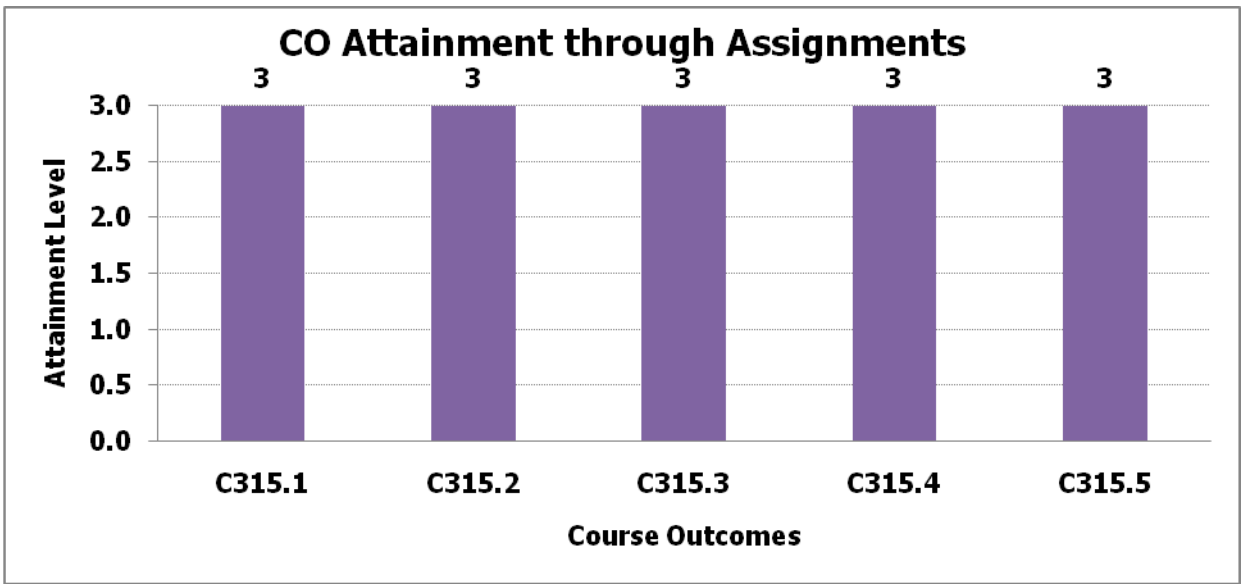
Assessment Tools:

- 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 %)

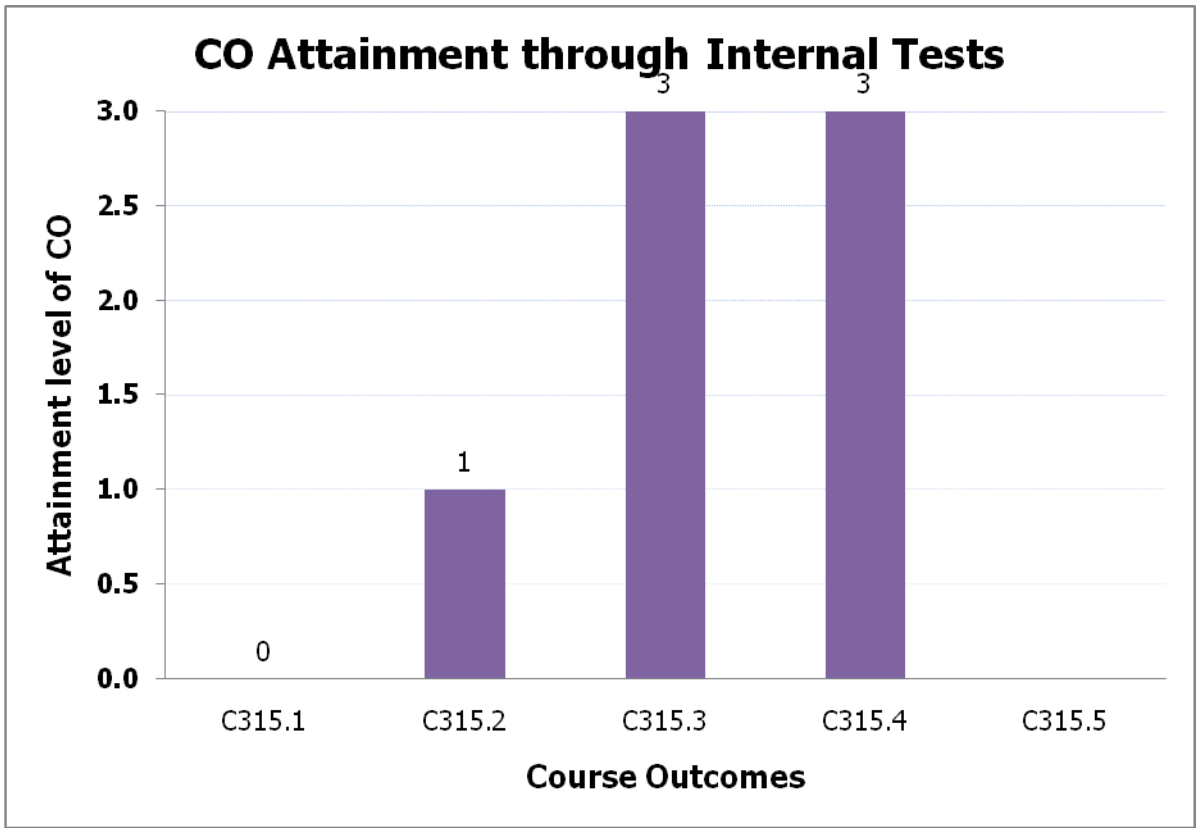
COs	Assignment -1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO	Mapped PSO
	A	R	A	R	A	R	A	R	A	R				
C315.1	62	62									100.00	3	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.2			62	62							100.00	3	PO1,PO2,PO3,PO6,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

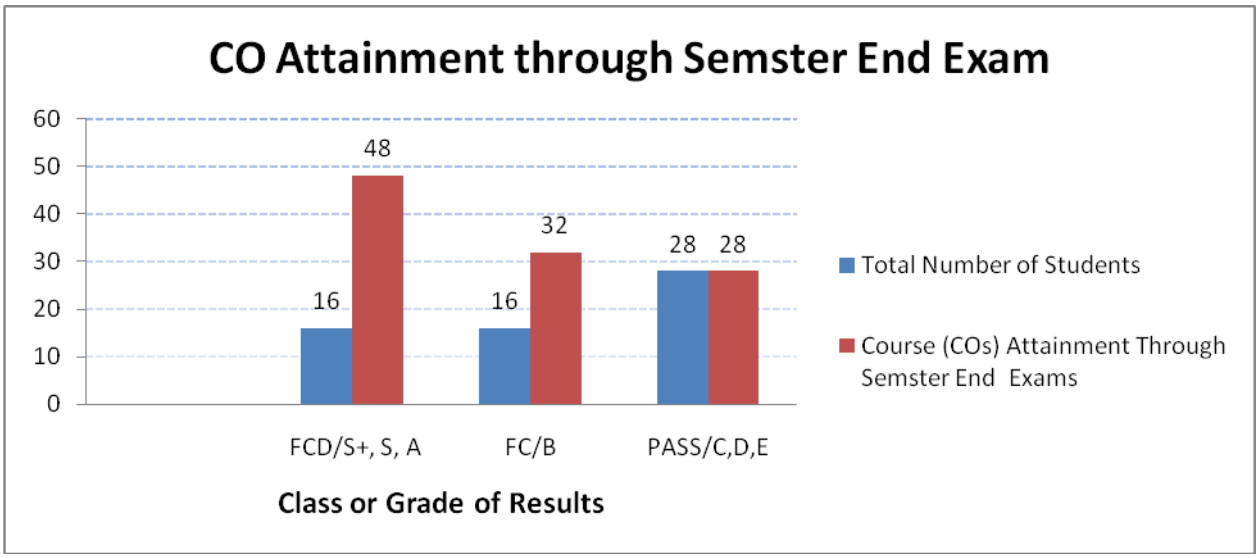
COs	IA Test-1				IA Test -2				IA Test -3				Attainment level of CO	Mapped PO	Mapped PSO
	Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4		Q.No.1 OR Q. No. 2		Q.No.3 OR Q. No. 4				
	A	R	A	R	A	R	A	R	A	R	A	R			
C315.1	56	30	54	24									0	PO1,PO2,PO3,PO6, PO8,PO11,PO12	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:

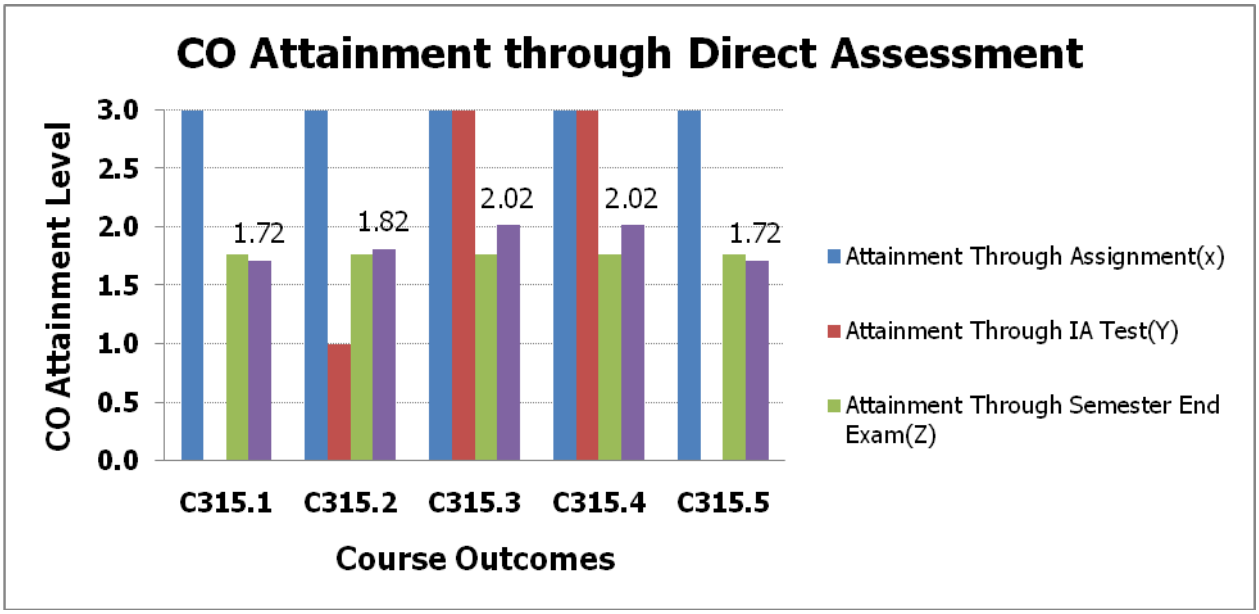
COs Attainment Levels:
FCD: S+, S, & A = 3; FC (B) = 2; Pass: C, D, & E = 1; Fail = 0

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:

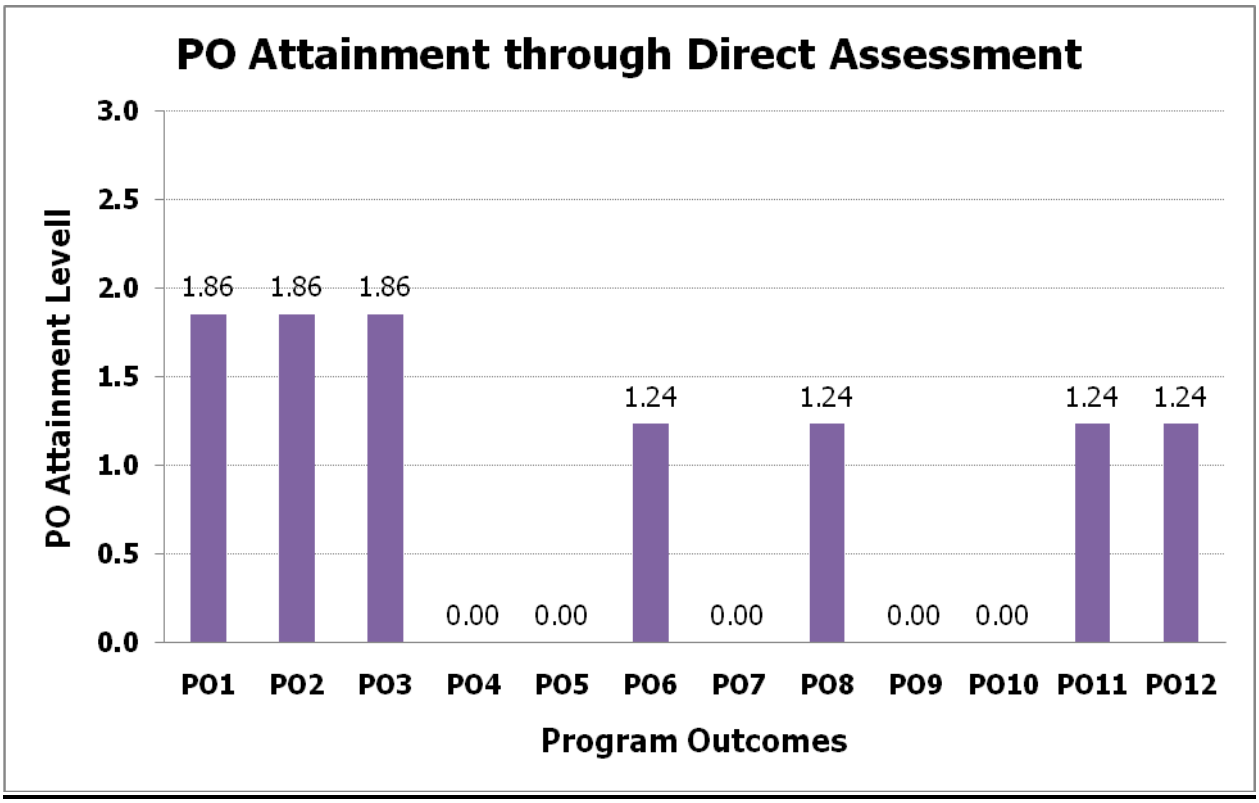
COs	Attainment Through Assignment (X)	Attainment Through IA Test(Y)	Attainment Through Semester End Exam(Z)	Attainment level of CO [0.2(X+Y)/2]+0.8Z	Mapped POs	Mapped PSOs
C315.1	3	0	1.77	1.72	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C315.2	3	1	1.77	1.82	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2,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

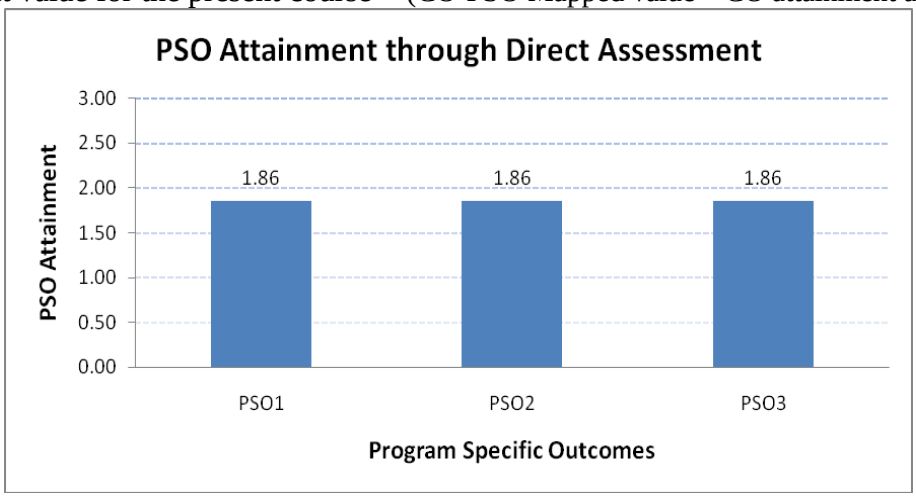
POs attainment value for the present course = (CO-PO Mapped value * CO attainment average)/3



6. PSO Attainment for the Entire Course:

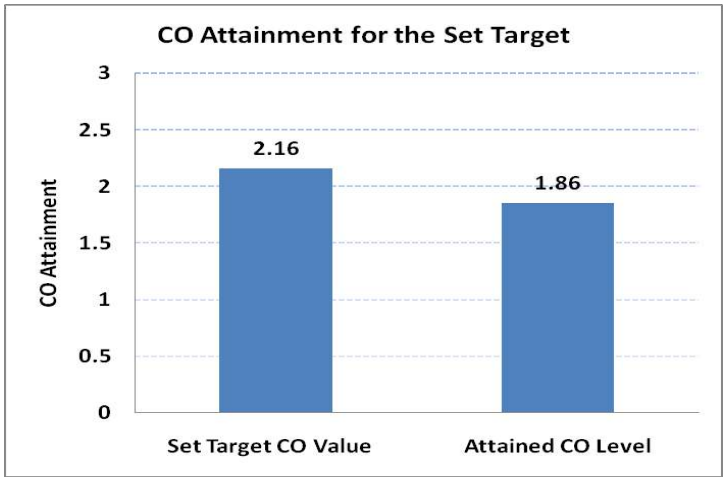
CO	PSO1	PSO2	PSO3
Attainment Level	1.86	1.86	1.86

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 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

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	-

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: 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:

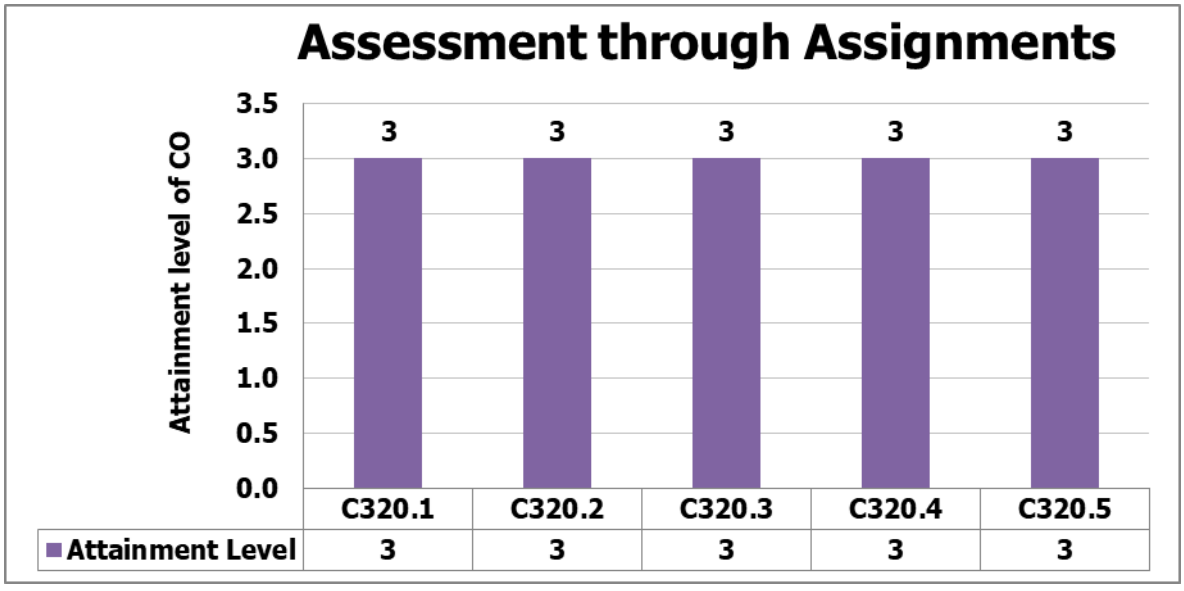
- Continuous assessment
- Laboratory experiments
- End semester exam

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

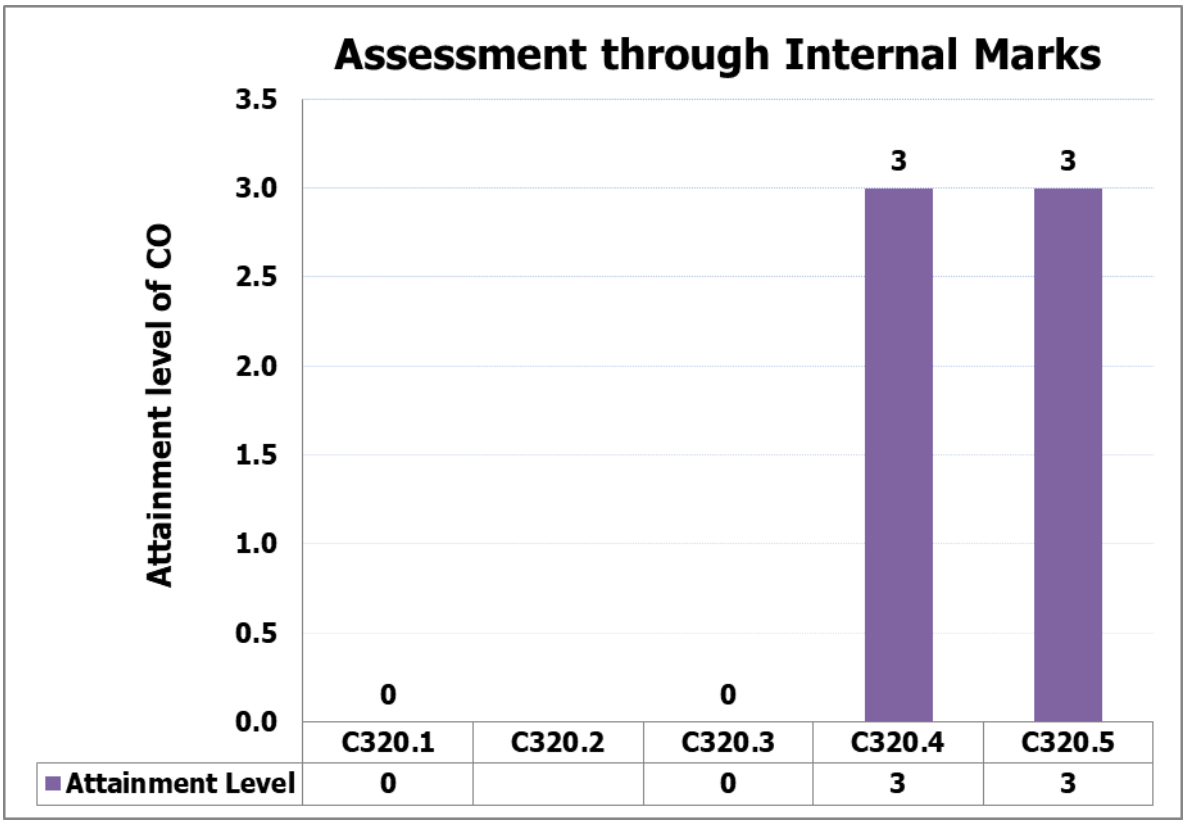
	A	R	A	R	A	R	A	R	A	R	of CO in Percentage	of CO		
C318.1	60	60									100.00	3	PO1,PO2,PO3, PO6,PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.2			60	60							100.00	3	PO1,PO2,PO3, PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.3					60	60					100.00	3	PO1,PO2,PO3, PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.4							60	60	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

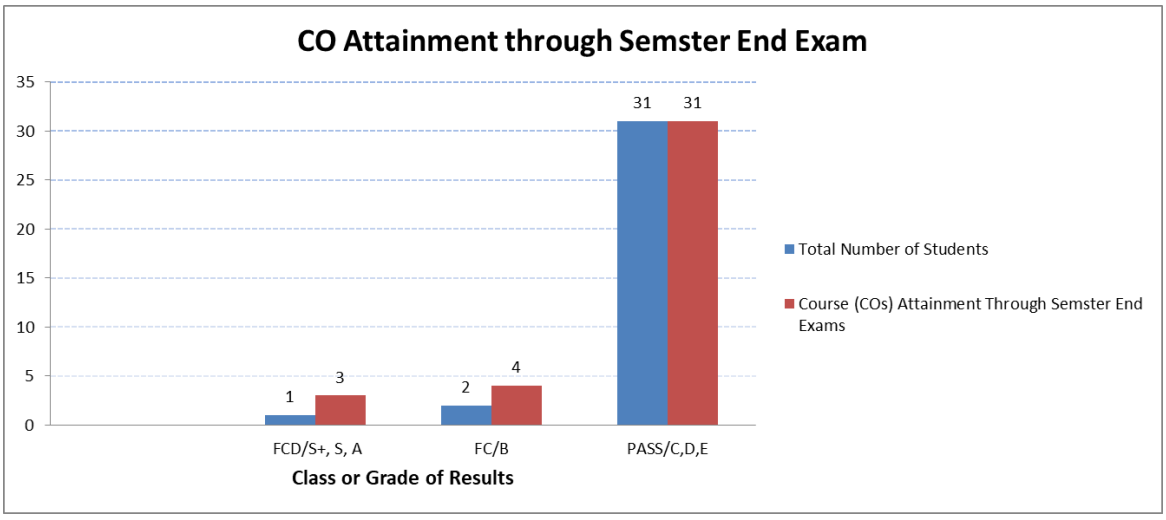


3. CO Attainment through Semester End Exam:

COs Attainment Levels:

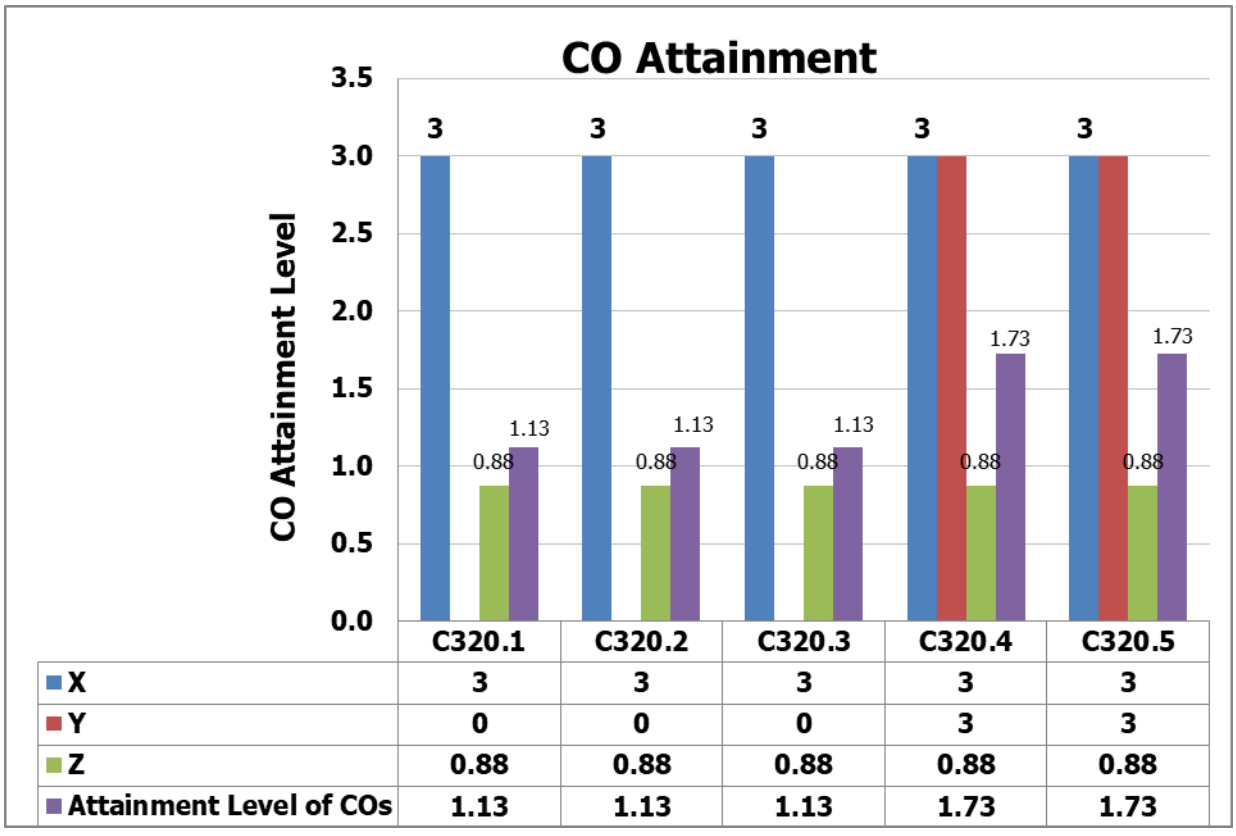
FCD: S+, S, & A = 3; FC (B) = 2; Pass: C, D, & E = 1; Fail = 0

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:

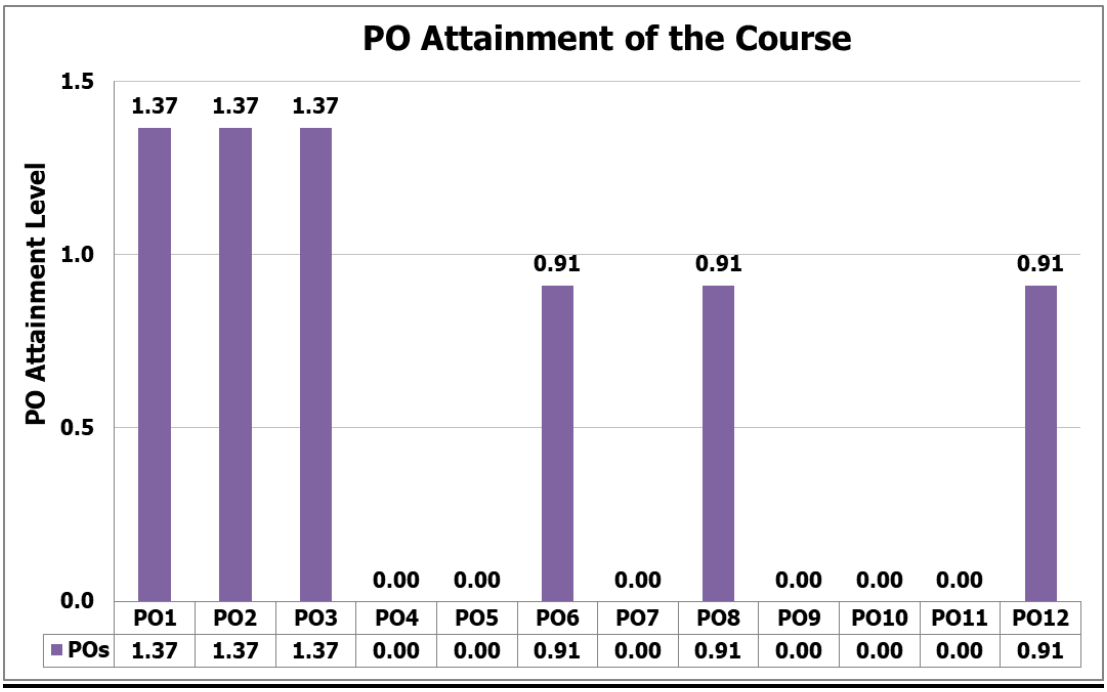
COs	Attainment Through Assignment (X)	Attainment Through IA Test(Y)	Attainment Through Semester End Exam(Z)	Attainment level of CO [0.2(X+Y)/2]+0.8Z	Mapped POs	Mapped PSOs
C318.1	3	0	0.88	1.13	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2, PSO3
C318.2	3	0	0.88	1.13	PO1,PO2,PO3,PO6, PO8,PO11,PO12	PSO1,PSO2,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

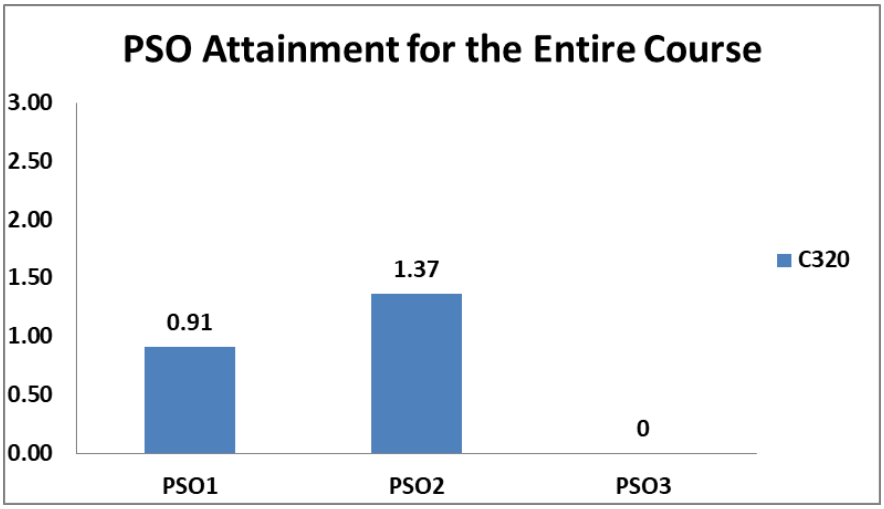
POs attainment value for the present course = (Mapped value * CO attainment average)/3



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**

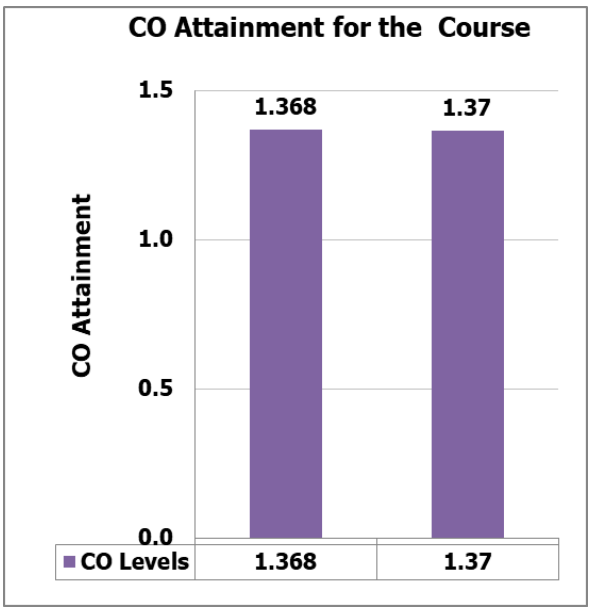


7. Target Attainment:

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

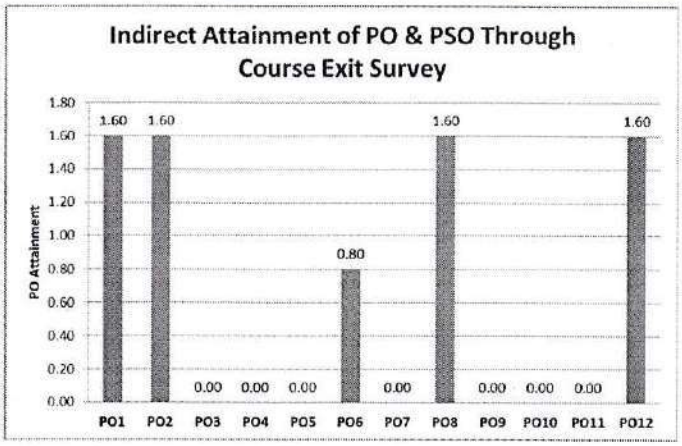


8. Indirect Attainment of PO & PSO Through Course Exit Survey (CES)

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

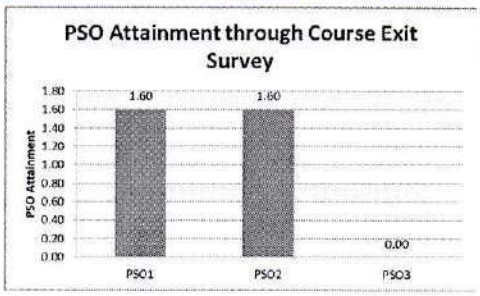
CO Attainment Value through Course Exit Survey:	2.52

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.

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

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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:	**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:

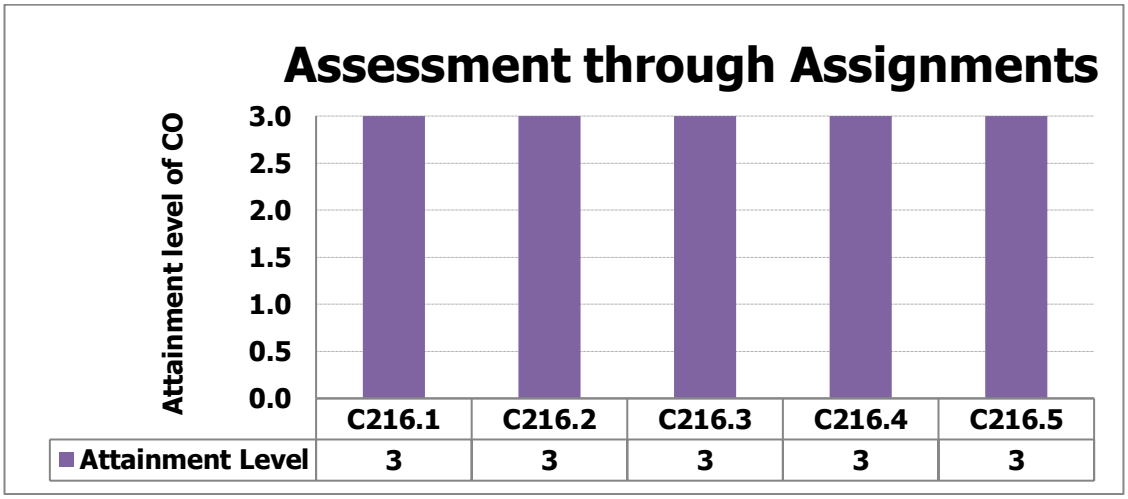
- Lecture by Teacher
- PPT or Online demo etc.

Assessment Tools:

- Continuous assessment
- End semester exam

I. Assessment through Assignment:

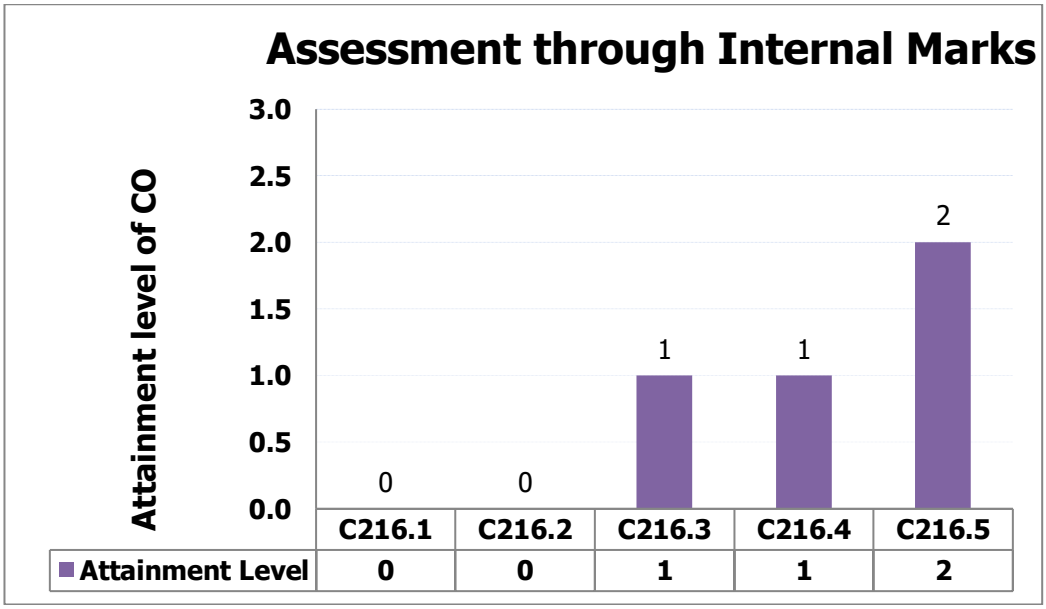
COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO
	A	R	A	R	A	R	A	R	A	R			
C216.1	32	32									100.00	3	PO1-PO9 & PO12
C216.2			32	32							100.00	3	PO1-PO9 & PO12
C216.3					32	32					100.00	3	PO1-PO9 & PO12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

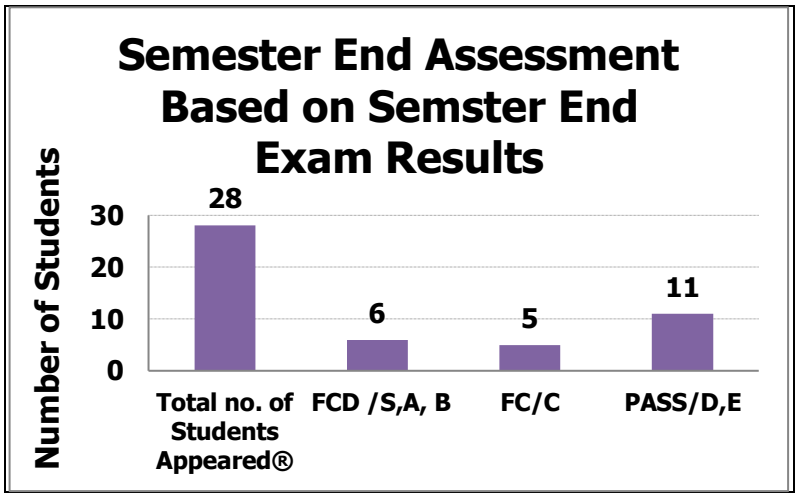
A: Appeared R: Reached Low =1 (50-60 %) Medium =2 (61-70 %) High =3 (above 70 %)

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



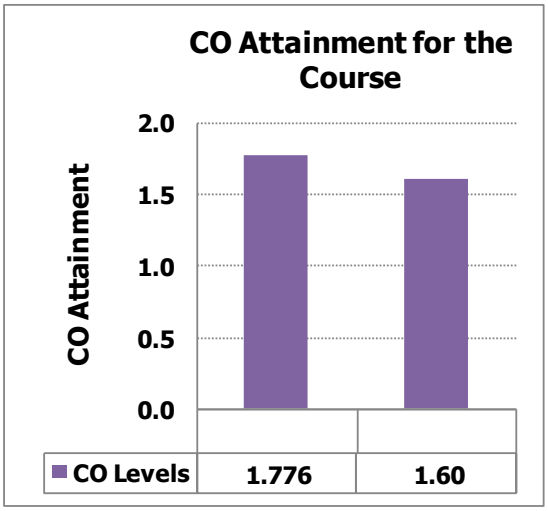
III. Semester End Exam Assessment Based on VTU Exam Results:

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

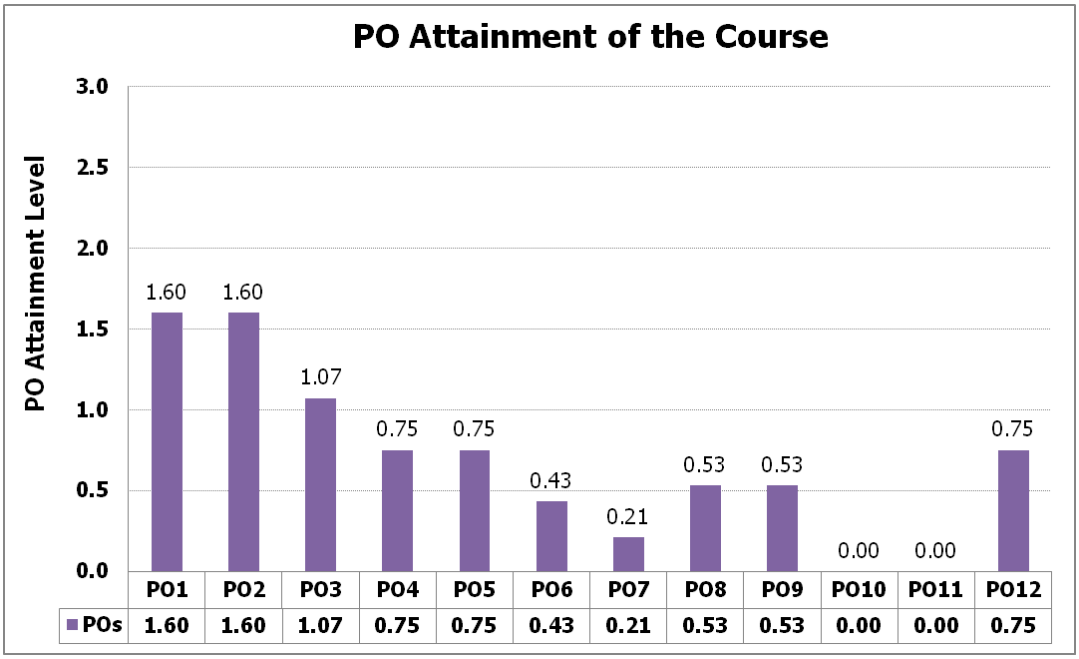


V. PO Attainment for the Entire Course:

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

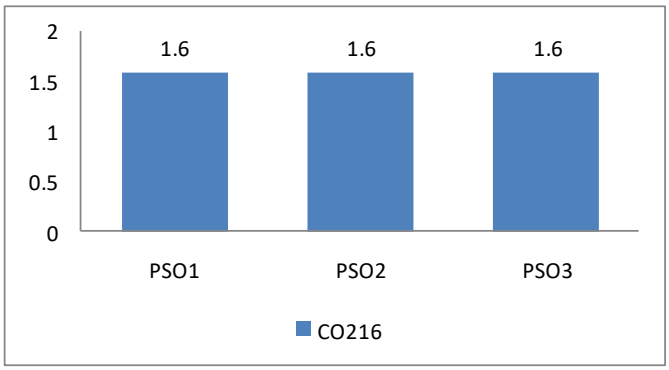


VI. PSO Attainment:

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**

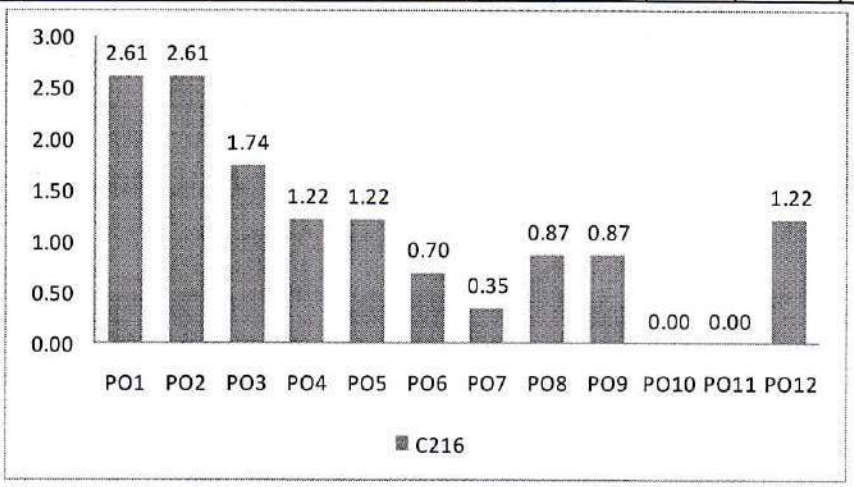
Note: Mapped value is available in section 5 given above.

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

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

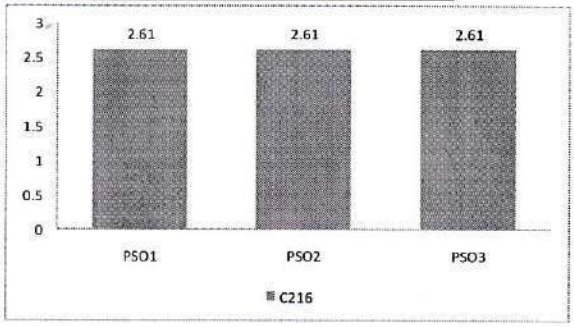
CO Attainment Value through Course Exit Survey:	2.61

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 Program Outcomes and Program Specific Outcomes

PO/PSO Attainment through Direct Assessment Method:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	1.73	1.69	1.52	1.60	1.40	1.63	2.08	1.04	1.95	1.24	1.88	1.06	1.43	1.29

PO/PSO Attainment through Indirect Assessment Methods:

S. No.	Indirect Method	Weightage (%)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Employer Survey	5	3	2.75	2.75	2.75	2.75	2.75	2.75	3	3	2.75	2.5	2.5	2.75	3
2	Alumni Survey	15	2.77	2.77	2.15	2.38	2.17	1.62	1.62	2.23	2.46	2.46	--	2.17	2.00	1.00
3	Senior Exit Survey	15	2.60	2.68	2.68	2.55	2.66	2.74	2.77	2.81	2.81	2.79	2.66	2.81	2.79	2.77
4	Activity Feedback	35	3	--	--	--	3	--	3	3	3	3	3	3	3	3
5	Course Exit Survey	15	2.30	2.34	2.01	1.97	1.85	2.39	2.61	1.41	2.14	1.54	2.34	1.43	1.98	1.72
6	Placement, Higher Education and Entrepreneurship	15	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
	Indirect Assessment(B)		**2.53**	**1.49**	**1.34**	**1.35**	**2.37**	**1.33**	**2.42**	**2.35**	**2.49**	**2.39**	**2.11**	**2.32**	**2.38**	**2.20**

PO/PSO Attainment through Direct and Indirect Assessment Methods:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	1.73	1.69	1.52	1.60	1.40	1.63	2.08	1.04	1.95	1.24	1.88	1.06	1.43	1.29
Indirect Assessment(B)	2.53	1.49	1.34	1.35	2.37	1.33	2.42	2.35	2.49	2.39	2.11	2.32	2.38	2.20
AVG(0.8*A+0.2*B)	**1.89**	**1.65**	**1.48**	**1.55**	**1.59**	**1.57**	**2.15**	**1.30**	**2.06**	**1.47**	**1.92**	**1.31**	**1.62**	**1.47**

Raptadar 8/11/2019
Criteria Coordinator

8/11/2019
HOD.D
Computer Science & Engg.
HIT, Nidasoshi.

PO Attainment through Direct Assessment Method

Assessment Year - 2018-19

Sl. No	Course	Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12
1	Engg. Mathematics-I	C101	1.25	0.83	--	--	--	--	--	--	--	--	--	0.42
2	Engg. Physics	C102	1.59	--	1.06	--	0.53	--	--	0.53	--	0.53	--	0.53
3	Basic Civil Engg.	C103	1.64	1.64	1.09	1.09	--	0.55	--	0.55	--	--	0.55	1.09
4	Elements of Mechanical Engg.	C104	1.34	1.34	--	--	--	0.67	--	--	--	--	--	2
5	Basic Electrical Engg.	C105	0.84	0.84	--	--	--	--	--	--	--	--	--	--
6	Workshop Practice Lab	C106	2.13	1.33	2.4	1.6	--	2.4	--	2.4	1.6	1.6	2.4	0.8
7	Engg. Physics Lab	C107	2.76	--	--	--	0.92	--	--	0.92	1.84	1.82	--	0.92
8	Const. of India Prof. Ethics & Human Rights	C108	--	--	--	--	1.12	--	--	0.75	--	--	--	--
9	Engg. Mathematics-II	C109	1.33	0.89	--	--	--	--	--	--	--	--	--	0.44
10	Engineering Chemistry	C110	1.36	1.09	0.91	--	--	0.82	--	--	--	--	--	0.45
11	Programming in C & Data Structures	C111	1.62	1.3	1.4	--	--	--	--	0.54		0.54	--	0.54
12	Computer Aided & Engg. Drawing	C112	0.87	--	--	--	1.75	--	--	--	--	2.62	--	--
13	Basic Electronics	C113	1.11	0.74	0.96	0.59	0.74	1.11			0.74	0.96	0.59	1.11
14	Computer Programming Lab	C114	2.83	2.83	2.83	--	--	--	--	0.94	1.89	1.89	--	0.94
15	Engg. Chemistry Lab	C115	2.96	2.96	2.96	--	--	1.98	--	--	--	--	--	0.99
16	Environmental Science	C116	2.3	1.53	1.53	--	--	1.53	1.53	0.77	--	--	0.77	0.77
17	Engineering Mathematics -III	C201	2.07	1.38	0.69	--	--	--	--	--	--	--	--	0.69
18	Analog & Digital Electronics	C202	1.85	1.85	1.85	--	--	--	--	1.23	--	0.62	--	1.23
19	Data Structures & Applications	C203	1.49	1.49	1.24	--	--	--	--	0.99	--	0.99	--	--
20	Computer Organization	C204	0.99	1.09	1.09	--	--	--	--	0.50	--	0.50	--	0.50
21	Unix & System Programming	C205	2.13	2.13	1.42	--	--	--	--	0.71	--	0.71	--	0.71
22	Discrete Mathematical Structures	C206	1.26	1.26	0.84	--	--	--	--	0.84	--	0.84	--	--

23	Analog & Digital Electronics Lab	C207	2.20	2.20	2.20	1.47	1.47	--	--	1.47	1.47	1.47	--	1.47
24	Data Structures Lab	C208	1.66	1.66	1.11	--	1.11	--	--	1.11	1.11	1.11	--	1.11
25	Engineering Mathematics -IV	C209	2.35	1.57	0.78	--	--	--	--	--	--	--	--	0.78
26	Software Engineering	C210	1.13	1.69	1.69	1.13	1.41	1.13	--	1.13	--	0.56	1.69	1.13
27	Design & Analysis of Algorithms	C211	1.19	1.19	1.19	--	--	--	--	1.19	--	1.19	--	1.19
28	Microprocessor & Microcontroller	C212	1.33	1.33	0.89	--	--	--	--	0.44	--	0.44	--	0.44
29	Object Oriented Concepts	C213	0.83	0.83	0.83	--	0.41	--	--	0.41	--	0.41	--	0.83
30	Data Communications	C214	0.45	0.90	--	--	0.45	--	--	0.45	--	0.45	--	0.45
31	Design & Analysis of Algorithms Lab	C215	2.58	2.58	1.72	--	--	--	--	0.86	1.72	1.72	--	1.72
32	Microprocessors Lab	C216	1.91	1.91	1.91	0.96	0.96	--	--	0.96	1.91	1.91	--	0.96
33	Management & Entrepreneurship for IT	C301	1.52	1.52	--	--	--	1.18	1.01	1.52	1.52	1.52	1.52	1.27
34	Computer Networks	C302	1.15	1.15	1.15	1.15	--	--	--	0.57	--	1.15	--	1.15
35	Database Management System	C303	1.37	1.37	0.91	--	--	--	--	0.46	--	0.46	--	0.46
36	Automata Theory & Computability	C304	1.39	1.39	1.11	--	--	--	--	0.93	--	0.93	--	--
37	Introduction to Software Testing	C306	1.19	1.19	1.19	1.19	--	--	--	0.60	--	1.19	--	0.60
38	Advanced Java & J2EE	C307	1.18	1.18	1.18	--	1.18	--	--	0.47	--	0.47	--	1.41
39	Dotnet Framework for Application development	C312	1.50	1.50	1.50	0.50	1.50	--	--	1.00	--	1.00	--	1.50
40	Computer Networks Lab	C314	2.43	2.43	1.62	1.62	1.62	--	--	0.81	1.62	1.62	--	0.81
41	DBMS Lab with Mini Project	C315	2.84	2.84	1.89	1.89	1.89	--	--	0.95	1.89	1.89	1.89	0.95
42	Cryptography, Network Security & Cyber Law	C316	1.64	1.64	0.82	--	--	--	--	1.09	--	0.55	--	0.55
43	Computer Graphics & Visualization	C317	1.11	0.83	0.93	--	1.39	--	--	0.46	--	0.46	--	0.46
44	System Software and Compiler Design	C318	1.74	1.39	1.39	--	--	--	--	1.16	--	1.16	--	--
45	Operating Systems	C319	1.23	1.23	1.23	--	--	--	--	1.23	--	1.23	--	0.61

46	Data Mining & Data Warehousing	C320	1.84	1.84	1.84	--	--	--	--	0.61	--	0.61	--	0.61
47	Python Application Programming	C327	0.50	1.00	1.00	--	0.50	--	--	0.50	--	0.50	--	0.50
48	System Software & Operating System Lab	C330	1.79	1.79	0.90	--	--	--	--	0.90	1.79	1.79	--	0.90
49	Computer Graphics & Visualization Lab with	C331	1.98	1.98	1.98	--	0.99	--	--	0.99	1.98	1.98	0.99	0.99
50	Web Technology & Applications	C401	1.71	1.71	1.14	--	0.57	--	--	0.57	--	1.14	--	1.14
51	Advanced Computer Architecture	C402	2.06	2.06	2.06	--	--	--	--	1.37	--	1.37	--	1.37
52	Machine Learning	C403	1.10	1.10	1.10	--	--	--	--	0.47	--	0.47	--	0.47
53	Cloud Computing & Applications	C405	1.20	1.20	1.20	--	1.20	--	--	0.60	--	0.60	--	0.60
54	Storage Area Networks	C411	1.63	1.63	--	--	--	1.09	--	1.09	--	1.09	--	1.09
55	Machine Learning Lab	C412	2.97	2.97	1.98	1.98	1.98	--	--	0.99	1.98	1.98	--	1.98
56	Web Technology Lab with Mini Project	C413	2.98	2.98	1.99	--	1.99	--	--	0.99	1.99	1.99	1.99	0.99
57	Project Phase - I	C414	3	3	3	3	3	3	3	3	3	3	3	3
58	Internet of Things & Applications	C415	2.25	2.25	2.25	--	--	--	--	1.50	--	0.75	--	1.50
59	Big Data Analytics	C416	0.67	1.35	1.35	--	--	--	--	0.67	--	0.67	--	0.67
60	System Modeling and Simulation	C420	0.77	1.55	1.55	--	--	--	--	0.77	--	0.77	--	0.77
61	Internship	C421	3	3	3	3	3	3	3	3	3	3	3	3
62	Project Work - II	C422	3	3	3	3	3	3	3	3	3	3	3	3
63	Seminar	C423	3	3	3	3	3	3	3	3	3	3	3	3
	Direct Assessment(A)		**1.73**	**1.69**	**1.52**	**1.60**	**1.40**	**1.63**	**2.08**	**1.04**	**1.95**	**1.24**	**1.88**	**1.06**

Criteria Coordinator — 8/11/2019

HOD — 8/11/19

H.O.D
Computer Science & Engg.
HIT, Nidasoshi

PSO Attainment through Direct Assessment Method of LYGm3

(2018-19 Passedout Batch)

Sl.No.	Course	Code	PSO1	PSO2
1.	Engineering Mathematics -III	C201	-	-
2.	Analog & Digital Electronics	C202	1.85	1.23
3.	Data Structures & Applications	C203	0.99	0.99
4.	Computer Organization	C204	0.79	0.50
5.	Unix & System Programming	C205	2.13	2.13
6.	Discrete Mathematical Structures	C206	0.42	--
7.	Analog & Digital Electronics Lab	C207	1.47	1.47
8.	Data Structures Lab	C208	1.11	1.11
9.	Engineering Mathematics -IV	C209	--	--
10.	Software Engineering	C210	1.13	1.13
11.	Design & Analysis of Algorithms	C211	1.19	1.19
12.	Microprocessor & Microcontroller	C212	0.89	0.44
13.	Object Oriented Concepts	C213	0.83	0.83
14.	Data Communications	C214	0.45	0.45
15.	Design & Analysis of Algorithms Lab	C215	2.58	2.58
16.	Microprocessors Lab	C216	0.96	0.96
17.	Management & Entrepreneurship for IT	C301	0.00	1.52
18.	Computer Networks	C302	1.15	0.57
19.	Database Management System	C303	1.37	1.37
20.	Automata Theory & Computability	C304	0.93	--
21.	Introduction to Software Testing	C306	1.19	1.19
22.	Advanced Java & J2EE	C307	1.41	0.94
23.	Dotnet Framework for Application development	C312	1.50	1.00
24.	Computer Networks Lab	C314	1.62	0.81
25.	DBMS Lab with Mini Project	C315	2.84	2.84
26.	Cryptography, Network Security & Cyber Law	C316	1.09	1.09
27.	Computer Graphics & Visualization	C317	0.93	0.93
28.	System Software and Compiler Design	C318	1.16	--
29.	Operating Systems	C319	1.23	0.61
30.	Data Mining & Data Warehousing	C320	1.23	0.61
31.	Python Application Programming	C327	1.00	1.00
32.	System Software & Operating System Lab	C330	1.79	0.90
33.	Computer Graphics & Visualization Lab with Mini	C331	0.99	0.99
34.	Web Technology & Applications	C401	1.14	0.57

35.	Advanced Computer Architecture	C402	2.06	1.37
36.	Machine Learning	C403	0.95	0.95
37.	Cloud Computing & Applications	C405	1.20	1.20
38.	Storage Area Networks	C411	1.09	0.54
39.	Machine Learning Lab	C412	1.98	1.98
40.	Web Technology Lab	C413	1.99	0.99
41.	Project Phase - I	C414	3	3
42.	Internet of Things & Applications	C415	2.25	1.50
43.	Big Data Analytics	C416	1.35	1.35
44.	System Modeling and Simulation	C420	1.55	1.55
45.	Internship	C421	3	3
46.	Project Work - II	C422	3	3
47.	Seminar	C423	3	3
		Direct Assessment	**1.43**	**1.29**

8/11/2019
Criteria Coordinator

8/11/19
HOD
H.O.D
Computer Science & Engg.
HIT, Nidasoshi

FACULTY COURSE ASSESSEMENT REPORT (FCAR)

Course Coordinator: **Prof: Mahesh G. Huddar** **Class Strength: 47**

Semester: VII **Subject: Machine Learning** **Code: 15CS73**

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:	Understand, design and analyze computer programs in the areas related to Algorithms, System Software, Web design, Bigdata Analytics and Networking.
PSO2:	Make use of modern computer tools for creating innovative career paths to be an entrepreneur and desire for higher studies.

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

CO	Description	Cognitive Level	Mapped Pos
C403.1	Identify the problems for machine learning and select the either supervised, unsupervised or reinforcement learning.	L2	PO1, PO2, PO3, PO8, PO10, PO12
C403.2	Explain theory of probability and statistics related to machine learning.	L2	PO1, PO2, PO3, PO8, PO10, PO12
C403.3	Investigate concept learning, ANN, Bayes classifier, k nearest neighbor, Q Learning.	L3	PO1, PO2, PO3, PO8, PO10, PO12

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

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C403.1	2	2	2	-	-	-	-	1	-	1	-	1
C403.2	2	2	2	-	-	-	-	1	-	1	-	1
C403.3	3	3	3	-	-	-	-	1	-	1	-	1
Average	2.33	2.33	2.33	-	-	-	-	1	-	1	-	1

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

PSOs / COs	PSO 1	PSO 2
C403.1	2	2
C403.2	2	2
C403.3	2	2
Average	2	2

VI. Justification of CO-PO Mapping:

Mapping	Justification
C403.1-PO1	A medium correlation as the basic knowledge of machine learning helps to represent the complex engineering problem.
C403.2-PO1	A medium correlation as the basic knowledge of probability and statistics helps to represent the complex engineering problem.
C403.3-PO1	A strong correlation as the basic knowledge of machine learning algorithms helps to represent the complex engineering problem.
C403.1-PO2	A medium correlation as the basic knowledge of machine learning helps to analyze the

	complex engineering problem.
C403.2-PO2	A medium correlation as the basic knowledge of probability and statistics helps to analyze the complex engineering problem.
C403.3-PO2	A strong correlation as the basic knowledge of machine learning algorithms helps to analyze the complex engineering problem.
C403.1-PO3	A medium correlation as the basic knowledge of machine learning helps to solve the complex engineering problem.
C403.2-PO3	A medium correlation as the basic knowledge of probability and statistics helps to solve the complex engineering problem.
C403.3-PO3	A strong correlation as the basic knowledge of machine learning algorithms helps to solve the complex engineering problem.
C403.1-PO8	A weak correlation since students applies ethical principles while writing programs.
C403.2-PO8	
C403.3-PO8	
C403.1-PO10	A weak correlation since it help students to 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.
C403.2-PO10	
C403.3-PO10	
C403.1-PO12	A weak correlation since it contributes weakly in lifelong learning of a student.
C403.2-PO12	
C403.3-PO12	

VII. Justification of CO-PSO Mapping:

Mapping	Justification
C403-PSO1	A medium correlation since it contributes in understanding, analyzing and developing machine learning applications among students.
C403-PSO2	A medium correlation since it contributes in creating innovative career paths to be an entrepreneur and desire for higher studies in data science.

VIII. Bench Mark Setting

The course Machine Learning (15CS673) is introduced first time in the 2015 scheme of the University curriculum, the CO attainment target is set to 1.5.

IX. DIRECT ASSESSMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

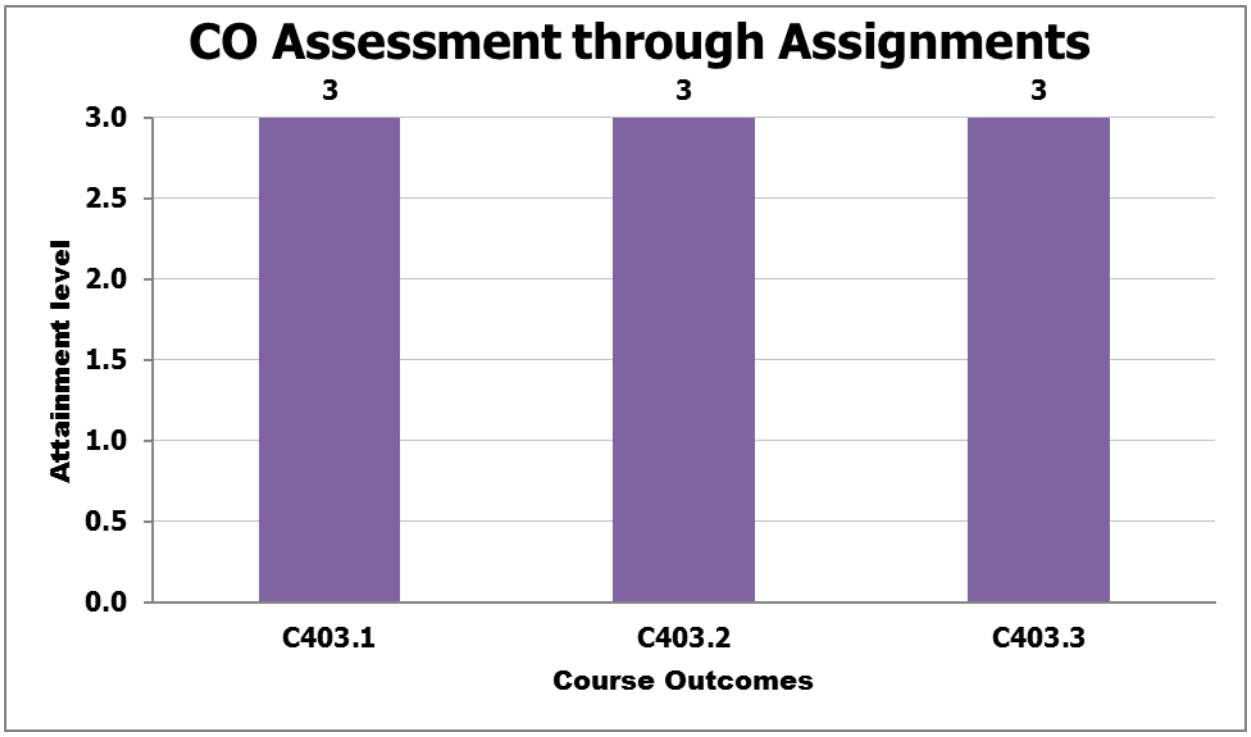
Assessment Tools:

- Continuous assessment
- Laboratory experiments
- End semester exam

I. Assessment through Assignment:

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

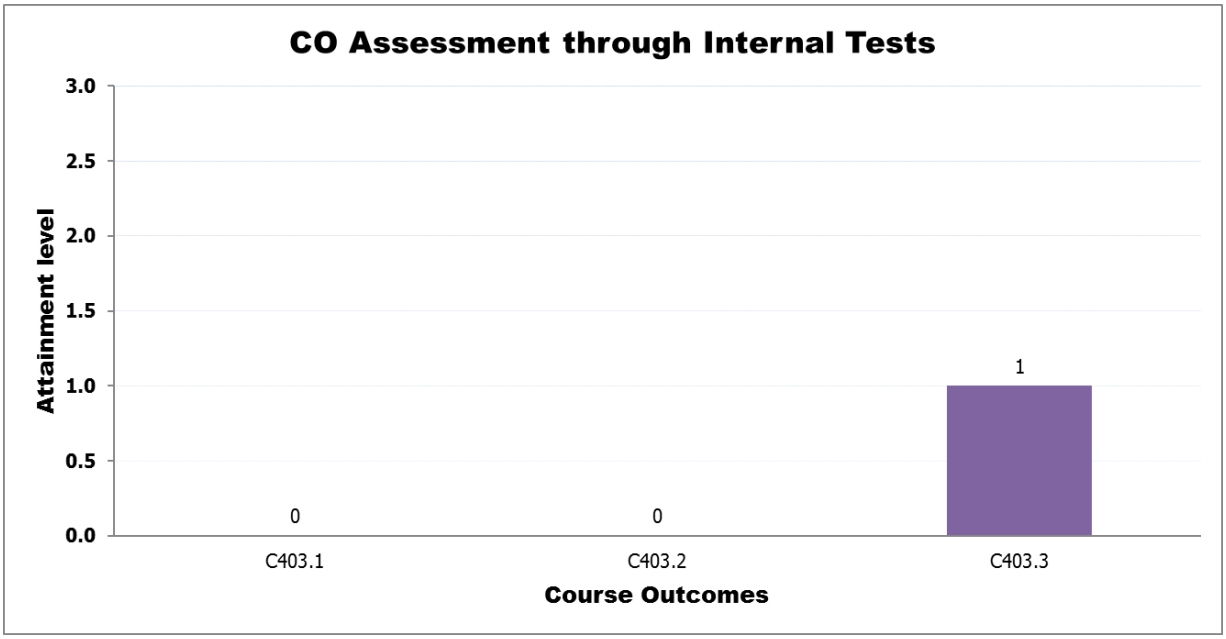
COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO
	A	R	A	R	A	R	A	R	A	R			
C403.1	47	47									100.00	3	PO1, PO2, PO3, PO8, PO10, PO12
C403.2			47	47	47	47					100.00	3	PO1, PO2, PO3, PO8, PO10, PO12
C403.3							47	47	47	47	100.00	3	PO1, PO2, PO3, PO8, PO10, PO12



II. Assessment through Internal Marks:

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

COs	IA-1				IA-2				IA-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		
C403.1	46	16	46	29									0	PO1, PO2, PO3, PO8, PO10, PO12
C403.2					43	13			23	14			0	PO1, PO2, PO3, PO8, PO10, PO12
C403.3							43	27			21	7	1	PO1, PO2, PO3, PO8, PO10, PO12

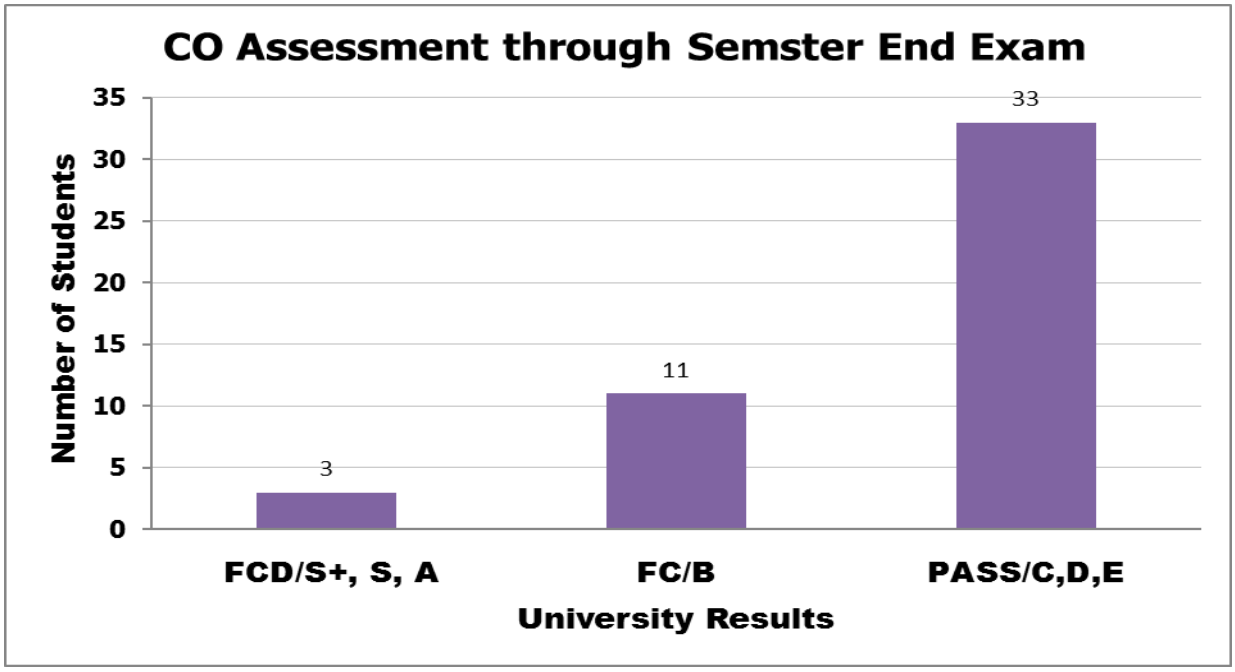


III. Semester End Exam Assessment Based on VTU Exam Results:

COs Attainment Levels:

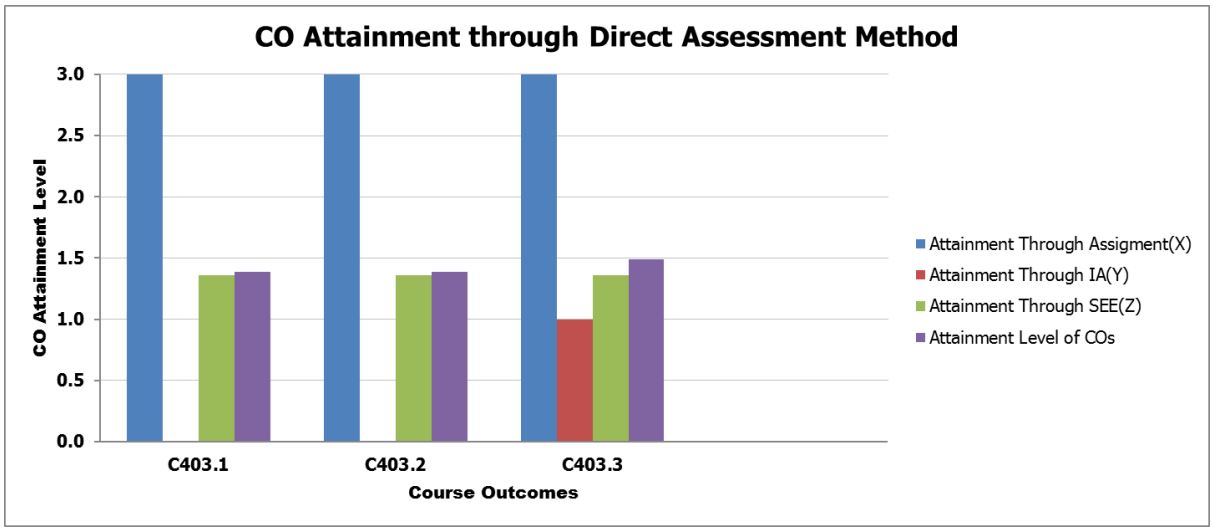
FCD: S+, S, & A = 3; FC (B) = 2; Pass: C, D, & E = 1; Fail = 0

Total no. of Students Appeared	47	
Class/Grade↓	Total Number of Students	Course (COs) Attainment Through Semester End Exams
FCD/S+, S, A	3	9
FC/B	11	22
PASS/C,D,E	33	33
Total Percentage of Passing	100.00%	1.36



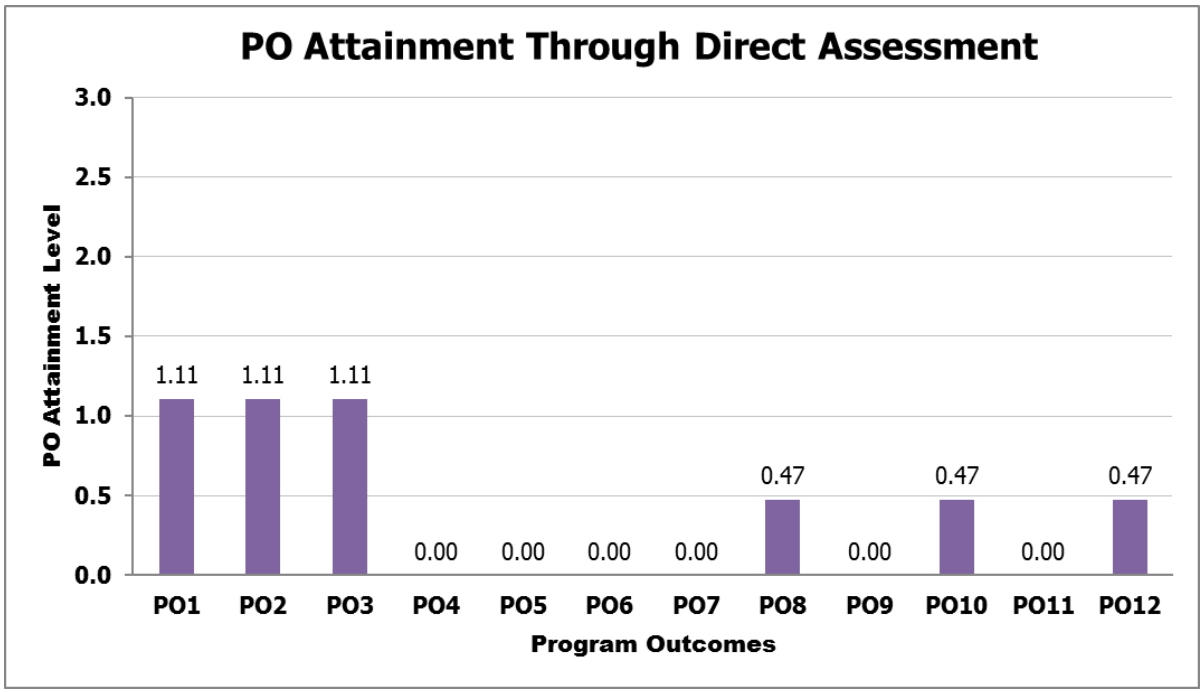
IV. CO Attainment:

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
C403.1	3	0	1.36	1.39	PO1, PO2, PO3, PO8, PO10, PO12
C403.2	3	0	1.36	1.39	PO1, PO2, PO3, PO8, PO10, PO12
C403.3	3	1	1.36	1.49	PO1, PO2, PO3, PO8, PO10, PO12
CO Attainment through Direct Assessment Method				**1.42**	



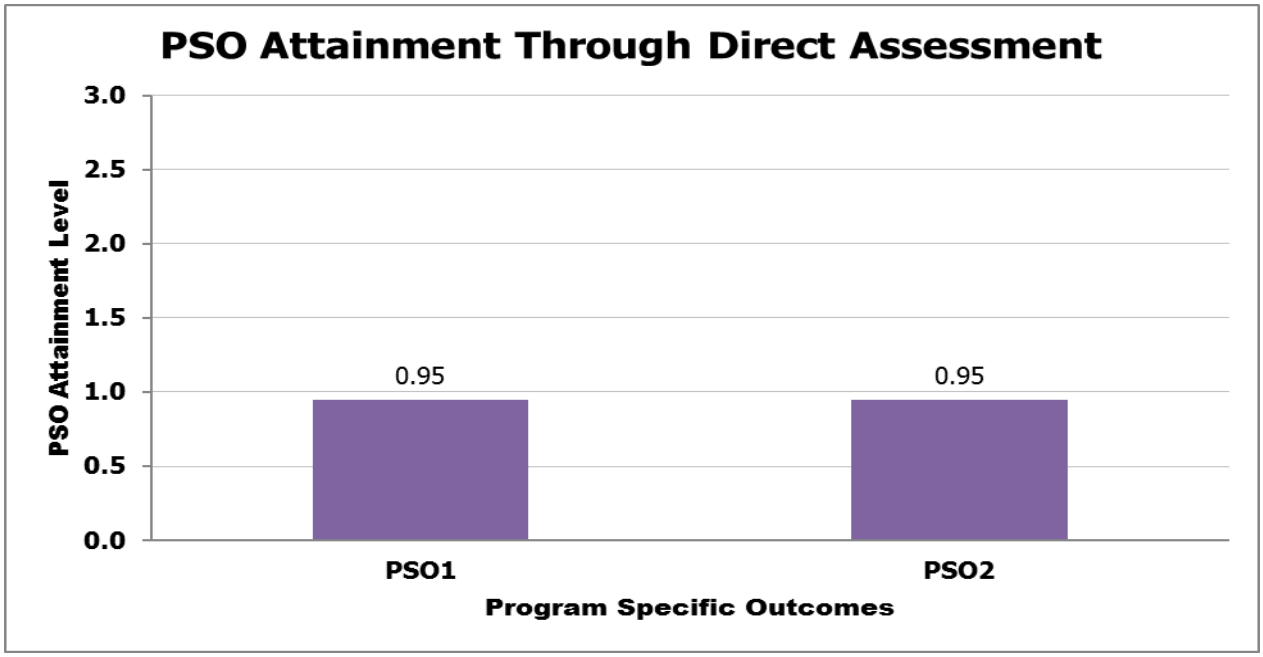
V. PO Attainment for the Entire Course:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C403	1.11	1.11	1.11	0.00	0.00	0.00	0.00	0.47	0.00	0.47	0.00	0.47



VI. PSO Attainment for the Entire Course:

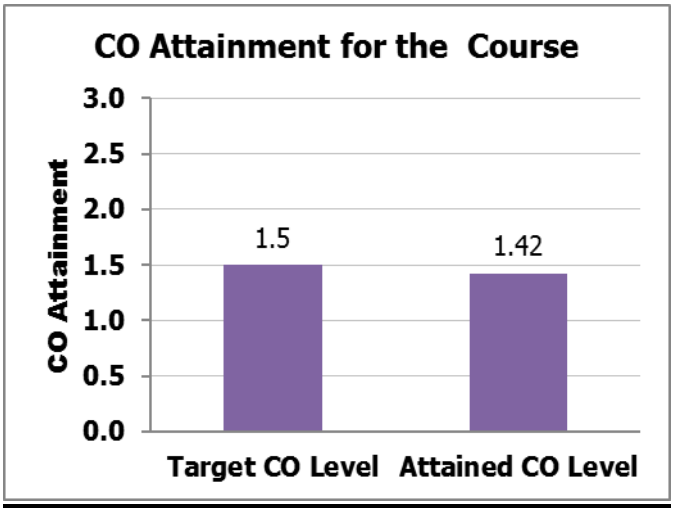
CO/PSO	PSO1	PSO2
C403	0.95	0.95



VII. Target Attainment:

The course Machine Learning (15CS73) is introduced first time in the 2015 scheme of the University curriculum, the CO attainment target is set to 1.5. If the attained value is greater than or equal to initial target value, then for next subsequent years (2019-20) 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)	1.50
Attained Value	1.42
New Target Level for the Next Exam	1.50



VIII. 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. Some tutorial classes are required to clarify ambiguities of students.
2	Course Outcome Attainment	Target level can be achieved by improving the IA performance and semester end examination result with innovative teaching methodologies such as using videos for the real time examples, providing important course materials other than prescribed textbooks, conducting quiz on subject areas etc.
3	Scope for Improvement	Below mentioned activities can be suggested. • Animated videos to clarify concepts of Machine Learning
4	Additional Comments (if any)	--

X. INDIRECT ASSESSMENT OF PO & PSO THROUGH COURSE EXIT SURVEY (CES)

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

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C403.1	2	2	2	-	-	-	-	1	-	1	-	1
C403.2	2	2	2	-	-	-	-	1	-	1	-	1
C403.3	3	3	3	-	-	-	-	1	-	1	-	1
Average	2.33	2.33	2.33	-	-	-	-	1	-	1	-	1
CES Attainment	2.04	2.04	2.04	0.00	0.00	0.00	0.00	0.87	0.00	0.87	0.00	0.87

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

PSOs / COs	PSO 1	PSO 2
C403.1	2	2
C403.2	2	2
C403.3	2	2
Average	2	2
CES Attainment	1.75	1.75

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Course Coordinator

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Computer Science & Engg.
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Attainment of Program Outcomes and Program Specific Outcomes

Assessment Year 2019-20

PO/PSO Attainment through Direct Assessment Method:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	1.84	1.78	1.58	1.75	1.50	1.70	2.19	1.07	2.09	1.32	1.92	1.12	1.54	1.34

PO/PSO Attainment through Indirect Assessment Methods:

S. No.	Indirect Method	Weightage (%)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Employer Survey	5	3	2.67	2.67	2.33	2.67	3.00	3.00	3.00	2.67	2	2.33	2.33	2.67	3.00
2	Alumni Survey	15	2.62	2.52	2.29	2.52	2.80	2.33	2.33	2.29	2.43	2.52	1.00	2.87	2.00	1.00
3	Senior Exit Survey	15	2.47	2.53	2.52	2.52	2.48	2.56	2.5	2.71	2.54	2.6	2.5	2.67	2.54	2.58
4	Activity Feedback	35	3.00	3.00	3.00	--	3.00	3.00	3.00	3.00	3.00	3.00	3.00	--	3.00	3.00
5	Course Exit Survey	15	2.33	2.34	1.99	1.95	1.85	2.32	2.47	1.39	2.12	1.57	2.29	1.46	1.96	1.69
6	Placement, Higher Education and Entrepreneurship	15	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
	Indirect Assessment(B)		2.53	2.51	2.42	1.38	2.47	2.49	2.51	2.37	2.46	2.37	2.25	1.38	2.37	2.20

PO/PSO Attainment through Direct and Indirect Assessment Methods:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	1.84	1.78	1.58	1.75	1.50	1.70	2.19	1.07	2.09	1.32	1.92	1.12	1.54	1.34
Indirect Assessment(B)	2.53	2.51	2.42	1.38	2.47	2.49	2.51	2.37	2.46	2.37	2.25	1.38	2.37	2.20
AVG(0.8*A+0.2*B)	1.98	1.92	1.74	1.68	1.69	1.86	2.26	1.33	2.16	1.53	1.99	1.17	1.70	1.51

10/10/2020

Criteria Coordinator

10/10/20

HOD

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PO Attainment through Direct Assessment Method

Assessment Year - 2019-20

Sl. No	Course	Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12
1	Engg. Mathematics-I	C101	2.04	1.36	--	--	--	--	--	--	--	--	--	0.68
2	Engg. Physics	C102	2.28	--	1.52	--	0.76	--	--	0.76	--	0.76	--	0.76
3	Basic Civil Engg.	C103	1.37	1.37	0.91	0.91	--	0.46	--	0.46	--	--	0.46	0.91
4	Elements of Mechanical Engg.	C104	1.67	1.44	--	--	--	0.48	0.24		--	--	--	1.44
5	Basic Electrical Engg.	C105	1.1	1.1	0.28	--	--	0.14	--	0.14	--	--	0.14	--
6	Workshop Practice Lab	C106	2.6	1.62	2.93	1.3	--	2.93	--	2.93	1.95	1.95	2.93	2.44
7	Engg. Physics Lab	C107	2.59	--	0.92	--	0.86	--	--	0.76	--	--	--	0.46
8	Const. of India Prof. Ethics & Human Rights	C108	--	--	--	--	1.12		--	0.75	--	--	--	--
9	Engg. Mathematics-II	C109	1.48	0.98	--	--	--	--	--	--	--	--	--	0.49
10	Engineering Chemistry	C110	1.82	1.46	1.21	--	--	1.09	--	--	--	--	--	0.61
11	Programming in C & Data Structures	C111	1.92	1.53	1.66	--	--	--	--	0.64	--	0.64	--	0.64
12	Computer Aided & Engg. Drawing	C112	0.88	--	--	--	1.76	--	--	0.3	--	2.63	--	--
13	Basic Electronics	C113	1.77	1.77	1.77	1.18	--	0.59	--	--	--	--	--	1.39
14	Computer Programming Lab	C114	2.87	2.87	2.87	--	--	--	--	0.96	1.91	1.91	--	0.96
15	Engg. Chemistry Lab	C115	2.89	2.89	2.89	--	--	1.93	--	--	--	--	--	0.96
16	Environmental Science	C116	2.43	1.62	1.62	--	--	1.62	1.62	0.81	--	--	0.81	0.81
17	Engineering Mathematics -III	C201	2.12	1.41	0.71	--	--	--	--	--	--	--	--	0.71
18	Analog & Digital Electronics	C202	1.72	1.72	1.72	--	--	--	--	1.15	--	0.57	--	1.15
19	Data Structures & Applications	C203	1.41	1.41	1.18	--	--	--	--	0.94	--	0.94	--	--
20	Computer Organization	C204	0.99	1.09	1.09	--	--	--	--	0.50	--	0.50	--	0.50
21	Unix & System Programming	C205	1.85	1.85	1.23	--	--	--	--	0.62	--	0.62	--	0.62
22	Discrete Mathematical Structures	C206	1.39	1.39	0.93	--	--	--	--	0.93	--	0.93	--	--

23	Analog & Digital Electronics Lab	C207	2.34	2.34	2.34	1.56	1.56	--	--	1.56	1.56	1.56	--	1.56
24	Data Structures Lab	C208	1.66	1.66	1.11	--	1.11	--	--	1.11	1.11	1.11	--	1.11
25	Engineering Mathematics -IV	C209	2.58	1.72	0.86	--	0.00	--	--	--	--	--	--	0.86
26	Software Engineering	C210	1.08	1.62	1.62	1.08	1.35	1.08	--	1.08	--	0.54	1.62	1.08
27	Design & Analysis of Algorithms	C211	1.23	1.23	1.23	--	--	--	--	1.23	--	1.23	--	1.23
28	Microprocessor & Microcontroller	C212	2.11	2.11	1.41	--	--	--	--	0.70	--	0.70	--	0.70
29	Object Oriented Concepts	C213	0.79	0.79	0.79	--	0.40	--	--	0.40	--	0.40	--	0.79
30	Data Communications	C214	0.44	0.89	--	--	0.44	--	--	0.44	--	0.44	--	0.44
31	Design & Analysis of Algorithms Lab	C215	2.13	2.13	1.42	--	--	--	--	0.71	1.42	1.42	--	1.42
32	Microprocessors Lab	C216	1.98	1.98	1.98	0.99	0.99	--	--	0.99	1.98	1.98	--	0.99
33	Management & Entrepreneurship for IT	C301	2.24	2.24	--	--	--	1.74	1.49	2.24	2.24	2.24	2.24	1.87
34	Computer Networks	C302	1.37	1.37	1.37	1.37	--	--	--	0.68	--	1.37	--	1.37
35	Database Management System	C303	1.42	1.42	0.95	--	--	--	--	0.47	--	0.47	--	0.47
36	Automata Theory & Computability	C304	2.06	2.06	1.65	--	--	--	--	1.37	--	1.37	--	--
37	Introduction to Software Testing	C306	1.29	1.29	1.29	1.29	--	--	--	0.65	--	1.29	--	0.65
38	Advanced Java & J2EE	C307	1.87	1.87	1.87	0.00	1.87	--	--	0.75	--	0.75	--	2.24
39	Dotnet Framework for Application	C312	1.44	1.44	1.44	0.48	1.44	--	--	0.96	--	0.96	--	1.44
40	Computer Networks Lab	C314	2.36	2.36	1.57	1.57	1.57	--	--	0.79	1.57	1.57	--	0.79
41	DBMS Lab with Mini Project	C315	2.81	2.81	1.87	1.87	1.87	--	--	0.94	1.87	1.87	1.87	0.94
42	Cryptography, Network Security & Cyber Law	C316	1.96	1.96	0.98	--	--	--	--	1.31	--	0.65	--	0.65
43	Computer Graphics & Visualization	C317	1.24	0.93	1.03	--	1.55	--	--	0.52	--	0.52	--	0.52
44	System Software and Compiler Design	C318	1.94	1.55	1.55	--	--	--	--	1.29	--	1.29	--	0.00
45	Operating Systems	C319	1.51	1.51	1.51	--	--	--	--	1.51	--	1.51	--	0.75

46	Data Mining & Data Warehousing	C320	1.88	1.88	1.88	--	--	--	--	0.63	--	0.63	--	0.63
47	Python Application Programming	C327	0.50	1.01	1.01	--	0.50	--	--	0.50	--	0.50	--	0.50
48	System Software & Operating System Lab	C330	1.96	1.96	0.98	--	--	--	--	0.98	1.96	1.96	--	0.98
49	Computer Graphics & Visualization Lab with	C331	2.00	2.00	2.00	--	1.00	--	--	1.00	2.00	2.00	1.00	1.00
50	Web Technology & Applications	C401	1.52	1.52	1.01	--	0.51	--	--	0.51	--	1.01	--	1.01
51	Advanced Computer Architecture	C402	2.02	2.02	2.02	--	--	--	--	1.35	--	1.35	--	1.35
52	Machine Learning	C403	1.48	1.48	1.48	--	--	--	--	0.63	--	0.63	--	0.63
53	Cloud Computing & Applications	C405	1.71	1.71	1.71	--	1.71	--	--	0.85	--	0.85	--	0.85
54	Storage Area Networks	C411	2.25	2.25	--	--	--	1.50		1.50	--	1.50	--	1.50
55	Machine Learning Lab	C412	2.79	2.79	1.86	1.86	1.86	--	--	0.93	1.86	1.86	--	1.86
56	Web Technology Lab with Mini Project	C413	2.97	2.97	1.98	--	1.98	--	--	0.99	1.98	1.98	1.98	0.99
57	Project Phase - I	C414	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
58	Internet of Things & Applications	C415	2.47	2.47	2.47	--	--	--	--	1.65	--	0.82	--	1.65
59	Big Data Analytics	C416	0.91	1.83	1.83	--	--	--	--	0.91	--	0.91	--	0.91
60	User Interface Design	C420	0.96	1.91	1.91	--	--	--	--	0.96	--	0.96	--	0.96
61	Internship	C421	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
62	Project Work - II	C422	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
63	Seminar	C423	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	Direct Assessment(A)		**1.84**	**1.78**	**1.58**	**1.75**	**1.50**	**1.70**	**2.19**	**1.07**	**2.09**	**1.32**	**1.92**	**1.12**

Criteria Coordinator

HOD

H.O.D
Computer Science & Engg.
HIT, Nidasoshi.

PSO Attainment through Direct Assessment Method

Assessment Year - 2019-20

Sl.No.	Course	Code	PSO1	PSO2
1.	Engineering Mathematics -III	C201	--	--
2.	Analog & Digital Electronics	C202	1.72	1.15
3.	Data Structures & Applications	C203	0.94	0.94
4.	Computer Organization	C204	0.79	0.50
5.	Unix & System Programming	C205	1.85	1.85
6.	Discrete Mathematical Structures	C206	0.46	
7.	Analog & Digital Electronics Lab	C207	1.56	1.56
8.	Data Structures Lab	C208	1.11	1.11
9.	Engineering Mathematics -IV	C209	--	--
10.	Software Engineering	C210	1.08	1.08
11.	Design & Analysis of Algorithms	C211	1.23	1.23
12.	Microprocessor & Microcontroller	C212	1.41	0.70
13.	Object Oriented Concepts	C213	0.79	0.79
14.	Data Communications	C214	0.44	0.44
15.	Design & Analysis of Algorithms Lab	C215	2.13	2.13
16.	Microprocessors Lab	C216	0.99	0.99
17.	Management & Entrepreneurship for IT	C301	--	2.24
18.	Computer Networks	C302	1.37	0.68
19.	Database Management System	C303	1.42	1.42
20.	Automata Theory & Computability	C304	1.37	--
21.	Introduction to Software Testing	C306	1.29	1.29
22.	Advanced Java & J2EE	C307	2.24	1.49
23.	Dotnet Framework for Application development	C312	1.44	0.96
24.	Computer Networks Lab	C314	1.57	0.79
25.	DBMS Lab with Mini Project	C315	2.81	2.81
26.	Cryptography, Network Security & Cyber Law	C316	1.31	1.31
27.	Computer Graphics & Visualization	C317	1.03	1.03
28.	System Software and Compiler Design	C318	1.29	--
29.	Operating Systems	C319	1.51	0.75
30.	Data Mining & Data Warehousing	C320	1.25	0.63
31.	Python Application Programming	C327	1.01	1.01
32.	System Software & Operating System Lab	C330	1.96	0.98
33.	Computer Graphics & Visualization Lab with Mini	C331	1.00	1.00
34.	Web Technology & Applications	C401	1.01	0.51

35.	Advanced Computer Architecture	C402	2.02	1.35
36.	Machine Learning	C403	1.27	1.27
37.	Cloud Computing & Applications	C405	1.71	1.71
38.	Storage Area Networks	C411	1.50	0.75
39.	Machine Learning Lab	C412	1.86	1.86
40.	Web Technology Lab	C413	1.98	0.99
41.	Project Phase - I	C414	3.00	3.00
42.	Internet of Things & Applications	C415	2.47	1.65
43.	Big Data Analytics	C416	1.83	1.83
44.	User Interface Design	C420	1.91	1.91
45.	Internship	C421	3.00	3.00
46.	Project Work - II	C422	3.00	3.00
47.	Seminar	C423	3.00	3.00
	Direct Assessment		**1.54**	**1.34**

10/10/2020
Criteria Coordinator

10/10/20
HOD

Computer Science & Engg.
HIT, Nidasoshi.

FACULTY COURSE ASSESSEMENT REPORT (FCAR)

Course Coordinator: **Prof: A. A. Daptardar** **Class Strength:49**

Semester:VI **Subject: Operating Systems** **Code: 15CS64**

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:	Understand, design and analyze computer programs in the areas related to Algorithms, System Software, Web design, Bigdata Analytics and Networking.
PSO2:	Make use of modern computer tools for creating innovative career paths to be an entrepreneur and desire for higher studies.

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

CO	Description	Cognitive Level	Mapped Pos
C319.1	Demonstrate need for Operating System and its types.	L2	1,2,3,8,10,12
C319.2	Explain the multithreaded systems and scheduling algorithms.	L2	1,2,3,8,10,12
C319.3	Illustrate the concept of process synchronization and Deadlock.	L2	1,2,3,8,10,12
C319.4	Explain the concept of memory management and File System.	L2	1,2,3,8,10,12
C319.5	Illustrate the different concepts of disk management, Protection and Linux System case studies.	L2	1,2,3,8,10,12

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

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C319.1	2	2	2	--	--	--	--	2	--	2	--	1
C319.2	2	2	2	--	--	--	--	2	--	2	--	1
C319.3	2	2	2	--	--	--	--	2	--	2	--	1
C319.4	2	2	2	--	--	--	--	2	--	2	--	1
C319.5	2	2	2	--	--	--	--	2	--	2	--	1
Average	**2**	**2**	**2**	**--**	**--**	**--**	**--**	**2**	**--**	**2**	**--**	**1**

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

PSOs / COs	PSO 1	PSO 2
C319.1	2	1
C319.2	2	1
C319.3	2	1
C319.4	2	1
C319.5	2	1
Average	**2**	**1**

VI. Justification of CO-PO Mapping:

Mapping	Justification
C319.1-PO1	A moderate correlation is given, as to demonstrate the need for Operating System and its types requires the basic knowledge of engineering.
C319.2-PO1	A moderate correlation is given, as to explain the multithreaded systems and scheduling algorithms requires the knowledge of mathematics and engineering fundamentals.
C319.3-PO1	A moderate correlation is given, as to illustrate the concept of process synchronization and deadlock which includes Banker's algorithm requires the knowledge of mathematics and engineering fundamentals.
C319.4-PO1	A moderate correlation is given, as to explain the concept of memory management and file system requires the knowledge of mathematics and engineering fundamentals.
C319.5-PO1	A moderate correlation is given, as to explain the different concepts of disk management, protection and Linux system case studies requires the knowledge of mathematics and engineering fundamentals.
C319.1-PO2	A moderate correlation is given, as to demonstrate the need for Operating System and its types is essential for problem identification and solution formulation.
C319.2-PO2	A moderate correlation is given, as to explain the multithreaded systems and scheduling algorithms is essential for problem identification and solution formulation.
C319.3-PO2	A moderate correlation is given, as to illustrate the concept of process synchronization and deadlock which includes Banker's algorithm is essential for problem identification and solution formulation.
C319.4-PO2	A moderate correlation is given, as to explain the concept of memory management and file system is essential for problem identification and solution formulation.
C319.5-PO2	A moderate correlation is given, as to explain the different concepts of disk management, protection and Linux system case studies is essential for problem identification and solution formulation.
C319.1-PO3	A moderate correlation is given, as to demonstrate the need for Operating System and its types is essential during the design/development of solutions to the problems.
C319.2-PO3	A moderate correlation is given, as to explain the multithreaded systems and scheduling algorithms is essential during the design/development of solutions to the problems.
C319.3-PO3	A moderate correlation is given, as to illustrate the concept of process synchronization and deadlock which includes Banker's algorithm is essential during the design/development of solutions to the problems.
C319.4-PO3	A moderate correlation is given, as to explain the concept of memory management and file system is essential is essential during the design/development of solutions to the problems.
C319.5-PO3	A moderate correlation is given, as to explain the different concepts of disk management, protection and Linux system case studies is essential during the design/development of solutions to the problems.
C319.1-PO8	A moderate correlation is given, as to demonstrate the need for Operating System and its types requires knowledge of ethical principles and professional ethics.
C319.2-PO8	A moderate correlation is given, as to explain the multithreaded systems and scheduling algorithms requires knowledge of ethical principles and professional ethics.
C319.3-PO8	A moderate correlation is given, as to illustrate the concept of process synchronization and deadlock which includes Banker's algorithm requires knowledge of ethical principles and professional ethics.

C319.4-PO8	A moderate correlation is given, as to explain the concept of memory management and file system is essential requires knowledge of ethical principles and professional ethics.
C319.5-PO8	A moderate correlation is given, as to explain the different concepts of disk management, protection and Linux system case studies requires knowledge of ethical principles and professional ethics.
C319.1-PO10	A moderate correlation is given, as to demonstrate the need for Operating System and its types requires knowledge of Verbal/Non-Verbal communication for effective presentation and design documentation.
C319.2-PO10	A moderate correlation is given, as to explain the multithreaded systems and scheduling algorithms requires knowledge of Verbal/Non-Verbal communication for effective presentation and design documentation.
C319.3-PO10	A medium correlation is given, as to illustrate the concept of process synchronization and deadlock which includes Banker's algorithm requires knowledge of Verbal/Non-Verbal communication for effective presentation and design documentation.
C319.4-PO10	A moderate correlation is given, as to explain the concept of memory management and file system requires knowledge of Verbal/Non-Verbal communication for effective presentation and design documentation.
C319.5-PO10	A moderate correlation is given, as to explain the different concepts of disk management, protection and Linux system case studies requires knowledge of Verbal/Non-Verbal communication for effective presentation and design documentation.
C319.1-PO12	A weak correlation is given, as to demonstrate the need for Operating System and its types recognize the need for life-long learning in the broadest context of technological change.
C319.2-PO12	A weak correlation is given, as to explain the multithreaded systems and scheduling algorithms recognize the need for life-long learning in the broadest context of technological change.
C319.3-PO12	A weak correlation is given, as to illustrate the concept of process synchronization and deadlock which includes Banker's algorithm recognize the need for life-long learning in the broadest context of technological change.
C319.4-PO12	A weak correlation is given, as to explain the concept of memory management and file system is essential recognize the need for life-long learning in the broadest context of technological change.
C319.5-PO12	A weak correlation is given, as to explain the different concepts of disk management, protection and Linux system case studies recognize the need for life-long learning in the broadest context of technological change.

VII. Justification of CO-PSO Mapping:

Mapping	Justification
C319.1-PSO1	A moderate correlation is given, as to demonstrate the need for Operating System and its types to understand and analyze the computer programs using the operating system.
C319.2-PSO1	A moderate correlation is given, as to explain the multithreaded systems and scheduling algorithms to understand and analyze the computer programs using the operating system.
C319.3-PSO1	A moderate correlation is given, as to illustrate the concept of process synchronization and deadlock which includes Banker's algorithm to understand and analyze the computer programs using the operating system.
C319.4-PSO1	A moderate correlation is given, as to explain the concept of memory management and file system to understand and analyze the computer programs using the operating system..
C319.5-PSO1	A moderate correlation is given, as to explain the different concepts of disk management, protection and Linux system case studies to understand and analyze the computer programs using the operating system.

C319.1-PSO2	A weak correlation is given, as to demonstrate the need for Operating System and its types for creating career paths to be an entrepreneur
C319.2-PSO2	A weak correlation is given, as to explain the multithreaded systems and scheduling algorithms for creating career paths to be an entrepreneur
C319.3-PSO2	A weak correlation is given, as to illustrate the concept of process synchronization and deadlock which includes Banker's algorithm for creating career paths to be an entrepreneur
C319.4-PSO2	A weak correlation is given, as to explain the concept of memory management and file system for creating career paths to be an entrepreneur.
C319.5-PSO2	A weak correlation is given, as to explain the different concepts of disk management, protection and Linux system case studies for creating career paths to be an entrepreneur

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
2HN11CS006	35	2HN11CS015	70	2HN14CS002	88
2HN11CS011	61	2HN12CS011	61	2HN14CS004	73
2HN11CS013	53	2HN12CS014	62	2HN14CS005	
2HN11CS024	52	2HN12CS024	50	2HN14CS006	86
2HN12CS001	80	2HN12CS038	64	2HN14CS008	75
2HN12CS002	65	2HN12CS411	50	2HN14CS010	100
2HN12CS003	91	2HN13CS001	75	2HN14CS011	76
2HN12CS004	57	2HN13CS002	61	2HN14CS012	66
2HN12CS005	81	2HN13CS003	62	2HN14CS013	94
2HN12CS006	40	2HN13CS004	69	2HN14CS015	84
2HN12CS007	54	2HN13CS005	71	2HN14CS016	71
2HN12CS008	52	2HN13CS006	81	2HN14CS017	83
2HN12CS009	83	2HN13CS007	66	2HN14CS018	81
2HN12CS010	57	2HN13CS008	53	2HN14CS019	78
2HN12CS012	83	2HN13CS009	62	2HN14CS020	
2HN12CS013	68	2HN13CS010	69	2HN14CS021	91
2HN12CS015	78	2HN13CS011	65	2HN14CS023	89
2HN12CS016	55	2HN13CS013	69	2HN14CS024	80
2HN12CS018	48	2HN13CS014	79	2HN14CS025	60
2HN12CS019	28	2HN13CS015	78	2HN14CS026	74
2HN12CS020	81	2HN13CS016	56	2HN14CS027	92
2HN12CS021	75	2HN13CS017	82	2HN14CS028	95
2HN12CS022	89	2HN13CS018	67	2HN14CS029	89
2HN12CS023	81	2HN13CS019	86	2HN14CS030	69
2HN12CS025	97	2HN13CS020	58	2HN14CS031	92
2HN12CS026	72	2HN13CS022	68	2HN14CS032	75
2HN12CS027	72	2HN13CS023	81	2HN14CS033	72

2HN12CS028	86	2HN13CS025	61	2HN14CS034	59
2HN12CS030	68	2HN13CS026	70	2HN14CS035	90
2HN12CS031	66	2HN13CS027	69	2HN14CS037	82
2HN12CS032	91	2HN13CS028	83	2HN14CS038	91
2HN12CS033	84	2HN13CS029	78	2HN14CS039	97
2HN12CS034	52	2HN13CS030	74	2HN14CS040	88
2HN12CS035	60	2HN13CS031	76	2HN14CS041	88
2HN12CS036	74	2HN13CS032	53	2HN14CS042	80
2HN12CS037	70	2HN13CS033	67	2HN14CS043	69
2HN12CS039	66	2HN13CS034	74	2HN14CS045	93
2HN12CS040	70	2HN13CS035	70	2HN14CS046	80
2HN12CS041	69	2HN13CS036	73	2HN14CS048	79
2HN12CS042	46	2HN13CS037	72	2HN15CS400	54
2HN12CS043	53	2HN13CS038	85	2HN15CS401	80
2HN12CS045	54	2HN13CS039	93	2HN15CS402	76
2HN12CS046	79	2HN13CS040	75	2HN15CS403	74
2HN12CS047	57	2HN13CS041	78	2HN15CS404	68
2HN12CS048	56	2HN13CS042	91	2HN15CS405	71
2HN12CS406	66	2HN13CS043	77	2HN13CS021	53
2HN13CS400	50	2HN13CS045	74		
2HN13CS401	57	2HN13CS046	78		
2HN13CS402	59	2HN13CS047	55		
2HN13CS403	74	2HN13CS048	78		
2HN13CS404	73	2HN13CS049	57		
2HN12CS044	60	2HN13CS050	71		
2HN10CS026	52	2HN13CS051	63		
		2HN13CS052	73		
		2HN13CS053	76		
		2HN14CS400	63		
		2HN14CS401	63		
		2HN13CS024	66		
		2HN12CS029	50		
MEDIAN	**66**		**70**		**80**

Year	Median	Median of Medians	Initial Target Value **ITV= (Median of Medians)*3/100**
July/August 2015	66	70	**2.10**
July/August 2016	70		
July/August 2017	80		

IX. DIRECT ASSESSMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

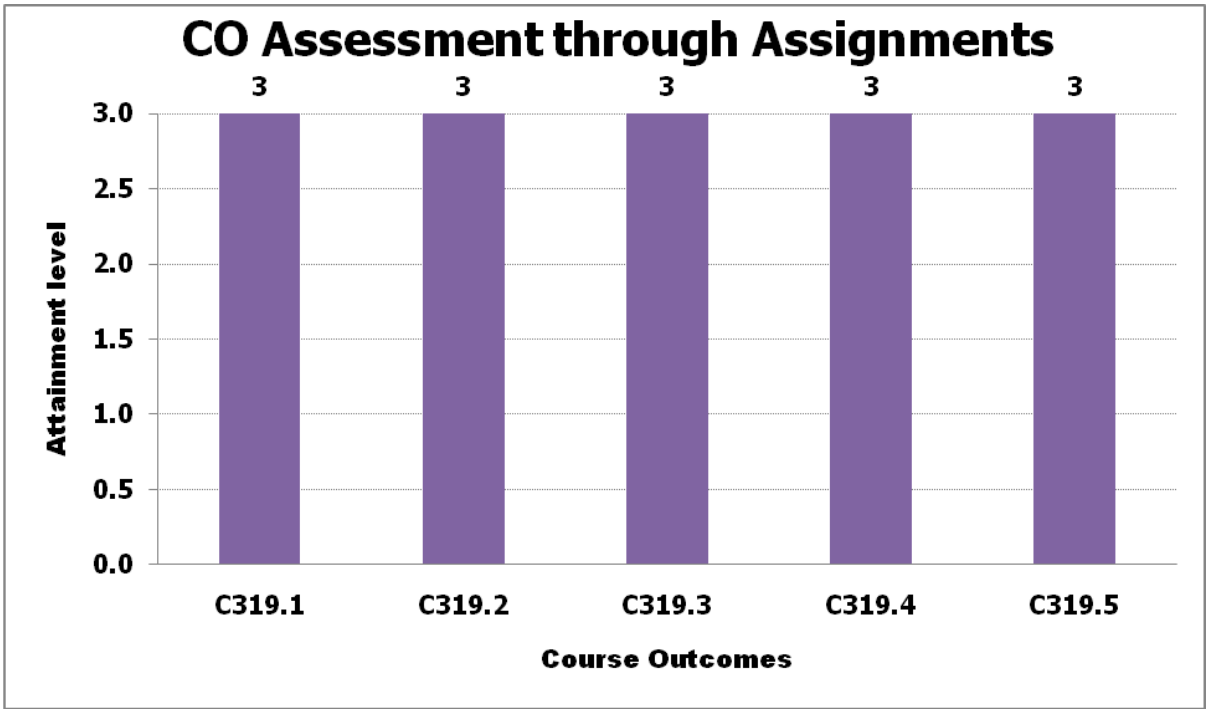
Assessment Tools:

- Continuous assessment
- Laboratory experiments
- End semester exam

I. Assessment through Assignment:

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

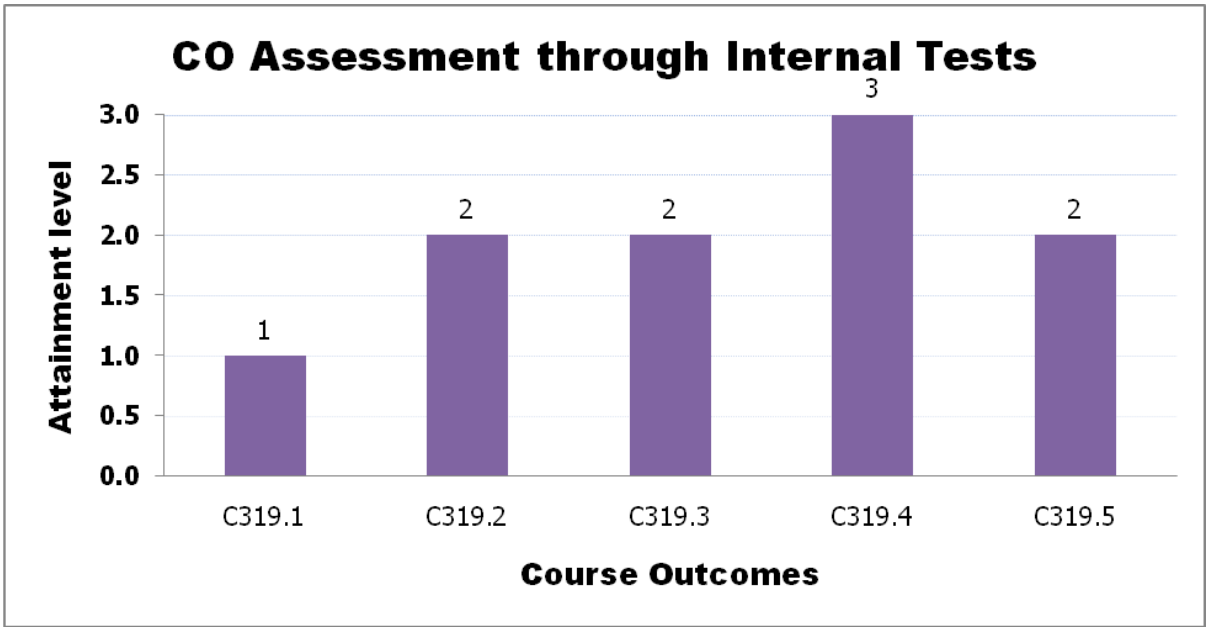
COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO	Mapped PSO
	A	R	A	R	A	R	A	R	A	R				
C319.1	49	49									100.00	3	1,2,3,8,10,12	1,2
C319.2			49	49							100.00	3	1,2,3,8,10,12	1,2
C319.3					49	49					100.00	3	1,2,3,8,10,12	1,2
C319.4							49	49			100.00	3	1,2,3,8,10,12	1,2
C319.5									49	49	100.00	3	1,2,3,8,10,12	1,2



II. Assessment through Internal Marks:

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

COs	IA - 1				IA -2				IA -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			
C319.1	48	26											1	1,2,3,8,10,12	1,2
C319.2			49	30									2	1,2,3,8,10,12	1,2
C319.3					49	30	48	32					2	1,2,3,8,10,12	1,2
C319.4									33	30			3	1,2,3,8,10,12	1,2
C319.5											33	23	2	1,2,3,8,10,12	1,2

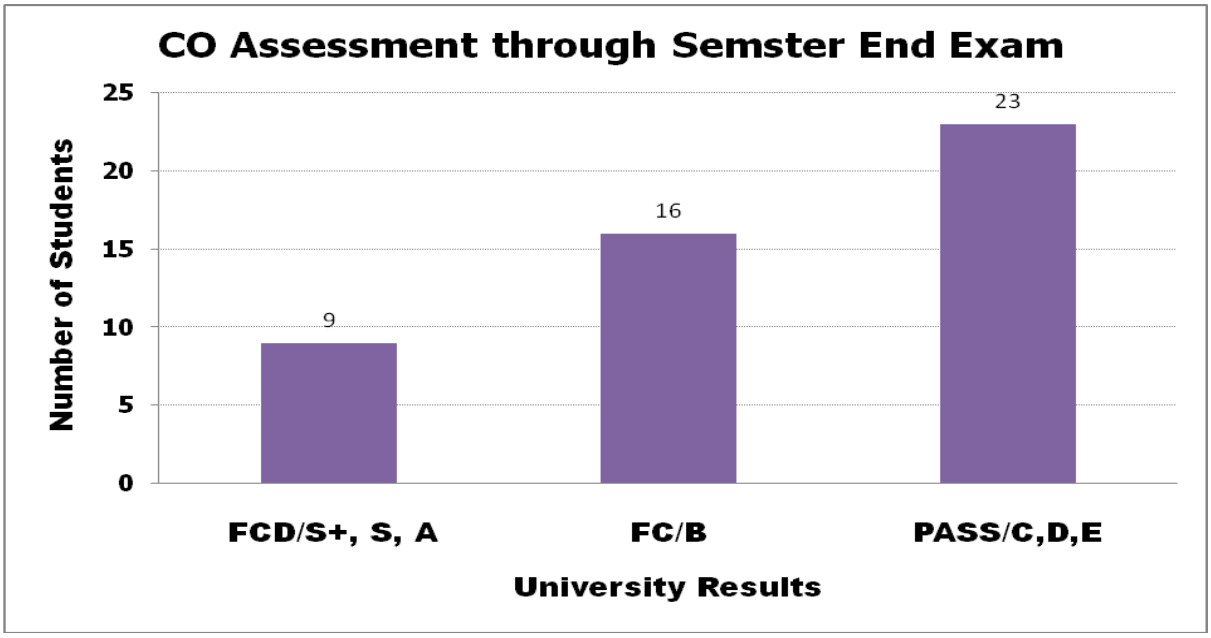


III. Semester End Exam Assessment Based on VTU Exam Results:

COs Attainment Levels:

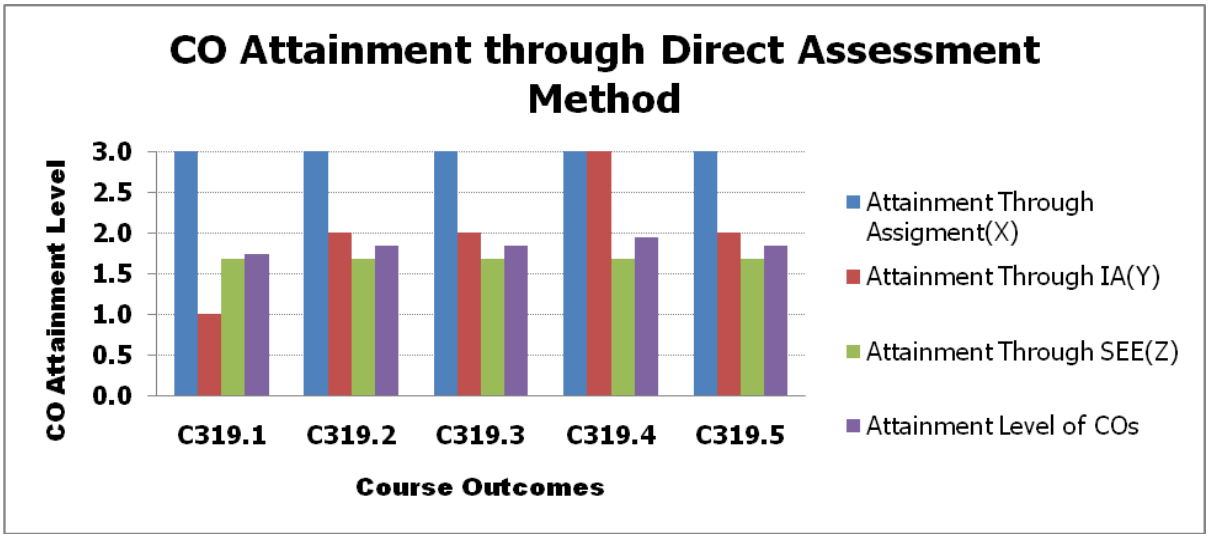
FCD: S+, S, & A = 3; **FC (B) = 2;** **Pass: C, D, & E = 1;** **Fail = 0**

Total no. of Students Appeared	49	
Class/Grade	Total Number of Students	Course (COs) Attainment Through Semster End Exams
FCD/S+, S, A	9	27
FC/B	16	32
PASS/C,D,E	23	23
Total Percentage of Passing	97.96%	1.67



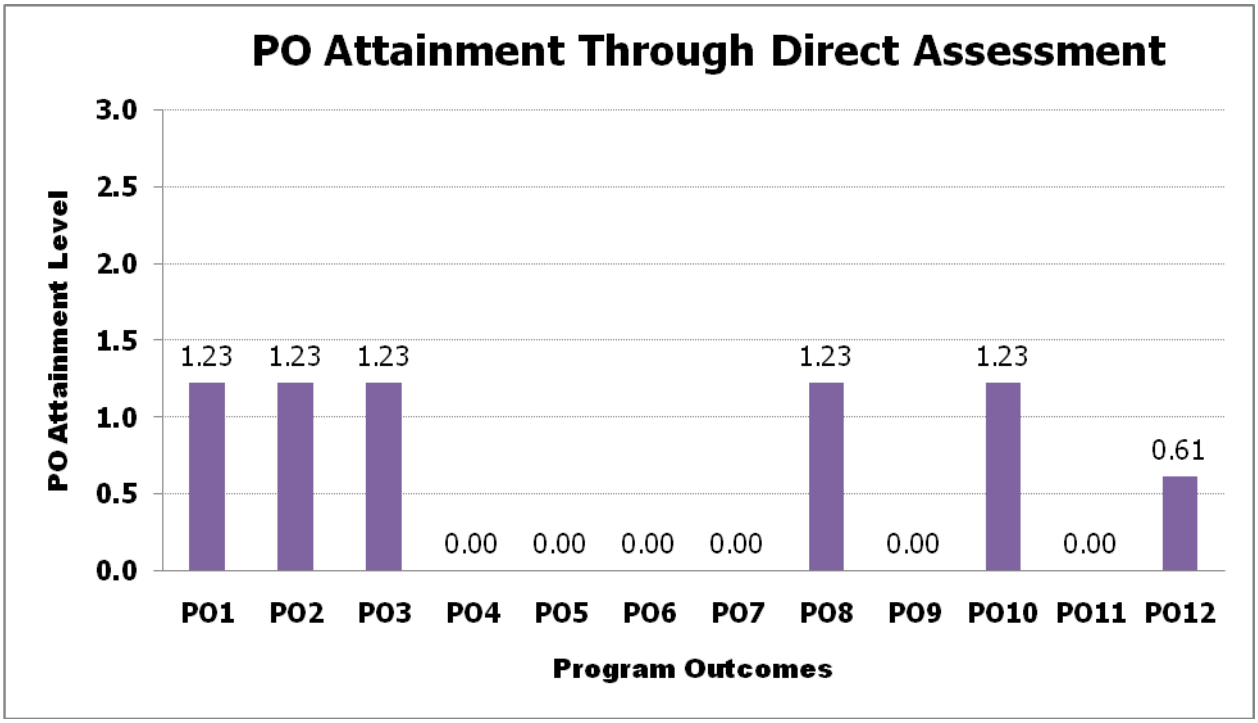
IV. CO Attainment:

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
C319.1	3	1	1.67	1.74	1,2,3,8,10,12	1,2
C319.2	3	2	1.67	1.84	1,2,3,8,10,12	1,2
C319.3	3	2	1.67	1.84	1,2,3,8,10,12	1,2
C319.4	3	3	1.67	1.94	1,2,3,8,10,12	1,2
C319.5	3	2	1.67	1.84	1,2,3,8,10,12	1,2
CO Attainment through Direct Assessment Method				1.84		



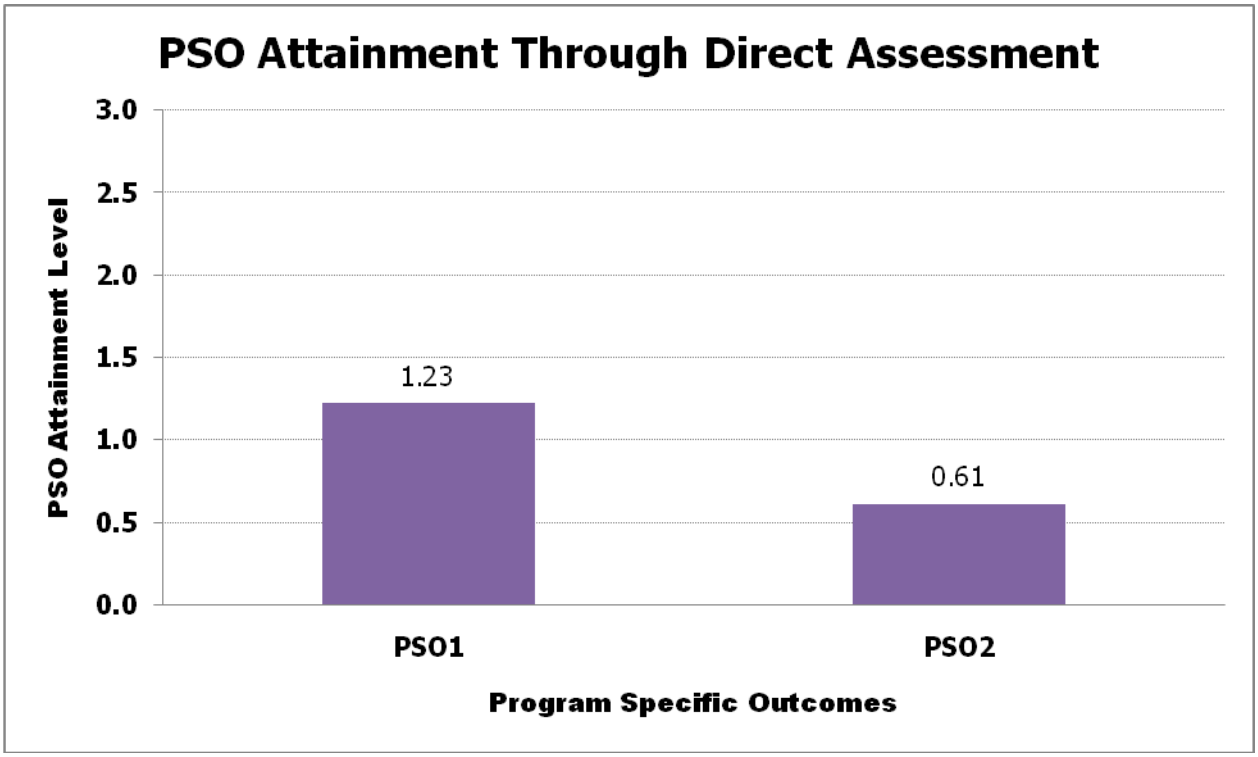
V. PO Attainment for the Entire Course:

CO/PO	PO1	PO2	PO3	PO8	PO5	PO6	PO10	PO8	PO9	PO10	PO11	PO12
C319	1.23	1.23	1.23	--	--	--	--	1.23	--	1.23	--	0.61



VI. PSO Attainment for the Entire Course:

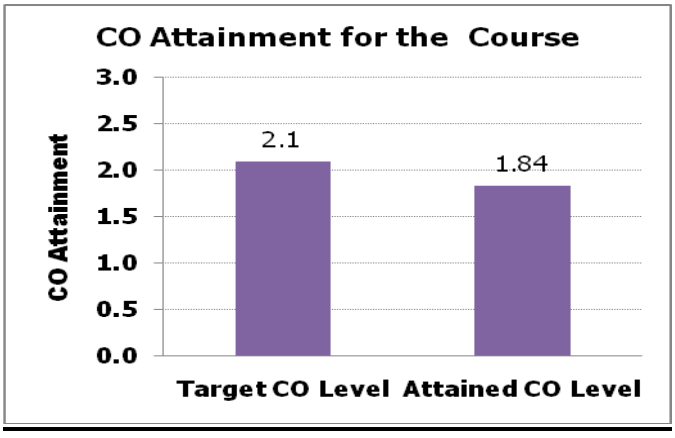
CO/PSO	PSO1	PSO2
C319	1.23	0.61



VII. 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)	2.10
Attained Value	1.84
New Target Level for the next Exam	2.10



VIII. 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. 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 1is less than 2 as compared to other remaining COs. To improve attainment level course outcomes C319.1, 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	Below mentioned activities can be suggested. • Animated videos to clarify concepts of Operating System
4	Additional Comments (if any)	--

X. INDIRECT ASSESSMENT OF PO & PSO THROUGH COURSE EXIT SURVEY (CES)

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

POs→ / COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C319.1	2	2	2	--	--	--	--	2	--	2	--	1
C319.2	2	2	2	--	--	--	--	2	--	2	--	1
C319.3	2	2	2	--	--	--	--	2	--	2	--	1
C319.4	2	2	2	--	--	--	--	2	--	2	--	1
C319.5	2	2	2	--	--	--	--	2	--	2	--	1
Average	2	2	2	--	--	--	--	2	--	2	--	1
CES Attainment	1.81	1.81	1.81	--	--	--	--	1.81	--	1.81	--	0.90

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

PSOs	PSO 1	PSO 2
COs		
C319.1	2	1
C319.2	2	1
C319.3	2	1
C319.4	2	1
C319.5	2	1
Average	2	1
CES Attainment	1.81	0.90

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Attainment of Program Outcomes and Program Specific Outcomes

Assessment Year 2020-21

PO/PSO Attainment through Direct Assessment Method:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	2.14	2.10	1.83	1.83	1.66	1.98	2.32	1.32	2.20	1.51	2.14	1.29	1.86	1.61

PO/PSO Attainment through Indirect Assessment Methods:

S. No.	Indirect Method	Weightage (%)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	Employer Survey	5	2.67	2.67	3.00	3.00	2.33	3.00	2.67	3.00	3.00	2.67	2.67	3.00	3.00	2.67
2	Alumni Survey	15	3.00	3.00	2.00	2.00	2.14	1.63	1.63	2.00	2.13	2.13	2.00	2.14	2.14	--'
3	Senior Exit Survey	15	2.86	2.86	2.86	2.81	2.92	2.92	2.83	2.89	2.89	2.89	2.75	2.89	2.86	2.89
4	Activity Feedback	35	3	3	3		3	3	3	3	3	3	3	3	3	3
5	Course Exit Survey	15	2.45	2.47	2.11	2.07	1.95	2.51	2.69	1.48	2.22	1.64	2.45	1.55	2.06	1.78
6	Placement, Higher Education and Entrepreneurship	15	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72
	Indirect Assessment(B)		2.69	2.69	2.50	1.44	2.48	2.52	2.51	2.41	2.54	2.44	2.52	2.45	2.52	2.14

PO/PSO Attainment through Direct and Indirect Assessment Methods:

Assessment Method/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Direct Assessment(A)	2.14	2.10	1.83	1.83	1.66	1.98	2.32	1.32	2.20	1.51	2.14	1.29	1.86	1.61
Indirect Assessment(B)	2.69	2.69	2.50	1.44	2.48	2.52	2.51	2.41	2.54	2.44	2.52	2.45	2.52	2.14
AVG(0.8*A+0.2*B)	2.25	2.22	1.96	1.75	1.82	2.09	2.36	1.54	2.27	1.69	2.22	1.52	1.99	1.72

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PO Attainment through Direct Assessment Method

Assessment Year - 2020-21

Sl. No	Course	Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1	PO11	PO12
1	Engg. Mathematics-I	C101	1.76	1.17	0.59	--	--	--	--	--	--	--	--	0.59
2	Engg. Physics	C102	2.18	--	1.45	--	0.73	--	--	--	--	--	--	0.73
3	Basic Civil Engg.	C103	1.16	1.16	0.77	0.77	--	0.39	--	0.39	--	--	0.39	0.77
4	Elements of Mechanical Engg.	C104	1.86	1.24	--	--	--	--	0.62	--	--	--	--	--
5	Basic Electrical Engg.	C105	1.88	--	1.25	--	0.63	--	--	--	--	--	--	0.63
6	Workshop Practice Lab	C106	2.66	1.66	3	1.33	--	3	--	3	2	2	3	2.5
7	Engg. Physics Lab	C107	2.76	--	--	--	0.92	--	--	--	--	--	--	--
8	Engg. Mathematics-II	C109	1.52	1.01	0.51	--	--	--	--	--	--	--	--	0.51
9	Engineering Chemistry	C110	1.73	1.38	1.15	--	--	1.04	--	--	--	--	--	0.58
10	Programming in C & Data Structures	C111	1.43	1.14	1.24	--	--	--	--	0.48	--	0.48	--	0.48
11	Computer Aided & Engg. Drawing	C112	0.5	--	--	--	1.01	--	--	0.5	--	1.51	--	--
12	Basic Electronics	C113	1.63	1.63	1.63	1.09		0.54	--	--	--	--	--	1.09
13	Computer Programming Lab	C114	2.91	2.91	2.91	--	--	--	--	0.97	1.94	1.94	--	0.97
14	Engg. Chemistry Lab	C115	2.91	2.91	2.91	--	--	1.94	--	--	--	--	--	0.97
15	Environmental Science	C116	3	2	2	--	--	2	2	1	--	--	1	1
16	Engineering Mathematics -III	C201	1.63	1.09	0.54	--	--	--	--	--	--	--	--	0.54
17	Analog & Digital Electronics	C202	2.12	2.12	2.12	--	--	--	--	1.42	--	0.71	--	1.42
18	Data Structures & Applications	C203	2.25	2.25	1.87	--	--	--	--	1.50	--	1.50	--	--
19	Computer Organization	C204	1.14	1.25	1.25	--	--	--	--	0.57	--	0.57	--	0.57
20	Unix & System Programming	C205	2.21	2.21	1.47	--	--	--	--	0.74	--	0.74	--	0.74
21	Discrete Mathematical Structures	C206	2.09	2.09	1.40	--	--	--	--	1.40	--	1.40	--	--

22	Analog & Digital Electronics Lab	C207	2.92	2.92	1.95	1.95	1.95	--	--	1.95	1.95	1.95	--	1.95
23	Data Structures Lab	C208	2.85	2.85	1.90	--	1.90	--	--	1.90	1.90	1.90	--	1.90
24	Engineering Mathematics -IV	C209	2.02	1.35	0.67	--	--	--	--	--	--	--	--	0.67
25	Object Oriented Concepts	C210	1.03	1.03	1.03	--	0.51	--	--	0.51	--	0.51		1.03
26	Design & Analysis of Algorithms	C211	1.48	1.48	1.48	--	--	--	--	1.48	--	1.48	--	1.48
27	Microprocessor & Microcontroller	C212	2.17	2.17	1.45	--	--	--	--	0.72	--	0.72	--	1.45
28	Software Engineering	C213	1.38	2.07	2.07	1.38	1.72	1.38		1.38	--	0.69	2.07	1.38
29	Data Communications	C214	0.49	0.99	--	--	0.49	--	--	0.49	--	0.49	--	0.49
30	Design & Analysis of Algorithms Lab	C215	2.81	2.81	1.87	--	--	--	--	0.94	1.87	1.87	--	1.87
31	Microprocessors Lab	C216	1.82	1.82	1.82	0.91	0.91	--	--	0.91	1.82	1.82	--	0.91
32	Management & Entrepreneurship for IT	C301	2.44	2.44	--	--	--	1.90	1.63	2.44	2.44	2.44	2.44	2.03
33	Computer Networks	C302	1.72	1.72	1.72	1.72	--	--	--	0.86	--	1.72	--	1.72
34	Database Management System	C303	1.68	1.68	1.12	--	--	--	--	0.56	--	0.56	--	0.56
35	Automata Theory & Computability	C304	2.22	2.22	1.77	--	--	--	--	1.48	--	1.48	--	--
36	Advanced Java & J2EE	C307	1.72	1.72	1.72	--	1.72	--	--	0.69	--	0.69	--	2.06
37	Dotnet Framework for Application	C312	2.06	2.06	2.06	0.69	2.06	--	--	1.37	--	1.37	--	2.06
38	Computer Networks Lab	C314	2.81	2.81	1.87	1.87	1.87	--	--	0.94	1.87	1.87	--	0.94
39	DBMS Lab with Mini Project	C315	2.76	2.76	1.84	1.84	1.84	--	--	0.92	1.84	1.84	1.84	0.92
40	Cryptography, Network Security & Cyber Law	C316	2.96	2.96	1.48	--	--	--	--	1.98	--	0.99	--	0.99
41	Computer Graphics & Visualization	C317	2.32	1.74	1.93	--	2.89	--	--	0.96	--	0.96	--	0.96
42	System Software and Compiler Design	C318	2.98	2.39	2.39	--	--	--	--	1.99	--	1.99	--	--
43	Operating Systems	C319	1.85	1.85	1.85	--	--	--	--	1.85	--	1.85	--	0.92
44	Data Mining & Data Warehousing	C320	2.98	2.98	2.98	--	--	--	--	0.99	--	0.99	--	0.99

45	Python Application Programming	C327	0.98	1.95	1.95	--	0.98	--	--	0.98	--	0.98	--	0.98
46	System Software & Operating System Lab	C330	1.98	1.98	0.99	--	--	--	--	0.99	1.98	1.98	--	0.99
47	Computer Graphics & Visualization Lab with	C331	1.95	1.95	1.95	--	0.98	--	--	0.98	1.95	1.95	0.98	0.98
48	Web Technology & Applications	C401	2.36	2.36	1.58	--	0.79	--	--	0.79	--	1.58	--	1.58
49	Advanced Computer Architecture	C402	2.68	2.68	2.68	--	--	--	--	1.79	--	1.79	--	1.79
50	Machine Learning	C403	2.05	2.05	2.05	--	--	--	--	0.88	--	0.88	--	0.88
51	Cloud Computing & Applications	C405	1.64	1.64	1.64	--	1.64	--	--	0.82	--	0.82	--	0.82
52	Storage Area Networks	C411	2.39	2.39	--	--	--	1.59	--	1.59	--	1.59	--	1.59
53	Machine Learning Lab	C412	2.88	2.88	1.92	1.92	1.92	--	--	0.96	1.92	1.92	--	1.92
54	Web Technology Lab with Mini Project	C413	2.98	2.98	1.99	--	1.99	--	--	0.99	1.99	1.99	1.99	0.99
55	Project Phase - I	C414	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
56	Internet of Things & Applications	C415	2.81	2.81	2.81	--	--	--	--	1.87	--	0.94	--	1.87
57	Big Data Analytics	C416	0.96	1.93	1.93	--	--	--	--	0.96	--	0.96	--	0.96
58	User Interface Design	C420	1.86	1.86	1.86	--	--	--	--	0.93	--	1.86	--	0.93
59	Internship	C421	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
60	Project Work - II	C422	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
61	Seminar	C423	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Direct Assessment(A)			**2.14**	**2.10**	**1.83**	**1.83**	**1.66**	**1.98**	**2.32**	**1.32**	**2.20**	**1.51**	**2.14**	**1.29**

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PSO Attainment through Direct Assessment Method

Assessment Year - 2020-21

Sl.No.	Course	Code	PSO1	PSO2
1.	Engineering Mathematics -III	C201	--	--
2.	Analog & Digital Electronics	C202	2.12	1.42
3.	Data Structures & Applications	C203	1.50	1.50
4.	Computer Organization	C204	0.91	0.57
5.	Unix & System Programming	C205	2.21	2.21
6.	Discrete Mathematical Structures	C206	0.70	--
7.	Analog & Digital Electronics Lab	C207	1.95	1.95
8.	Data Structures Lab	C208	1.90	1.90
9.	Engineering Mathematics -IV	C209	--	--
10.	Software Engineering	C210	1.03	1.03
11.	Design & Analysis of Algorithms	C211	1.48	1.48
12.	Microprocessor & Microcontroller	C212	1.45	0.72
13.	Object Oriented Concepts	C213	1.38	1.38
14.	Data Communications	C214	0.49	0.49
15.	Design & Analysis of Algorithms Lab	C215	2.81	2.81
16.	Microprocessors Lab	C216	0.91	0.91
17.	Management & Entrepreneurship for IT	C301	--	2.44
18.	Computer Networks	C302	1.72	0.86
19.	Database Management System	C303	1.68	1.68
20.	Automata Theory & Computability	C304	1.48	--
21.	Advanced Java & J2EE	C307	2.06	1.37
22.	Dotnet Framework for Application development	C312	2.06	1.37
23.	Computer Networks Lab	C314	1.87	0.94
24.	DBMS Lab with Mini Project	C315	2.76	2.76
25.	Cryptography, Network Security & Cyber Law	C316	1.98	1.98
26.	Computer Graphics & Visualization	C317	1.93	1.93
27.	System Software and Compiler Design	C318	1.99	--
28.	Operating Systems	C319	1.85	0.92
29.	Data Mining & Data Warehousing	C320	1.99	0.99
30.	Python Application Programming	C327	1.95	1.95
31.	System Software & Operating System Lab	C330	1.98	0.99
32.	Computer Graphics & Visualization Lab with Mini	C331	0.98	0.98
33.	Web Technology & Applications	C401	1.58	0.79
34.	Advanced Computer Architecture	C402	2.68	1.79

35.	Machine Learning	C403	1.75	1.75
36.	Cloud Computing & Applications	C405	1.64	1.64
37.	Storage Area Networks	C411	1.59	0.80
38.	Machine Learning Lab	C412	1.92	1.92
39.	Web Technology Lab	C413	1.99	0.99
40.	Project Phase - I	C414	3.00	3.00
41.	Internet of Things & Applications	C415	2.81	1.87
42.	Big Data Analytics	C416	1.93	1.93
43.	User Interface Design	C420	0.93	0.93
44.	Internship	C421	3.00	3.00
45.	Project Work - II	C422	3.00	3.00
46.	Seminar	C423	3.00	3.00
		Direct Assessment	**1.86**	**1.61**

26/10/2021

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26/10/21

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FACULTY COURSE ASSESSEMENT REPORT (FCAR)

Course Coordinator: **Dr. K. B. Manwade** **Class Strength:34**

Semester: VIII **Subject: User Interface Design** **Code: 17CS832**

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:	Understand, design and analyze computer programs in the areas related to Algorithms, System Software, Web design, Bigdata Analytics and Networking.
PSO2:	Make use of modern computer tools for creating innovative career paths to be an entrepreneur and desire for higher studies.

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

CO	Description	Cognitive Level	Mapped POs
C418.1	Explain principles, importance, characteristics of good interface design.	L2	1,2,3,5,12
C418.2	Explain the user interface design process, characteristics, and standards of design process.	L2	1,2,3,5,12
C418.3	Explain various aspects of system menus and its navigation.	L2	1,2,3,5,12
C418.4	Explain different aspects of windows like its characteristics, components, presentation, control and working.	L2	1,2,3,5,12
C418.5	Explain types of screen based controls.	L2	1,2,3,5,12

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

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C418.1	2	2	2	--	--	--	--	1	--	2	--	1
C418.2	2	2	2	--	--	--	--	1	--	2	--	1
C418.3	2	2	2	--	--	--	--	1	--	2	--	1
C418.4	2	2	2	--	--	--	--	1	--	2	--	1
C418.5	2	2	2	--	--	--	--	1	--	2	--	1
Average	**2**	**2**	**2**	**--**	**--**	**--**	**--**	**1**	**--**	**2**	**--**	**1**

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

PSOs / COs	PSO 1	PSO 2
C418.1	2	1
C418.2	2	1
C418.3	2	1
C418.4	2	1
C418.5	2	1
Average	**2**	**1**

VI. Justification of CO-PO Mapping:

Mapping	Justification
C418.1-PO1	A medium correlation since explaining the principles of good interface design which require knowledge of engineering sciences.
C418.2-PO1	A medium correlation since explaining the user interface design process which require knowledge of engineering sciences.
C418.3-PO1	A medium correlation since explaining the various aspects of system menus design which require knowledge of engineering sciences.
C418.4-PO1	A medium correlation since explaining the aspects of windows like its characteristics which require knowledge of engineering sciences.
C418.5-PO1	A medium correlation since explaining the Explain types of screen based controls which require knowledge of engineering sciences.
C418.1-PO2	The CO contributes moderately to problem analysis by explaining importance and characteristics of good interface design.
C418.2-PO2	The CO contributes moderately to problem analysis by Explain the user interface design process, characteristics.
C418.3-PO2	The CO contributes moderately for problem analysis by Explain various aspects of system menus and its navigation.
C418.4-PO2	The CO contributes moderately for problem analysis by Explain components, presentation, control and it's working.
C418.5-PO2	The CO contributes moderately for problem analysis by various Explain types of screen based controls.
C418.1-PO3	The CO maps moderately to design and development by explaining characteristics of good user interface design.
C418.2-PO3	The CO maps moderately to design and development by explaining the standards of design process.
C418.3-PO3	The CO maps moderately to design and development by explaining various aspects of system menus and its navigation design.
C418.4-PO3	The CO maps moderately to design and development by explaining the components an presentation window module.
C418.5-PO3	The CO maps moderately to design and development by explaining various types of designs for screen based controls.
C418.1-PO8	The CO explains only principles, importance, characteristics user interface, so contributes weakly to professional ethics and responsibilities.
C418.2-PO8	The CO explains various standards for designing user interface, thus contributes weakly to professional ethics and responsibilities.
C418.3-PO8	The CO explains only requirements for implementation of system menus and its navigation. so contributes weakly to professional ethics and responsibilities.
C418.4-PO8	The CO explains only requirements not ethical principle for implementing window components and its presentation.
C418.5-PO8	The CO explains only types of screen based controls for different types of devices, so contributes weakly to professional ethics and responsibilities.
C418.1-PO10	The CO explain concept, characteristics and importance of user interface and contributes moderately for communication.
C418.2-PO10	The CO contributes moderately for communication as it explains user interface design process and its characteristics and standards.
C418.3-PO10	The CO explains menu and its types and thus contributes moderately for communication.
C418.4-PO10	The CO contributes moderately for communication by explaining windows based controls.

C418.5-PO10	The CO contributes moderately for communication by explaining screen based controls.
C418.1-PO12	The CO explains importance of good interface design and motivates for lifelong learning.
C418.2-PO12	The CO explains standards of user interface design process and motivates for lifelong learning.
C418.3-PO12	The CO explains advantages of menus and types of navigations in the menu and motivates for lifelong learning.
C418.4-PO12	The CO explains types and aspects of windows based systems and motivates for lifelong learning.
C418.5-PO12	The CO explains modern screen based controls and requirement for designing good interface which motivates for lifelong learning.

VII. Justification of CO-PSO Mapping:

Mapping	Justification
C418.1-PSO1	A medium correlation since CO gives introduction about user interface design which is required for implementation of different software products.
C418.2-PSO1	The required design process for implementation of user interface is explained by CO, so medium correlation between CO and the corresponding PO.
C418.3-PSO1	For GUI based software product the important component is menus and its navigation which explained by the CO, therefore medium correlation.
C418.4-PSO1	A medium correlation since CO explains windows based system and its implementation.
C418.5-PSO1	As per types of devices user interface need to be developed, the CO explains various screen based interfaces therefore medium correlation.
C418.1-PSO2	The CO indicates low correlation to higher studies and for innovative career paths as it guides about characteristics and importance of user interface.
C418.2-PSO2	The CO indicates low correlation to higher studies and for innovative career paths as it explains the design process for different types of devices.
C418.3-PSO2	The CO indicates low correlation to higher studies and for innovative career paths and explains theoretical aspects of different types of menus and navigation of menus.
C418.4-PSO2	The CO indicates low correlation to higher studies and for innovative career paths as it explains windows systems, their presentation, characteristics and their components.
C418.5-PSO2	The CO indicates low correlation to higher studies and for innovative career paths as it explains only types of screen based controls.

VIII. Bench Mark Setting

The syllabus of course User Interface Design (17CS832) is same as compared with the previous scheme syllabus of the University curriculum. The previous set target value 1.5 is achieved by 2.87. Therefore **set target value for academic year 2020-21 the CO attainment is 2.87**.

IX. DIRECT ASSESSMENT OF COs, POs & PSOs ATTAINMENT

Teaching Methodology:

- Lecture by Teacher
- PPT or Online demo etc.

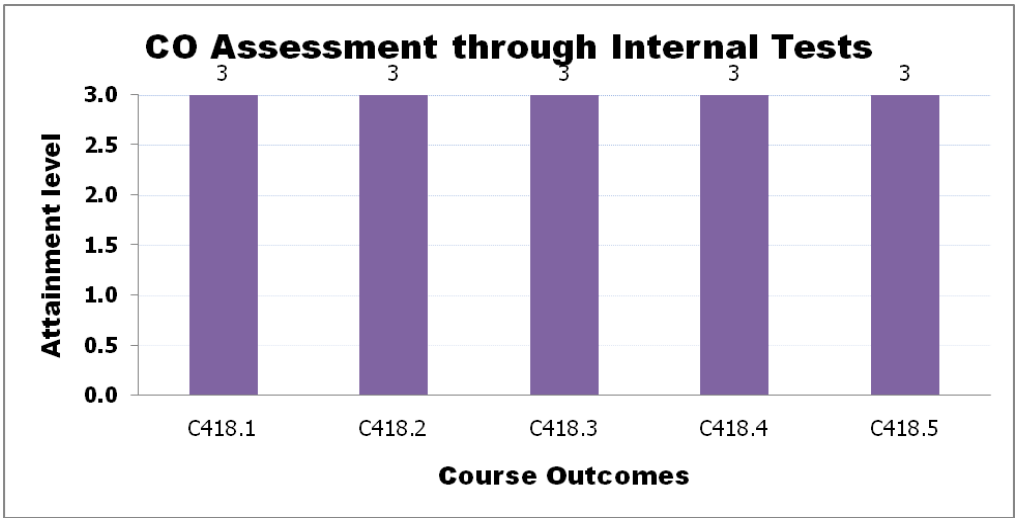
Assessment Tools:

- Continuous assessment
- Laboratory experiments
- End semester exam

I. Assessment through Assignment:

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

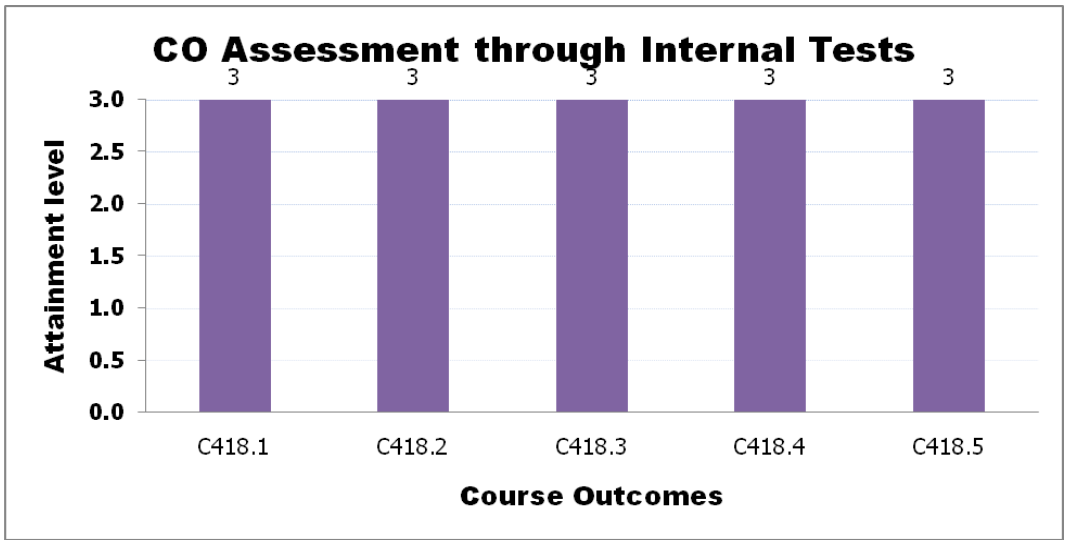
COs	Assignment-1		Assignment-2		Assignment-3		Assignment-4		Assignment-5		Attainment level of CO in Percentage	Attainment level of CO	Mapped PO	Mapped PSO
	A	R	A	R	A	R	A	R	A	R				
C418.1	34	34									100.00	3	1,2,3,8,10,12	1,2
C418.2			34	34							100.00	3	1,2,3,8,10,12	1,2
C418.3					34	34					100.00	3	1,2,3,8,10,12	1,2
C418.4							34	34			100.00	3	1,2,3,8,10,12	1,2
C418.5									34	34	100.00	3	1,2,3,8,10,12	1,2



II. Assessment through Internal Marks:

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

COs	IA - 1				IA -2				IA -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			
C418.1	34	34											1	1,2,3,8,10,12	1,2
C418.2			34	34									2	1,2,3,8,10,12	1,2
C418.3					34	34							2	1,2,3,8,10,12	1,2
C418.4							34	34					3	1,2,3,8,10,12	1,2
C418.5									34	33	34	34	2	1,2,3,8,10,12	1,2

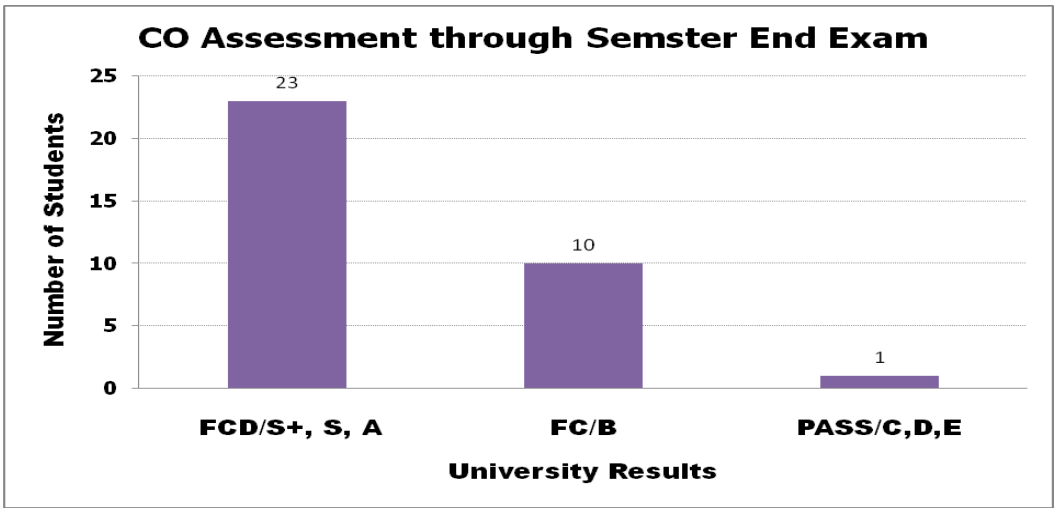


III. Semester End Exam Assessment Based on VTU Exam Results:

COs Attainment Levels:

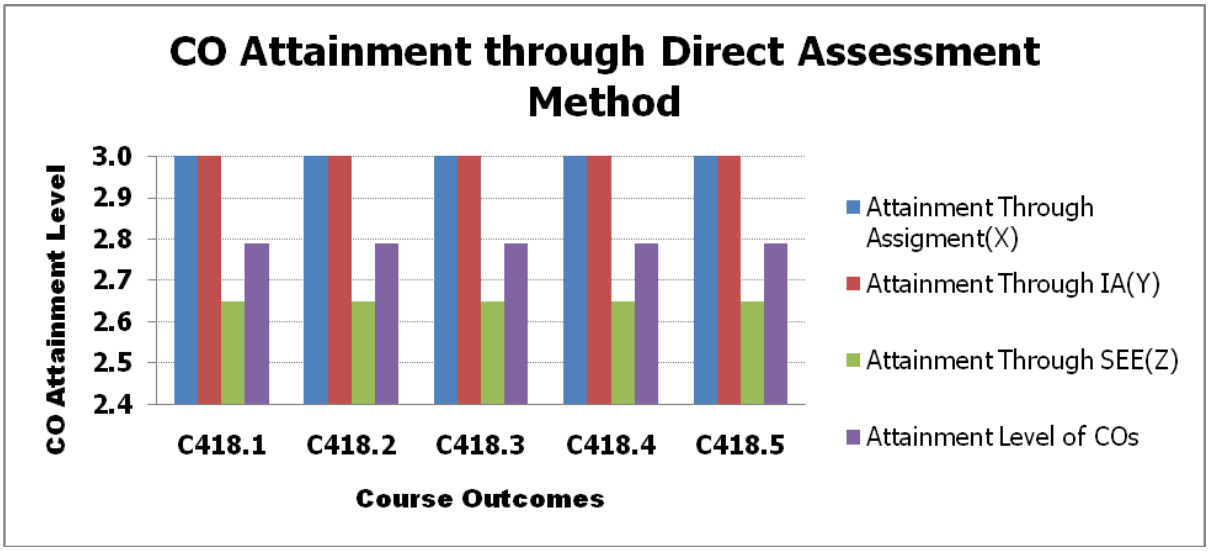
FCD: S+, S, & A = 3; FC (B) = 2; Pass: C, D, & E = 1; Fail = 0

Total no. of Students Appeared	49	
Class/Grade	Total Number of Students	Course (COs) Attainment Through Semster End Exams
FCD/S+, S, A	23	69
FC/B	10	20
PASS/C,D,E	1	1
Total Percentage of Passing	100.00%	2.65



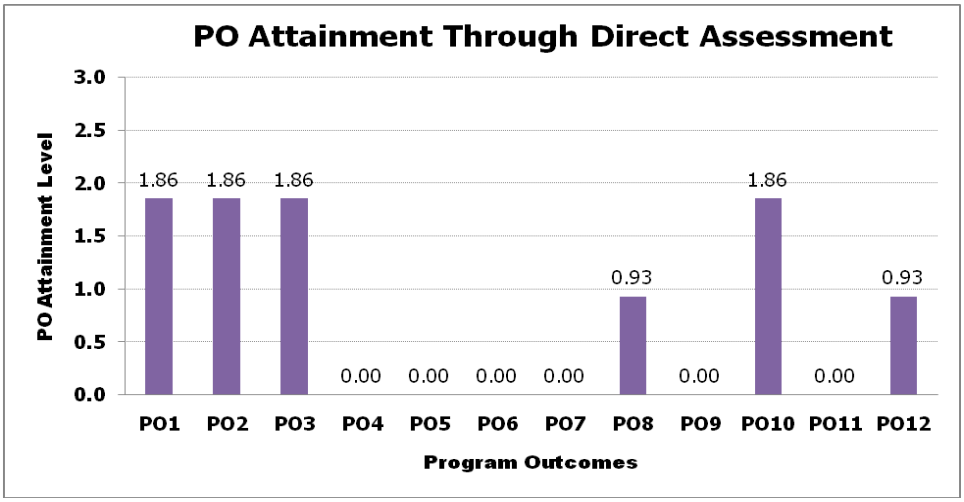
IV. CO Attainment:

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
C418.1	3	3	2.65	2.79	1,2,3,8,10,12	1,2
C418.2	3	3	2.65	2.79	1,2,3,8,10,12	1,2
C418.3	3	3	2.65	2.79	1,2,3,8,10,12	1,2
C418.4	3	3	2.65	2.79	1,2,3,8,10,12	1,2
C418.5	3	3	2.65	2.79	1,2,3,8,10,12	1,2
CO Attainment through Direct Assessment Method				2.79		



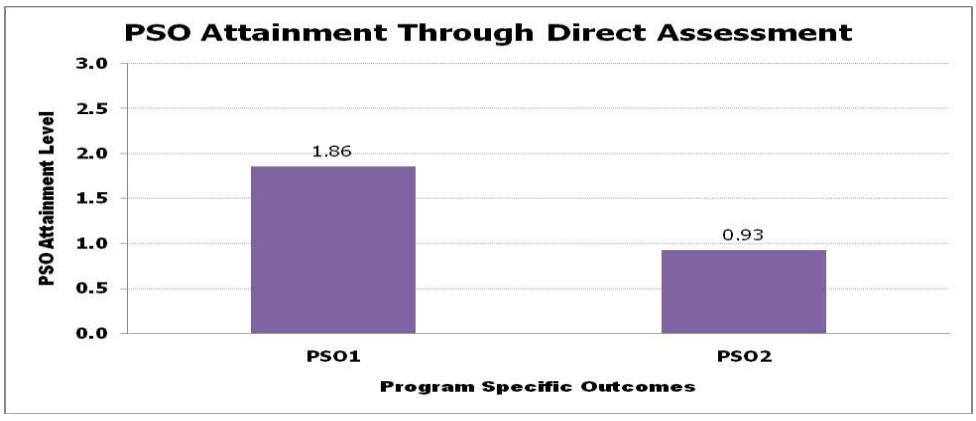
V. PO Attainment for the Entire Course:

CO/PO	PO1	PO2	PO3	PO8	PO5	PO6	PO10	PO8	PO9	PO10	PO11	PO12
C418	1.86	1.86	1.86	0.00	0.00	0.00	0.00	0.93	0.00	1.86	0.00	0.93



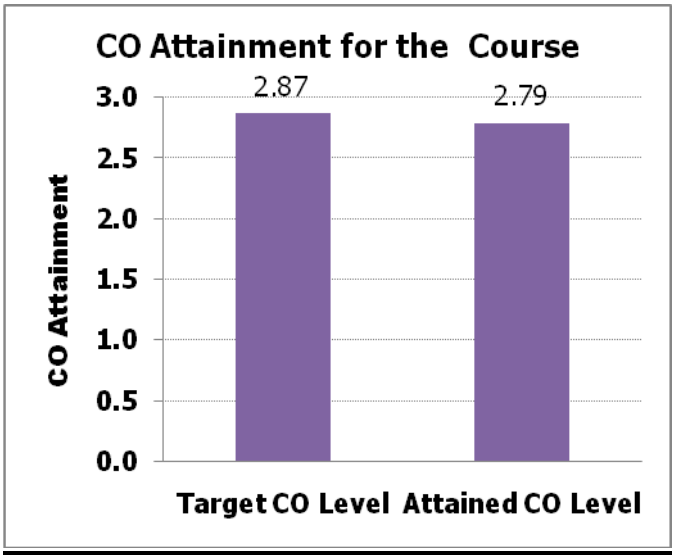
VI. PSO Attainment for the Entire Course:

CO/PSO	PSO1	PSO2
C418	1.86	0.93



VII. Target Attainment:

CO Attainment for the Course	
Target CO Level	2.87
Attained CO Level	2.79



VIII. 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. Because of covid-19 pandemic online teaching method was adopted, therefore due to limitations of online teaching the set target was not achieved.
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 less than set target level. To improve attainment level course outcomes 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	Below mentioned activities can be suggested. • NPTEL video lectures will be shared to students to clarify difficult concepts in the course.
4	Additional Comments (if any)	--

X. INDIRECT ASSESSMENT OF PO & PSO THROUGH COURSE EXIT SURVEY (CES)

PO Attainment = (Mapped value * CES attainment value)/3
= (2 * 2.87) / 3 =
= (1 * 2.87)/3 =

POs→ / COs↓	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C418.1	2	2	2	--	--	--	--	1	--	2	--	1
C418.2	2	2	2	--	--	--	--	1	--	2	--	1
C418.3	2	2	2	--	--	--	--	1	--	2	--	1
C418.4	2	2	2	--	--	--	--	1	--	2	--	1
C418.5	2	2	2	--	--	--	--	1	--	2	--	1
Average	2	2	2	--	--	--	--	1	--	2	--	1
CES Attainment	1.91	1.91	1.91	--	--	--	--	0.96	--	1.91	--	0.96

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

PSOs / COs	PSO 1	PSO 2
C418.1	2	1
C418.2	2	1
C418.3	2	1
C418.4	2	1
C418.5	2	1
Average	2	1
CES Attainment	1.91	0.96

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