Department of Electrical and Electronics Engineering

The Department follows a structured Guidelines handbook for Outcome evaluation followed commonly across the institution

Overall CO attainment is calculated by considering CO attainment (IA+SEE)

In order to obtain the CO attainment of the respective course:

Direct attainment is based on performance of the students in the Internal Assessment (30%) and semester end Examinations (70%)

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Department of Electrical and Electronics Engineering

Detail procedure for Obtaining CO attainment:

STEP 1: All the faculties handling the courses will map the student performance in the internal assessment to the **excel sheet** as and when the blue books are valued.

CO-PO-PSO ATTAINMENT TOOL

Note 1: In case a question (Ex: 2d) is not present in QP, keep the column blank.
Note 2: If the student is not attempted a question, leave the cell blank. Do not fill with ZERO.
Note 3: Fill only the cells with YELLOW / ORANGE, AQUA, PURPLE color. Do not alter the cells with other colors.
Note 4: If a question maps to multiple CO's, write them separated by commas. Ex: If a question maps to CO-1 and CO-4, write CO1,4.

Course	High Voltage Engineering				IA 1(2019-2020)								Faculty Name:Mr.Shreeshayana R					
IA 1																		
S.No.	USN	1a	1b	1c	1d	2a	2b	2c	2d	3a	3b	3c	3d	4a	5a	6a	7a	8a	<= Question No.
		CO1	-	-	-	CO1	-	-	-	CO1	-	-	-	CO1	CO1	CO2	CO2	CO2	<= CO Mapping
		10	-	-	-	10	-	-	-	10	-	-	-	10	10	10	10	10	<= Max. Marks
1	4AD16EE002	8				4.5				4				6		10			28.5
2	4AD16EE003	5								3						7		10	25
3	4AD16EE004	9.5												9.5	10	7.5			36.5
4	4AD16EE005	9				9										8		9	35
5	4AD16EE006	10				6								9.5		7.5		6	39
6	4AD16EE007	9				4.5								9.5		2.5			25.5
7	4AD16EE008	8				3									9	9	10	8	39
8	4AD16EE009	5				3								3		6.5		6	24

Fig. 1: Mapping of IA marks in excel sheet

No. cleared	44	0	0		20	0	0		14	0	0	0	31	9	45	5	30	23	> 32
No. attended	51	0	0		33	0	0		23	0	0	0	41	13	50	10	32	41	> 23
%	86.27	0.00	0.00		60.61	0.00	0.00		60.87	0.00	0.00	0.00	75.61	69.23	90.00	50.00	93.75	15	< 24
Course Outcomes	CO1	-	-	-	CO1	-	-	-	CO1	-	-	-	CO1	CO1	CO2	CO2	CO2		

% of Contribution of each question to CO's																		15	0 to 23
	1a	1b	1c	1d	2a	2b	2c	2d	3a	3b	3c	3d	4a	5a	6a	7a	8a	18	24 to 32
CO1	86.27				60.61				60.87				75.61	69.23				23	33 to 40
CO2															90.00	50.00	93.75	1	Absent
CO3																		57	Total
CO4																		28.54	Avg.
CO5																		10.43	St. D.
CO6																		108.87	Coe. V.

% of Attainment	CO1	73.00	CO2	87.00	CO3	0	CO4	0	CO5	0	CO6	0						IA1	

Fig.2: Calculation over all CO attainment Question wise and Actual Average of COs in the IA-1

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STEP 2: All the three IA including the improvement test is listed and the attainment is available as shown in the below figure. Attainment is calculated in the scale of 0 to 3 based on the percentage of Overall CO attainment

CO attainment %	Attainment Level
<50	0
≥50 but <60	1
≥60 but <70	2
≥70	3

% of Attainment	CO1	0.00	CO2	0.00	CO3	0.00	CO4	99	CO5	93	CO6	0	IA3
% of Attainment	CO1	0	CO2	0	CO3	94	CO4	85	CO5	0	CO6	0	IA2
% of Attainment	CO1	73	CO2	87	CO3	0	CO4	0	CO5	0	CO6	0	IA1
AVERAGE		73		87		94		92		93		0	
	CO Attainment through IA												
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	3	CO5	3	CO6	-	

Fig.3: Overall attainment of CO through Internal Assessment

STEP 3: Attainment Level in University Examination

Attainment Level 1: 50% students scoring more than 50 % maximum marks in the final examination.

Attainment Level 2: 60% students scoring more than 50 % maximum marks in the final examination.

Attainment Level 3: 70% students scoring more than 50 % maximum marks in the final examination.

Enter the university Examination (SEE) percentage of students scored more than 50% of the maximum marks.

Example: If the maximum marks for the Course is 125, then the target marks is 63.

If the maximum marks for the course is 100, then the target marks is 50.

➢ The University result once again reduced to the scale 0 to 3.

STEP 4: The excel calculates the overall attainment of the COs by considering 30%weightage to Internal Assessment and 70% of the weightage to Sessional End Examination.

	CO Attainment through IA												
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	3	CO5	3	CO6	-	
											VTU Exam Result-%		
	CO Attainment through VTU Exam											97	
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	3	CO5	3	CO6	-	
	Overall CO Attainment												
L1 / L2 / L3	CO1	3.00	CO2	3.00	CO3	3.00	CO4	3.00	CO5	3.00	CO6	-	

Fig.4: Overall CO Attainment Method

Course Outcome Attainment of Academic Year 2019-2020

Department of Electrical and Electronics Engineering

Course Outcome Attainment of Academic Year 2019-20

III Semester

Course Name : Electric Circuit Analysis (18EE32)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C302.1	1.78	0.75	-1.03	All COs not achieved the target level
C302.2		0.6	-1.18	
C302.3		0.9	-0.88	
C302.4		0.6	-1.18	
C302.5		0.75	-1.03	
C302.6		0.3	-1.48	
Course Name : Transformers and Generators (18EE33)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C303.1	1.76	2.3	0.54	All COs achieved the target level
C303.2		2.3	0.54	
C303.3		2.3	0.54	
C303.4		2	0.24	
C303.5		2.3	0.54	
Course Name : Analog Electronic Circuits (18EE34)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C304.1	1.76	2.35	0.59	All COs achieved the target level
C304.2		2.65	0.89	
C304.3		2.2	0.44	
C304.4		2.65	0.89	
C304.5		2.65	0.89	
Course Name : Digital System Design (18EE35)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C305.1	2.00	2.65	0.65	All COs achieved the target level
C305.2		2.65	0.65	
C305.3		2.65	0.65	
C305.4		2.65	0.65	
C305.5		2.65	0.65	
Course Name : Electrical & Electronics Measurements (18EE36)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C306.1	2.00	2.3	0.3	All COs achieved the target level
C306.2		2.3	0.3	
C306.3		2.3	0.3	
C306.4		2.3	0.3	
C306.5		2.3	0.3	

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Course Name : Electrical Machines Laboratory – I (18EEL37)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C307.1	2.00	3.00	1.00	All COs achieved the target level
C307.2		3.00	1.00	
C307.3		3.00	1.00	
C307.4		3.00	1.00	
C307.5		3.00	1.00	
Course Name : Electronics Laboratory (18EEL38)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C308.1	2.00	3.00	1.00	All COs achieved the target level
C308.2		3.00	1.00	
C308.3		3.00	1.00	
C308.4		3.00	1.00	
C308.5		3.00	1.00	
C308.6		3.00	1.00	

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IV Semester

Course Name : Power Generation & Economics (18EE42)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C402.1	2.00	3.00	1.00	All COs achieved the target level
C402.2		3.00	1.00	
C402.3		3.00	1.00	
C402.4		3.00	1.00	
C402.5		3.00	1.00	
Course Name : Transmission & Distribution (18EE43)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C403.1	1.73	3.00	1.27	All COs achieved the target level
C403.2		3.00	1.27	
C403.3		3.00	1.27	
C403.4		3.00	1.27	
C403.5		3.00	1.27	
Course Name : Electric Motors (18EE44)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C404.1	2.00	3.00	1.00	All COs achieved the target level
C404.2		3.00	1.00	
C404.3		3.00	1.00	
C404.4		3.00	1.00	
Course Name : Electromagnetic Field Theory (18EE45)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C405.1	1.77	3.00	1.23	All COs achieved the target level
C405.2		3.00	1.23	
C405.3		3.00	1.23	
C405.4		3.00	1.23	
C405.5		3.00	1.23	
Course Name : Operational Amplifiers & Linear ICs (18EE46)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C406.1	1.80	3.00	1.2	All COs achieved the target level
C406.2		3.00	1.2	
C406.3		2.55	0.75	
C406.4		2.55	0.75	
C406.5		3.00	1.2	

Department of Electrical and Electronics Engineering

Course Name : Electrical Machines Laboratory – II (18EEL47)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C407.1	2.00	3.00	1.00	All COs achieved the target level
C407.2		3.00	1.00	
C407.3		3.00	1.00	
C407.4		3.00	1.00	
C407.5		3.00	1.00	
Course Name : Operational Amplifiers & Linear ICs Laboratory (18EEL48)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C408.1	2.00	3.00	1.00	All COs achieved the target level
C408.2		3.00	1.00	
C408.3		3.00	1.00	
C408.4		3.00	1.00	
C408.5		3.00	1.00	

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V Semester

Course Name : Management and Entrepreneurship (17EE51)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C501.1	2.00	3.00	1.00	All COs achieved the target level
C501.2		2.70	0.70	
C501.3		3.00	1.00	
C501.4		3.00	1.00	
C501.5		3.00	1.00	
Course Name : Microcontrollers (17EE52)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C502.1	0.90	3.00	2.10	All COs achieved the target level
C502.2		3.00	2.10	
C502.3		3.00	2.10	
C502.4		3.00	2.10	
C502.5		3.00	2.10	
Course Name : Power Electronics (17EE53)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C503.1	2.00	3.00	1.00	All COs achieved the target level
C503.2		3.00	1.00	
C503.3		3.00	1.00	
C503.4		2.70	0.70	
C503.5		3.00	1.00	
Course Name : Signals & Systems (17EE54)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C504.1	1.38	2.30	0.92	All COs achieved the target level
C504.2		1.40	0.02	
C504.3		2.30	0.92	
C504.4		2.30	0.92	
C504.5		2.30	0.92	

Department of Electrical and Electronics Engineering

Course Name : Electrical Engineering Materials (17EE552)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C505.1	1.52	3.00	1.48	All COs achieved the target level
C505.2		3.00	1.48	
C505.3		3.00	1.48	
C505.4		3.00	1.48	
C505.5		3.00	1.48	
Course Name : Renewable Energy Sources (17EE563)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C506.1	2.00	2.40	0.40	All COs achieved the target level
C506.2		3.00	1.00	
C506.3		3.00	1.00	
C506.4		3.00	1.00	
C506.5		3.00	1.00	
Course Name : Microcontrollers Laboratory (17EEL57)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C507.1	2.00	3.00	1.00	All COs achieved the target level
C507.2		3.00	1.00	
C507.3		3.00	1.00	
C507.4		3.00	1.00	
C507.5		3.00	1.00	
Course Name : Power Electronics Laboratory (17EEL58)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C508.1	2.00	3.00	1.00	All COs achieved the target level
C508.2		3.00	1.00	
C508.3		3.00	1.00	
C508.4		3.00	1.00	
C508.5		3.00	1.00	

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VI Semester

Course Name : Control Systems (17EE61)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C601.1	2.00	3.00	1.00	All COs achieved the target level
C601.2		3.00	1.00	
C601.3		3.00	1.00	
C601.4		3.00	1.00	
C601.5		3.00	1.00	
Course Name : Power System Analysis – I (17EE62)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C602.1	2.00	3.00	1.00	All COs achieved the target level
C602.2		3.00	1.00	
C602.3		3.00	1.00	
C602.4		3.00	1.00	
C602.5		3.00	1.00	
Course Name : Digital Signal Processing (17EE63)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C603.1	2.00	3.00	1.00	All COs achieved the target level
C603.2		3.00	1.00	
C603.3		3.00	1.00	
C603.4		2.10	0.10	
C603.5		3.00	1.00	
Course Name : Electrical Machine Design (17EE64)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C604.1	2.00	3.00	1.00	All COs achieved the target level
C604.2		3.00	1.00	
C604.3		3.00	1.00	
C604.4		3.00	1.00	
C604.5		2.10	0.10	
C604.6		2.10	0.10	

Department of Electrical and Electronics Engineering

Course Name : Computer Aided Electrical Drawing (17EE651)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C605.1	2.00	3.00	1.00	All COs achieved the target level
C605.2		3.00	1.00	
C605.3		3.00	1.00	
C605.4		3.00	1.00	
C605.5		3.00	1.00	
Course Name : Sensors & Transducers (17EE662)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C606.1	2.00	3.00	1.00	All COs achieved the target level
C606.2		3.00	1.00	
C606.3		3.00	1.00	
C606.4		3.00	1.00	
C606.5		3.00	1.00	
Course Name : Control Systems Laboratory (17EEL67)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C607.1	2.00	3.00	1.00	All Cos achieved the target level
C607.2		3.00	1.00	
C607.3		3.00	1.00	
C607.4		3.00	1.00	
C607.5		3.00	1.00	
Course Name : Digital Signal Processing Laboratory (17EEL68)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C608.1	2.00	3.00	1.00	All COs achieved the target level
C608.2		3.00	1.00	
C608.3		3.00	1.00	
C608.4		3.00	1.00	
C608.5		3.00	1.00	

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VII Semester

Course Name : Power System Analysis – II (15EE71)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C701.1	2.00	3.00	1.00	All Cos achieved the target level
C701.2		3.00	1.00	
C701.3		3.00	1.00	
C701.4		3.00	1.00	
C701.5		3.00	1.00	
Course Name : Power System Protection (15EE72)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C702.1	2.00	3.00	1.00	All COs achieved the target level
C702.2		3.00	1.00	
C702.3		3.00	1.00	
C702.4		3.00	1.00	
C702.5		3.00	1.00	
Course Name : High Voltage Engineering (15EE73)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C703.1	2.00	3.00	1.00	All COs achieved the target level
C703.2		3.00	1.00	
C703.3		3.00	1.00	
C703.4		3.00	1.00	
C703.5		3.00	1.00	
Course Name : Utilization of Electrical Power (15EE742)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C704.1	2.00	1.60	-0.40	All COs not achieved the target level
C704.2		1.60	-0.40	
C704.3		1.60	-0.40	
C704.4		1.60	-0.40	
C704.5		1.60	-0.40	

Department of Electrical and Electronics Engineering

Course Name : Testing & Commissioning of Electrical Apparatus (15EE752)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C705.1	2.00	2.70	0.70	All COs achieved the target level
C705.2		3.00	1.00	
C705.3		3.00	1.00	
C705.4		3.00	1.00	
C705.5		3.00	1.00	
C705.6		3.00	1.00	

Course Name : Power System & Simulation Lab (15EEL76)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C706.1	2.00	3.00	1.00	All COs achieved the target level
C706.2		3.00	1.00	
C706.3		3.00	1.00	
C706.4		3.00	1.00	
C706.5		3.00	1.00	

Course Name : Relay & High Voltage Lab(15EEL77)				
Course Outcomes	**Target for current academic Year m**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C707.1	2.00	3.00	1.00	All COs achieved the target level
C707.2		3.00	1.00	
C707.3		3.00	1.00	
C707.4		3.00	1.00	
C707.5		3.00	1.00	

Course Name : Project Work Phase – I (15EEP78)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C708.1	2.00	3.00	1.00	All COs achieved the target level
C708.2		3.00	1.00	
C708.3		3.00	1.00	
C708.4		3.00	1.00	
C708.5		3.00	1.00	

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VIII Semester

Course Name : Power System Operation & Control (15EE81)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C801.1	2.00	3.00	1.00	All COs achieved the target level
C801.2		3.00	1.00	
C801.3		3.00	1.00	
C801.4		3.00	1.00	
C801.5		3.00	1.00	
Course Name : Industrial Drives & Applications (15EE82)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C802.1	2.00	3.00	1.00	All COs achieved the target level
C802.2		3.00	1.00	
C802.3		3.00	1.00	
C802.4		3.00	1.00	
C802.5		3.00	1.00	
C802.6		3.00	1.00	
Course Name : Integration of Distributed Generation (15EE833)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C803.1	2.00	2.30	0.30	All COs achieved the target level
C803.2		2.30	0.30	
C803.3		2.30	0.30	
C803.4		2.30	0.30	
Course Name : Internship/Professional Practice (15EE84)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C804.1	2.00	3.00	1.00	All COs achieved the target level
C804.2		3.00	1.00	
C804.3		3.00	1.00	
C804.4		3.00	1.00	
Course Name : Project Work Phase - II (15EEP85)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C805.1	2.00	3.00	1.00	All COs achieved the target level
C805.2		3.00	1.00	
C805.3		3.00	1.00	
C805.4		3.00	1.00	
C805.5		3.00	1.00	

Department of Electrical and Electronics Engineering

Course Name : Seminar (15EES86)				
Course Outcomes	**Attainment Level for last exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C806.1	2.00	3.00	1.00	All COs achieved the target level
C806.2		3.00	1.00	
C806.3		3.00	1.00	
C806.4		3.00	1.00	

HoD

Dr. PARTHASARATHY L.
Professor and HOD
Dept. of Electrical & Electronics Engineering
ATME College of Engineering, Mysuru

Attainment of Program Outcomes and Program Specific Outcomes

Program shall set Program Outcome attainment levels for all POs & PSOs.
(The attainment levels by direct (student performance) and indirect (surveys) are to be presented through Program level Course – PO & PSO matrix as indicated).

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101												
C102												

C409												
Direct attainment												
Indirect Attainment												
Over all PO attainment												

Note: Similar table is to be prepared for PSOs
C101, C102 are indicative courses in the first year. Similarly, C409 is final year course. First numeric digit indicates year of study and remaining two digits indicate course nos. in the respective year of study.

1. Direct attainment level of a PO & PSO is determined by taking average across all courses addressing that PO and/or PSO. Fractional numbers may be used up to two decimal places.
2. Indirect attainment level of PO & PSO is determined based on the student exit surveys, employer surveys and Alumni survey.

Calculation of PO attainment:

Following are the steps need to be followed to obtain the PO attainment.
Step 1: Course coordinator should enter the Course articulation matrix as per the course module in Sheet 4 of the CO-PO-PSO assessment tool.

Step 2: CO attainment from the Internal assessment is multiplied with the CAM and reduced percentage in the subsequent table and based on the target level set the percentage are converted to the scale 1 to 3.

Step 3: PO attainment through University Examination results is also considered and reduced to level points 1 to 3.

Step 4: PO and PSO attainment through direct assessment is thus calculated by putting the weightage 70% to attainment through University Exams and 30% to attainment through IA.

Step 5: Indirect Assessment of PO and PSO is calculated by considering the surveys such as Alumni Survey, Program Exit Survey and Employer Survey.
• In each survey the average values of individual POs and PSOs of all the courses in the program are taken.
• Then the overall average of PO1-PO12 and PSOs are taken. Then the final average value is converted and represented in percentage.

Step 6: Above step is carried out for all the three surveys and the final average value of the percentage obtained is converted to Level 1 to 3.

Department of Electrical and Electronics Engineering

Step 1: Course coordinator should enter the Course articulation matrix(CAM) as per the course module in Sheet 4 of the CO-PO-PSO assessment tool.

	CO - PO - PSO Mapping															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	-	pso1	pso2	pso3
C703.1	3	2	-	-	-	2	-	-	-	-	-	-	-	3	-	
C703.2	3	2	-	-	-	2	-	-	-	-	-	-	-	3	-	
C703.3	3	2	-	-	-	2	-	-	-	-	-	-	-	3	-	
C703.4	3	2	-	-	-	2	-	-	-	-	-	-	-	3	-	
C703.5	3	2	-	-	-	2	-	-	-	-	-	-	-	3	-	
													-			
Course-PO-pso	3	2	-	-	-	2	-	-	-	-	-	-	-	3	-	-

Fig.1: CAM of the respective Course

Step 2: CO attainment from the Internal assessment is multiplied with the CAM and reduced percentage in the subsequent table and based on the target level set the percentage are converted to the scale 1 to 3.

Step 3: PO attainment through University Examination results is also considered and reduced to level points 1 to 3.

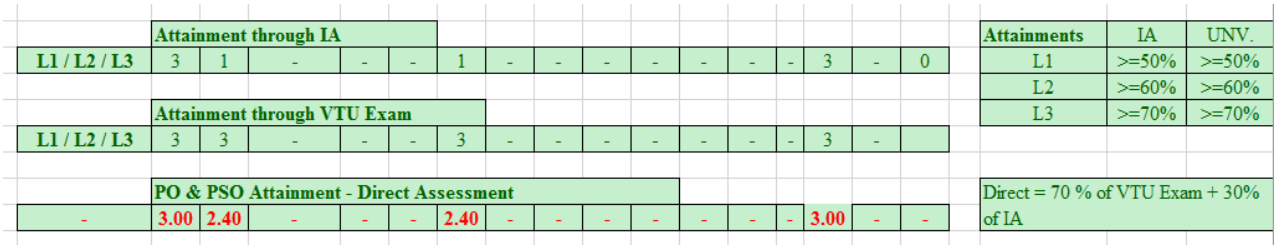
CO Attainment		
COs	%	L1/L2/L3
C703.1	73	3.00
C703.2	87	3.00
C703.3	94	3.00
C703.4	92	3.00
C703.5	93	3.00

Step 4: PO and PSO attainment through direct assessment is thus calculated by putting the weightage 70% to attainment through University Exams and 30% to attainment through IA.

	PO & PSO Attainment															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	-	pso1	pso2	pso3
C703.1	73	49	-	-	-	49	-	-	-	-	-	-	-	73	-	
C703.2	87	58	-	-	-	58	-	-	-	-	-	-	-	87	-	
C703.3	94	63	-	-	-	63	-	-	-	-	-	-	-	94	-	
C703.4	92	61	-	-	-	61	-	-	-	-	-	-	-	92	-	
C703.5	93	62	-	-		62							-	93		
													-			
% Attainment	88	59	-	-	-	59	-	-	-	-	-	-	-	88	-	

CO Attainment : 70% of Exam + 30 % of IA.	
Alumni Survey-%	86
Course Feedback-%	0
G. Exit Survey-%	84
Employer Feedback-%	79
	83.00
FC & FCD in UNV. Exam (%)	
	97.00

Fig 2:PO-PSO attainment reduced to percentage



	Attainment through IA															
L1 / L2 / L3	3	1	-	-	-	1	-	-	-	-	-	-	-	3	-	0
	Attainment through VTU Exam															
L1 / L2 / L3	3	3	-	-	-	3	-	-	-	-	-	-	-	3	-	
	PO & PSO Attainment - Direct Assessment															
-	3.00	2.40	-	-	-	2.40	-	-	-	-	-	-	-	3.00	-	-

Attainments	IA	UNV.
L1	>=50%	>=50%
L2	>=60%	>=60%
L3	>=70%	>=70%

Direct = 70 % of VTU Exam + 30% of IA

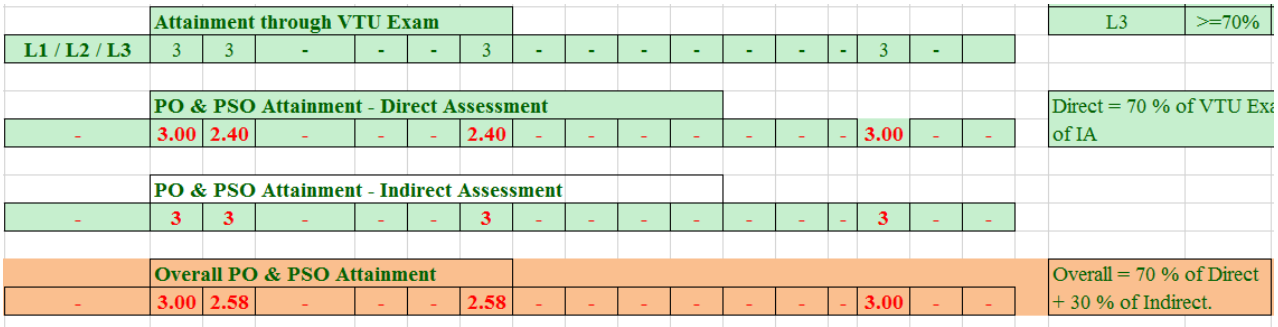
Fig 3: PO-PSO attainment through Direct Assessment

Step 5: Indirect Assessment of PO and PSO is calculated by considering the surveys such as Alumni Survey, Program Exit Survey and Employer Survey.

• In each survey the average values of individual POs and PSOs of all the courses in the program are taken.

• Then the overall average of PO1-PO12 and PSOs are taken. Then the final average value is converted and represented in percentage.

Step 6: Above step is carried out for all the three surveys and the final average value of the percentage obtained is converted to Level 1 to 3.



	Attainment through VTU Exam															
L1 / L2 / L3	3	3	-	-	-	3	-	-	-	-	-	-	-	3	-	
	PO & PSO Attainment - Direct Assessment															
-	3.00	2.40	-	-	-	2.40	-	-	-	-	-	-	-	3.00	-	-
	PO & PSO Attainment - Indirect Assessment															
-	3	3	-	-	-	3	-	-	-	-	-	-	-	3	-	-
	Overall PO & PSO Attainment															
-	3.00	2.58	-	-	-	2.58	-	-	-	-	-	-	-	3.00	-	-

L3	>=70%

Direct = 70 % of VTU Exa of IA

Overall = 70 % of Direct + 30 % of Indirect.

Fig 4: Overall PO-PSO attainment (Direct+ Indirect)

Department of Electrical and Electronics Engineering

SL No.	USN	Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	AD13EE042	YASHWANTH N	3	3	2	2	3	2	2	3	3	3	3	2	3	2
2	4AD15EE025	PREETHI JESWITA	3	3	2	2	3	2	2	3	3	3	3	2	3	2
3	4AD15EE030	SHARADH S	3	3	3	3	3	3	3	3	3	3	3	3	2	2
4	4AD15EE033	SHAZIM SHARIFF S	3	3	2	2	3	2	2	3	3	3	1	2	3	2
5	4AD15EE035	SIDDHARTHA H S	3	3	3	3	3	3	3	3	3	3	3	3	3	3
6	4AD16EE002	AKHILA SHARMA M D	3	3	2	2	3	2	2	3	3	3	1	2	3	3
7	4AD16EE003	AMRUTESH H K	3	3	2	2	3	2	2	3	3	3	3	2	3	2
8	4AD16EE004	AMRUTHA S	3	3	2	2	3	2	2	3	3	3	1	2	3	3
9	4AD16EE005	ASHWINI M N	3	3	2	2	3	2	2	3	3	3	1	2	2	3
10	4AD16EE006	BHAVYA G	3	3	3	3	3	3	3	3	3	3	3	3	3	3
11	4AD16EE007	CAROL SUSAN ANIL	3	3	3	3	3	3	3	3	3	3	3	3	3	3
12	4AD16EE008	CHANDAN V	3	3	3	3	3	3	3	3	3	3	3	3	2	2
13	4AD16EE009	DARSHAN KUMAR S	3	3	1	2	3	2	2	3	3	3	3	2	3	2
14	4AD16EE010	FALKIYA TAHAREEM	2	2	2	2	2	2	2	2	2	2	2	2	3	3
15	4AD16EE012	HARSHAN M	3	3	2	2	3	2	2	3	3	3	1	2	3	3
16	4AD16EE013	HARSHITHA S	3	3	2	2	3	2	2	3	3	3	2	2	3	2
17	4AD16EE016	KARTHIK H R	3	3	2	2	3	2	2	3	3	3	2	2	3	2
18	4AD16EE018	MAHADEVA PRASAD C K	3	3	2	2	3	2	3	3	3	3	2	2	3	1
19	4AD16EE021	MOHAMED IMADUDDIN	3	3	3	3	3	3	3	3	3	3	3	3	3	3
20	4AD16EE022	MOHAMMED ASSIM	3	3	2	2	3	2	2	3	3	3	3	2		
21	4AD16EE023	MOHITH R	2	2	2	2	2	2	3	2	2	2	2	2	3	3
22	4AD16EE026	NIKITHA M E	3	3	2	2	3	2	2	3	3	3	2	2	2	2
23	4AD16EE027	PALLAVI K R	3	3	3	3	3	3	3	3	3	3	3	3	2	2

Fig 5: Exit survey

HoD
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Professor and HOD
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ATME College of Engineering, Mysuru

Department of Electrical and Electronics Engineering

Dear Alumni,

For each of the Program Outcomes (PO1-PO12) given below, indicate the level / strength to which it has contributed to your understanding. Please include any comments.

Q1: Before each statement, indicate the answer 1 through 5 which most closely fits this statement for you:

1	2	3	4	5
No contribution	Poor contribution	Some contribution	Average contribution	Strong contribution

PO	Programme Outcomes Description	Answer
PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.	
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.	
PO3	**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.	
PO4	**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.	
PO5	**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.	
PO6	**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.	
PO7	**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.	
PO8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	
PO9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	
PO10	**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.	
PO11	**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.	
PO12	**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.	

Fig 6: Alumni survey Template

HoD
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Professor and HOD
Dept. of Electrical & Electronics Engineering
ATME College of Engineering, Mysuru

Department of Electrical and Electronics Engineering

ATME College of Engineering, Mysuru, Karnataka

EMPLOYERS: SURVEY QUESTIONNARE

Dear Sir,

The Institute is applying for Accreditation of various Programmes which is outcome based in conformity with the International practices. The assessment of the outcomes has to be through a survey. The following questions need your valued consideration. Please find some time and send us your answers to these questions. This response will be kept confidential.

Company Name: GENPACT		
Mailing Address:		
City, HYDERABAD	State, TS	Pin code: 500019
Employment details: Year 2020		Email:

Questions	Answers
1. What are the strengths of our under graduates?	DISCIPLINED
2. What are the weaknesses of our undergraduates?	INTROVERT
3. What areas are most/least important to your company? Following Departments are under assessment.	ALL
1. Computers 2. Civil 3. Electronics	
4. Electrical 5. Mechanical ---	
3. Is consideration being given to addition of other programs? If so, what area(s)?	
4. What additional experiences / preparations do you expect/value?	
5. What on-the-job training do you provide?	BUSINESS PROCESS
6. Do you see any changes that may need to be made or considered with the program Specific outcomes[1]? If so, what would be your suggestion?	COMMUNICATION TRAINING
7. Do you see any changes that may need to be made or considered with the program Educational objectives? If so, what would be your suggestion??	
8. Do you see any other issues that may need to be discussed?	

Name & Signature

HR DEPT

Fig 7: Employer survey Template

HoD
Dr. PARTHASARATHY
Professor and HOD
Dept. of Electrical & Electronics Engineering
ATME College of Engineering, Mysuru

OVERALL PO ATTAINMENT

Department of Electrical and Electronics Engineering

Overall attainment of PO and PSO ***course wise*** is obtained by considering Direct and Indirect Attainment with the weightage of 70% and 30% respectively.

Direct Attainment	2.23	2.09	2.10	2.27	2.16	1.75	1.92	1.51	2.51	2.47	2.07	2.03	1.92	1.97	1.62	2.21
Indirect Attainment	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Overall attainment	**2.46**	**2.37**	**2.37**	**2.49**	**2.41**	**2.12**	**2.24**	**1.96**	**2.66**	**2.63**	**2.35**	**2.32**	**2.24**	**2.28**	**2.03**	**2.45**

Sample Calculation:

Overall PO1 attainment =0.7 x Direct Attainment + 0.3 x Indirect Attainment

= 0.7 x 2.23 + 0.3 x 3

= 2.46

Overall attainment of the POs and PSOs is obtained by considering the overall PO & PSO attainment of all the courses of the batch under consideration and taking the average of them. The values thus obtained are the attainment of POs and PSOs for that batch.

The attainment values of the POs are then compared with the set target levels. If the targets are met by the POs and PSOs then, the PO and PSO is said to be attained for that batch. If not then the respective PO and PSO is not attained for the batch and need to addressed.

HoD

Dr. PARTHASARATHY
Professor and HOD
Dept. of Electrical & Electronics Engineering
ATME College of Engineering, Mysuru

PAC and DAB Committee Sample Report

ATME College of Engineering
Department of Electrical and Electronics Engineering

Ref: AY/2019.20/PAC/02

03/07/2019

To
The Principal
ATME College of Engineering, Mysuru

From
The HoD
Department of EEE

Respected Sir,

Subject: Formation of Program Assessment Committee: 2019-20

With reference to above subject, the department wishes to nominate the following Faculty members as Program Assessment Committee members

SL.No	PAC Members	Role
1	Dr.Parthasarathy L HoD, Dept. of EEE	Chairman & Program Coordinator
2	Mrs.Lakshmi K Assistant Professor	Member
3	Mr.Shreeshayana R Assistant Professor	Member Secretary
4	Mr.Rajesh K S Assistant Professor	Member

Request your good office to approve the formation of PAC and kindly do the needful.

1. Roles and Responsibilities of PAC members

a) Collect Course module from Course Coordinators

b) Submission of Program Articulation Matrix for Curriculum Gap Identification.

c) Submission of CO, PO & PSO attainment report to DAB.

3/7/20

HoD
Dr. PARTHASARATHY L.
Professor and HOD
Dept. of Electrical & Electronics Engineering
ATME College of Engineering, Mysuru

CC:
1. IQAC
2. DAB
3. Faculty members

ATME College of Engineering

Department of Electrical and Electronics Engineering

14/07/2019

CIRCULAR

Subject: PSO statements

The following Faculty members are informed about new Program Specific Outcomes.

PSO Statements:
Graduates will develop for abilities to

PSO1: Apply the concepts of Electrical & Electronics Engineering to evaluate the performance of power systems and also to control industrial drives using power electronics.

PSO2: Demonstrate the concepts of process control for industrial Automation, design models for environmental and social concerns and also exhibit continuous self-learning.

HoD
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Dept. of Electrical & Electronics Engineering
ATME College of Engineering, Mysuru

CC:

LK	SSR	RKS

ATME College of Engineering
NBA ACCREDITED
Department of Electrical and Electronics Engineering

AY:2019-2020/PAC/04 30/08/2019

Meeting Proceedings

Agenda:

1) **Submission of CO-PO attainment [AY:2018-2019(Even)]**
2) **BAM:2015-2019 Batch**

1. **Course Outcome (COs) Attainments of Academic Year 2018-2019, EVEN Semester**

Semester	Course Name	Remarks on COs Attainment	Batch
6th	Control Systems (15EE61)	All Cos not achieved the target level	4AD15EE
	Computer Aided Electrical Drawing (15EE651)		

2. Batch Articulation Matrix :2015-2019 Batch

Target Level set by Department Advisory Board is 1.95

Method	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
Direct Method	2.59	2.56	2.56	2.70	2.71	2.55	2.81	2.37	2.80	2.79	2.63	2.63	2.61	2.71	2.68	2.79
Indirect Method	2.46	2.04	1.90	1.81	2.28	2.11	2.05	2.10	2.10	2.23	1.94	2.06	2.37	1.86	1.93	2.17
Overall Attainment (Direct* 80%+indirect*20%)	2.57	2.45	2.43	2.52	2.62	2.46	2.66	2.47	2.66	2.68	2.49	2.52	2.56	2.54	2.53	2.67
Remarks	All POs & PSOs have attained the target.															

Members:

Sl. No.	Name	Designation	Role	Sign
1	Mrs.Lakshmi K	Assistant Professor	Member	
2	Mr.Shreeshayana R	Assistant Professor	Member Secretary	
3	Mr.Rajesh K S	Assistant Professor	Member	

HoD

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Dept. of Electrical & Electronics Engineering
ATME College of Engineering, Mysuru

CC:
1. IQAC
2. DAB

A T M E
College of Engineering
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Department of EEE
Emitting Elite Energy

Department of Electrical and Electronics Engineering

AY:2019-2020/PAC/05 3/03/2020

Meeting Proceedings

Agenda: Submission of CO-PO attainment [AY: 2019-2020 (ODD)]

1. **Course Outcome (COs) Attainments of Academic Year 2019-2020, ODD Semester**

Semester	Course Name	Remarks on COs Attainment	Batch
3rd	**Transform Calculus, Fourier Series and Numerical Techniques (18MAT31)**	All COs not achieved the target level	4AD18EE
	Electric Circuit Analysis (18EE32)		
5th	**Signals & Systems (17EE54)**	CO2 not achieved the target level	4AD17EE
7th	**Utilization of Electrical Power (15EE742)**	All COs not achieved the target level	4AD15EE

Members:

Sl. No.	Name	Designation	Role	Sign
1	Mrs.Lakshmi K	Assistant Professor	Member	
2	Mr.Shreeshayana R	Assistant Professor	Member Secretary	
3	Mr.Rajesh K S	Assistant Professor	Member	

HoD
Dr. PARTHASARATHY L.
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Dept. of Electrical & Electronics Engineering
ATME College of Engineering, Mysuru

CC:
1. IQAC
2. DAB

A T M E
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Department of EEE
Emitting Elite Energy

Department of Electrical and Electronics Engineering

09/07/2019

To
The Principal
ATMECE, Mysuru

From
The HoD
Department of EEE
ATMECE, Mysuru

Respected Sir,

Subject: Formation of Department Advisory Board: 2019-20

With reference to above subject, the department wishes to induct new members for Department Advisory Board (DAB) for the effective curriculum process & its implementations. The Department Advisory Board (DAB) members are as follows:

SL. No.	Name	Designation	Role
1	Dr. Parthasarathy L	Professor & Head, Department of EEE	Chairman and Program Coordinator
2	Mr. Raghavendra L	Associate Professor	Member
3	Mr. Praveen Kumar M	Assistant Professor	Member
4	Mr. Vinod Kumar P	Assistant Professor	Member Secretary
5	Ms. Swapna H	Assistant Professor	Member
6	Mr. Ravi Kumar K	Manager Techno Power Corporation(TPC), Bengaluru	Industry Expert
7	Ms. Amurtha R	Software Engineer, Wipro Ltd, Alumna of the Department	
8	Mrs. Kavya R	Alumna of the Department	
9	Mrs. Susanna Margreat K S	Employed as Teacher, Parent of ward-Mr.Joshua H Rayapuri	

Request your good office to approve DAB committee members and do the needful.

ATME COLLEGE OF ENGINEERING
13th Kilometer, Mysore-Kanakapura-Bangalore Road, Mysore – 570 028
Email: eee.atme@gmail.com Web : www.atme.in

Department of Electrical and Electronics Engineering

ATME College of Engineering
NBA ACCREDITED
Department of EEE Emitting Elite Energy
Department of Electrical and Electronics Engineering

Roles and Responsibilities of Department Advisory Board (DAB):

1. Redefine of Vision and Mission for the department.
2. Redefining of Program Specific Outcomes (PSO's).
3. Scrutinizing and approving of CO-PO and CO-PSO matrices for each course.
4. Advices the assessment process and assessment tools for COs, POs and PSOs attainments.
5. Identifying the compliance of university curriculum for COs, POs and PSOs attainments.
6. Identifying the curricular gaps and suggesting the department for academic activities for program outcome attainment.
7. Evaluating the quality of teaching and learning process.
8. DAB will meet bi-annually and submit report to Internal Quality Assurance Cell (IQAC).

HoD
Dr. PARTHASARATHY L.
Professor and HOD
Dept. of Electrical & Electronics Engineering
ATME College of Engineering, Mysuru

Copy to:

1. IQAC
2. Faculties
3. Industry Expert
4. Alumna
5. Parent
6. PAC

9/7/19

ATME COLLEGE OF ENGINEERING
13th Kilometer, Mysore-Kanakapura-Bangalore Road, Mysore – 570 028
Email: eee.atme@gmail.com Web : www.atme.in

ATME College of Engineering

Department of Electrical and Electronics Engineering

Department Advisory Board (DAB)

14/07/2019

Minutes of Meeting

The 13th meeting of DAB is held on 14th July 2019 in the Department meeting room for addressing on the following Agenda.

Agenda: Redefining Program Specific Outcomes (PSOs)

Discussed on redefining of Program Specific Outcomes (PSO's) for the Department.

Considering the suggestions from NBA program evaluators feedback on previous PSO's, the following PSO's were redefined.

Program Specific Outcomes (PSOs) are statements that describe what the graduates of a specific engineering program should be able to do.

Indicators for PSO formation:

I. **Course composition:**

1. Different courses that Program offers includes Basic Science, Multidisciplinary, programming and Core
2. The courses are categorised into:

a) Electrical Utility under which different courses are covered like–BEE, EPG, T&D, PSA-1, PSA-2, PSOC, UEP, SGP, HVE, IDG, T&C, RES, EEM- 13/48

b) Motor operation & its control through power electronics controllers –(TAG, EM, CS, EMD, PE,AEC, IDA, CAED,EEM,OLIC) -10/48

c) Industrial Automation (Process control) & IoT using electrical circuits- (ECA, DSD, MC,S&T, EEM,S&S, DSP)-7/48

II. **Higher studies**

III. **Career Inclination: CORE/IT/ Non IT Sector**

Core-53%; IT-23%; Non-IT-21%; Government-0.59% :Data provided for previous years

IV. **Training offered by the department/College through MoU for skill specific training**, Self-learning

PSO-1	PSO-2
Courses under Electrical Utility is mapped to PSO-1	Courses under: a) Motor operation & its control through power electronics controllers b) Industrial Automation (Process control) & IoT using electrical circuits c) Higher studies/Self learning **Is mapped under PSO-2**

Department of Electrical and Electronics Engineering

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Department of Electrical and Electronics Engineering

PSO statement

Graduates will develop the abilities to:

PSO1: Apply the concepts of Electrical & Electronics Engineering to evaluate the performance of power systems and also to control industrial drives using power electronics.

PSO2: Demonstrate the concepts of process control for Industrial Automation, design models for environmental and social concerns and also exhibit continuous self- learning.

Signature of DAB Members

Sl. No.	Name	Designation	Role	Sign
1	Dr. Parthasarathy L	HoD	Chairman and Program Coordinator	
2	Mr. Raghavendra L	Associate Professor	Member	
3	Mr. Praveen Kumar M	Assistant Professor	Member	
4	Mr. Vinod Kumar P	Assistant Professor	Member Secretary	
5	Ms. Swapna H	Assistant Professor	Member	
6	Mr. Ravi Kumar	Manager, Techno Power Corporation, Bangalore	Industry Expert	
7	Ms. Amurtha R	Software Engineer, Wipro Ltd,	Alumna of the Department	
8	Mrs. Kavya R	-	Alumna of the Department	
9	Mrs. Susanna Margreat K S	Teacher	Parent of ward- Mr.Joshua H Rayapuri	

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Dr. PARTHASARATHY L
Professor and HOD
Dept. of Electrical & Electronics Engineering
ATME College of Engineering, Mysuru

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2. Internal Quality Assurance Cell (IQAC)
3. Programme Assessment Committee
4. Circulate among Faculty Members

	Signature
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IQAC	
PAC Members	
Faculty members	

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ATME College of Engineering, Mysuru

Department of Electrical and Electronics Engineering

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Department Advisory Board (DAB)

07/09/2019

Minutes of Meeting

The 14th meeting of DAB is held on 7th September 2019 in the Department office for addressing the curriculum gap and Advices to fulfill the gaps.

Agenda: DAB Meeting

1. To review Course Outcome (COs) Attainments of Academic Year: 2018-19 Even Semester
2. To review Batch Articulation Matrix (BAM) and produce PO and PSO attainment after the University examination for 2018-19 pass out Batch.
3. To Identify the curricular gaps for Academic Year: 2019-20 and suggesting the department for academic activities in support of the attainment of the POs & PSOs.

The following points were discussed during the meeting and the minutes were recorded as below:

1) The DAB Member secretary was presented the curriculum gaps for academic year 2019-20.
2) The curriculum Gap was observed for PO8.
3) As per the Batch Articulation Matrix of 2018-19 passed out batch, all the POs and PSOs has attained set target.
4) The committee members suggested Industry Institute interactions in support of attainment of selected POs & PSOs.
5) The committee suggested including tutorials for course Control Systems and Computer Aided Electrical Drawings.
6) The committee members suggested few points for ongoing semester

- Suggested to provide Tutorials for the identified courses

Sl. No	Semester	Subject with code
1.	3rd	ECA- 18EE32
2.	5th	S&S – 17EE54

7) The committee members gave valuable suggestions to bridge the Curriculum Gaps & compliance of PO attainments to conduct workshops/Technical Talk/ Industry Institute Interactions on Concurrent Technologies & issues and also discussed about previous activities suggested for bridging gap.
8) The committee members suggested publishing research work of faculty members in journal.
9) The committee suggested setting target level for CO attainment as 1.85 for all courses in academic year 2019-20 with increment of 0.05for next academic years.
10) The CO attainment for any course fails to attain set target level and target level can be addressed based on historical data of previous years.
11) Suggested to provide the Assignments that induce self-learning. .
12) Informed to Program Assessment Committee for the preparation of CO Attainments of the ongoing Semester.

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Department Advisory Board (DAB)

07/03/2020

Minutes of Meeting

The 15th meeting of DAB is held on 7th March 2020 in the Department office for addressing the curriculum gap and Advices to fulfill the gaps.

Agenda: DAB Meeting

1. Discussion on CO Attainments of previous Semester 2019-20 ODD
2. Preparation of Batch Articulation Matrix (BAM) and produce PO and PSO attainment after the University examination of 2019-20 pass out Batch.
3. CO Assessment
4. Suggestion for the preparation of PAM and curriculum Gap of Academic year 2020-21

The following points were discussed during the meeting and the minutes were recorded as below:

The following points were discussed during the meeting and the minutes were recorded as below:

1) The member secretary explained the minutes of meeting of PAC for recently completed semester and discussed shortfall of course with less attainment.
2) The committee suggested including tutorials for course Electric circuit analysis, signals & systems and Utilization of Electrical Power for next year.
3) The committee members suggested few points for ongoing semester

- Suggested to provide Tutorials for the identified courses

Sl. No	Semester	Subject with code
1.	4th	EFT- 18EE45
2.	6th	DSP – 17EE63

- The committee suggested enhancing counselling for slow learners to improve their academic performance, personality & identify their domain of interest.

4) The committee suggested enhancing Industry Institute Interaction through MOUs in support of fulfilling the Curriculum Gaps.
5) The PAC members suggested to prepare a PAM Matrix and to identify curriculum gap for academic year 2020-21.
6) Dr. Parthasarathy L insisted the members of PAC can get into other survey in forthcoming days which lead to checking of attainment level.

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The Department follows a structured guidelines handbook for outcome evaluation followed commonly across the institution

Overall CO attainment is calculated by considering CO attainment (IA+SEE)

In order to obtain the CO attainment of the respective course:

Direct attainment is based on performance of the students in the Internal Assessment (30%) and Semester End Examination (70%).

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Detail Procedure for obtaining the CO attainment:

STEP 1: All the faculties handling the courses will map the student performance in the internal assessment to the excel sheet as and when the blue books are valued.

CO-PO-PSO ATTAINMENT TOOL

Note 1: In case a question (Ex: 2d) is not present in QP, keep the column blank.
Note 2: If the student is not attempted a question, leave the cell blank. Do not fill with ZERO.
Note 3: Fill only the cells with ORANGE & AQUA color. Do not alter the cells with other colors.
Note 4: If a question maps to multiple CO's, write them separated by commas. Ex: If a question maps to CO-1 and CO-4, write CO1,4.

Subject: ARM Microcontrollers & Embedded Systems (17EC62)		IA-I (2019-20)								Faculty Name: Prof. GIRISH M							
S.No.	USN	1	2	3		-	-	-	-	4	5	6	-	-	-		<= Question No.
		CO3	CO4	CO3	CO	CO	CO	CO	CO	CO3	CO3	CO3	CO	CO	CO		<= CO Mapping
		10	10	10		-	-	-	-	5	5	5	-	-	-		<= Max. Marks
1	4AD13EC080	8	8	6													<= IA
2	4AD14EC350	9		10							3	3					
3	4AD16EC017	10		9						5		3					
4	4AD16EC027	8	6								3	3					
5	4AD16EC047	10	9							5	2						
6	4AD16EC413																
7	4AD17EC001	9	8							5	2						
8	4AD17EC002	4	7	7							4	3					
9	4AD17EC004	9		10							4	3					
10	4AD17EC005	10	8							5	4						

Fig. 1: Mapping of IA marks in excel sheet

No. cleared	84	61	34	0	0	0	0	0	31	62	50	0	0	0	0	≥40
No. attended	87	65	35	0	0	0	0	0	33	70	56	0	0	0	0	≥30,<840
%	96.55	93.85	97.14						93.94	88.57	89.29				0	<30
Course Outcomes	CO3	CO4	CO3	CO	CO	CO	CO	CO	CO3	CO3	CO3	CO	CO	CO		

% of Contribution of each question to CO's															0	0 to 23
	1	2	3	4	-	-	-	-	5	6	7	-	-	0	2	24 to 32
CO1															0	33 to 40
CO2															0	Absent
CO3	96.55		97.14						93.94	88.57	89.29				2	Total
CO4		93.85													#DIV/0!	Avg.
CO5															#DIV/0!	St. D.
CO6															#DIV/0!	Coe. V.

% of Attainment	CO1	0	CO2	0	CO3	93	CO4	94	CO5	0	CO6	0	IA1	Actual Average

Fig.2: Calculation over all CO attainment Question wise and Actual Average of COs in the IA-1

STEP 2: All the three IA including the improvement test is listed and the attainment is available as shown in the below figure. Attainment is calculated in the scale of 0 to 3 based on the percentage of Overall CO attainment

CO attainment %	Attainment Level
<50	0
≥50 but <60	1
≥60 but <70	2
≥70	3

% of Attainment	CO1	0	CO2	0	CO3	0	CO4	0	CO5	0	CO6	0	IA3
% of Attainment	CO1	0	CO2	0	CO3	93	CO4	97	CO5	92	CO6	0	IA2
% of Attainment	CO1	0	CO2	0	CO3	93	CO4	94	CO5	0	CO6	0	IA1
AVERAGE		0		0		93		96		92		0	
	CO Attainment through IA												
L1 / L2 / L3	CO1	0	CO2	0	CO3	3	CO4	3	CO5	3	CO6	0	

Fig 3.Overall attainment of CO through Internal Assessment

STEP 3: Attainment Level in University Examination

Attainment Level 1: 50% students scoring more than 50 % maximum marks in the final examination.

Attainment Level 2: 60% students scoring more than 50 % maximum marks in the final examination.

Attainment Level 3: 70% students scoring more than 50 % maximum marks in the final examination.

Enter the university Examination (SEE) percentage of students scored more than 50% of the maximum marks.

Example: If the maximum marks for the Course is 125, then the target marks is 63.

If the maximum marks for the course is 100, then the target marks is 50.

➢ The University result once again reduced to the scale 0 to 3.

STEP 4: Then calculates the overall attainment of the COs by considering 30%weightage to Internal Assessment and 70% of the weightage to Sessional End Examination.

	CO Attainment through IA												
L1 / L2 / L3	CO1	0	CO2	0	CO3	3	CO4	3	CO5	3	CO6	0	
	CO Attainment through VTU Exam												
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	3	CO5	3	CO6	-	
	Overall CO Attainment												
L1 / L2 / L3	CO1	X	CO2	X	CO3	3	CO4	3	CO5	3	CO6	-	

% Students above 50% in VTU Exam
100

Fig.4: Overall CO Attainment Method

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Course Outcome Attainment of Academic Year 2019-2020

Course Outcomes Attainment AY:2019-20

Course Name: Engineering Mathematics-III(18MAT31)				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C201.1	1.8	1.9	0.1	All COs not achieved the Target
C201.2	1.8	1.9	0.1	
C201.3	1.8	1.9	0.1	
C201.4	1.8	1.9	0.1	
C201.5	1.8	1.9	0.1	
C201.6	1.8	1.9	0.1	
Course Name: Network Theory (18EC32)				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C202.1	1.8	0.7	-1.1	All COs not achieved the Target
C202.2	1.8	0.7	-1.1	
C202.3	1.8	0.7	-1.1	
C202.4	1.8	0.7	-1.1	
Course Name: 18EC33				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C203.1	1.8	3.00	1.2	All COs achieved the target
C203.2	1.8	3.00	1.2	
C203.3	1.8	3.00	1.2	
C203.4	1.8	3.00	1.2	
Course Name: 18EC34				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C204.1	1.8	3.00	1.2	All COs achieved the target
C204.2	1.8	2.70	0.9	
C204.3	1.8	3.00	1.2	
C204.4	1.8	3.00	1.2	
Course Name: 18EC35				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C205.1	1.8	2.70	0.9	All COs achieved the target
C205.2	1.8	3.00	1.2	
C205.3	1.8	3.00	1.2	
C205.4	1.8	3.00	1.2	
Course Name: 18EC36				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**

C206.1	1.8	2.7	0.9	All COs achieved the target
C206.2	1.8	3.0	1.2	
C206.3	1.8	3.0	1.2	
C206.4	1.8	3.0	1.2	
Course Name: 18ECL37				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C207.1	1.8	3.00	1.2	All COs achieved the target
C207.2	1.8	3.00	1.2	
C207.3	1.8	3.00	1.2	
C207.4	1.8	3.00	1.2	
Course Name: 18ECL38				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C208.1	1.8	3.0	1.2	All COs achieved the target
C208.2	1.8	3.0	1.2	
C208.3	1.8	3.0	1.2	
C208.4	1.8	3.0	1.2	
Course Name: 18MAT41				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C209.1	1.8	2.0	0.2	All COs not achieved the Target
C209.2	1.8	2.0	0.2	
C209.3	1.8	2.0	0.2	
C209.4	1.8	2.0	0.2	
Course Name: 18EC42				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C210.1	1.8	0	-1.8	CO 1 & 4 NOT achieved the target
C210.2	1.8	3	1.2	
C210.3	1.8	3	1.2	
C210.4	1.8	0	-1.8	
Course Name: 18EC43				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C211.1	1.8	2.1	0.3	CO 3 & 4 NOT achieved the target
C211.2	1.8	3	1.2	
C211.3	1.8	0	-1.8	
C211.4	1.8	0	-1.8	
Course Name: 18EC44				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**

C212.1	1.8	3	1.2	CO 3 NOT achieved the target
C212.2	1.8	3	1.2	
C212.3	1.8	0	-1.8	
C212.4	1.8	3	1.2	
Course Name: 18EC45				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C213.1	1.8	3	1.2	CO 2&4 NOT achieved the target
C213.2	1.8	0	-1.8	
C213.3	1.8	3	1.2	
C213.4	1.8	0	-1.8	
Course Name: 18EC46				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C214.1	1.8	3	1.2	CO 3&4 NOT achieved the target
C214.2	1.8	3	1.2	
C214.3	1.8	0	-1.8	
C214.4	1.8	0	-1.8	
Course Name: 18ECL47				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C209.1	1.8	3	1.2	All COs achieved the target
C209.2	1.8	3	1.2	
C209.3	1.8	3	1.2	
C209.4	1.8	3	1.2	
Course Name: 18ECL48				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C210.1	1.8	3	1.2	All COs achieved the target
C210.2	1.8	3	1.2	
C210.3	1.8	3	1.2	
C210.4	1.8	3	1.2	
Course Name: 17ES51				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C301.1	1.8	3	1.2	All COs achieved the target
C3012	1.8	3	1.2	
C301.3	1.8	3	1.2	
C301.4	1.8	3	1.2	
Course Name: 17EC52				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**

C302.1	1.8	2.1	0.3	All COs achieved the target
C302.2	1.8	2.1	0.3	
C302.3	1.8	2.7	0.9	
C302.4	1.8	2.4	0.6	

Course Name: 17EC53

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C303.1	1.8	3	1.2	All COs achieved the target
C3032	1.8	2.1	0.3	
C303.3	1.8	3	1.2	
C303.4	1.8	3	1.2	

Course Name: 17EC54

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C304.1	1.8	2.4	0.6	All COs achieved the target
C304.2	1.8	3	1.2	
C304.3	1.8	3	1.2	
C304.4	1.8	3	1.2	

Course Name: 17EC553

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C305.1	1.8	3	1.2	All COs achieved the target
C3052	1.8	3	1.2	
C305.3	1.8	3	1.2	
C305.4	1.8	3	1.2	
C305.5	1.8	3	1.2	

Course Name: 17EC561

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C306.1	1.8	2.7	0.9	All COs achieved the target
C306.2	1.8	2.4	0.6	
C306.3	1.8	3	1.2	
C306.4	1.8	3	1.2	

Course Name: 17ECL58

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C307.1	1.8	3	1.2	All COs achieved the target
C307.2	1.8	3	1.2	
C307.3	1.8	3	1.2	
C307.4	1.8	3	1.2	

Course Name: 17EC54				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C308.1	1.8	3	1.2	All COs achieved the target
C308.2	1.8	3	1.2	
C308.3	1.8	3	1.2	
C308.4	1.8	3	1.2	
Course Name: 17EC61				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C309.1	1.8	3	1.2	CO 3 NOT achieved the target
C309.2	1.8	3	1.2	
C309.3	1.8	0	-1.8	
C309.4	1.8	3	1.2	
Course Name: 17EC62				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C310.1	1.8	0	-1.8	CO 1 & 2 NOT achieved the target
C310.2	1.8	0	-1.8	
C310.3	1.8	3	1.2	
C310.4	1.8	3	1.2	
C310.5	1.8	3	1.2	

Course Name: 17EC63				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C311.1	1.8	3	1.2	All COs achieved the target
C311.2	1.8	3	1.2	
C311.3	1.8	3	1.2	
C311.4	1.8	3	1.2	
C311.5	1.8	3	1.2	
Course Name: 17EC64				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C312.1	1.8	3	1.2	CO 3 NOT achieved the target
C312.2	1.8	3	1.2	
C312.3	1.8	0	-1.8	
C312.4	1.8	3	1.2	
Course Name: 17EC663				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C313.1	1.8	3	1.2	CO 2 NOT

C313.2	1.8	0	-1.8	achieved the target
C313.3	1.8	3	1.2	
C313.4	1.8	3	1.2	

Course Name: 17EC654

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C314.1	1.8	0	-1.8	CO 1 &2 NOT achieved the target
C314.2	1.8	0	-1.8	
C314.3	1.8	3	1.2	
C314.4	1.8	3	1.2	

Course Name: 17ECL67

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C315.1	1.8	3	1.2	All COs achieved the target
C315.2	1.8	3	1.2	
C315.3	1.8	3	1.2	
C315.4	1.8	3	1.2	

Course Name: 17ECL68

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C316.1	1.8	3	1.2	All COs achieved the target
C316.2	1.8	3	1.2	
C316.3	1.8	3	1.2	
C316.4	1.8	3	1.2	

Course Name: 15EC71

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C401.1	1.8	0.9	-0.9	All COs NOT achieved the target
C401.2	1.8	0.3	-1.5	
C401.3	1.8	0.6	-1.2	
C401.4	1.8	0.6	-1.2	

Course Name: 15EC72

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C402.1	1.8	3	1.2	All COs achieved the target
C402.2	1.8	3	1.2	
C402.3	1.8	3	1.2	
C402.4	1.8	3	1.2	
C402.5	1.8	3	1.2	

Course Name: 15EC73

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis

C403.1	1.8	3	1.2	All COs achieved the target
C403.2	1.8	3	1.2	
C403.3	1.8	3	1.2	
C403.4	1.8	2.7	0.9	
Course Name: 15EC741				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C404.1	1.8	2.7	0.9	All COs achieved the target
C404.2	1.8	3	1.2	
C404.3	1.8	3	1.2	
C404.4	1.8	2.7	0.9	
Course Name: 15EC755				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C405.1	1.8			All COs achieved the target
C405.2	1.8			
C405.3	1.8			
C405.4	1.8			
C405.5	1.8			
Course Name: 15ECL76				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C406.1	1.8	3	1.2	All COs achieved the target
C406.2	1.8	3	1.2	
C406.3	1.8	3	1.2	
C406.4	1.8	3	1.2	
Course Name: 15ECL77				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C407.1	1.8	3	1.2	All COs achieved the target
C407.2	1.8	3	1.2	
C407.3	1.8	3	1.2	
C407.4	1.8	3	1.2	
Course Name: 15ECL78				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C408.1	1.8	3	1.2	All COs achieved the target
C408.2	1.8	3	1.2	
C408.3	1.8	3	1.2	
C408.4	1.8	3	1.2	
Course Name: 15EC81				

Course Outcomes	Target for Current AY	Attainment Level of Current Exam	Gap	Gap Analysis
C409.1	1.8	0	-1.8	CO 1& 3 NOT achieved the target
C409.2	1.8	3	1.2	
C409.3	1.8	0	-1.8	
C409.4	1.8	3	1.2	
Course Name: 15EC82				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C410.1	1.8	3	1.2	All COs achieved the target
C410.2	1.8	3	1.2	
C410.3	1.8	3	1.2	
C410.4	1.8	3	1.2	
Course Name: 15EC835				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C411.1	1.8	3	1.2	CO 3& 4 NOT achieved the target
C411.2	1.8	3	1.2	
C411.3	1.8	0	-1.8	
C411.4	1.8	0	-1.8	
Course Name: 15EC84				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C412.1	1.8	3	1.2	All COs achieved the target
C412.2	1.8	3	1.2	
C412.3	1.8	3	1.2	
C412.4	1.8	3	1.2	
Course Name: 15ECP85				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C413.1	1.8	3	1.2	All COs achieved the target
C413.2	1.8	3	1.2	
C413.3	1.8	3	1.2	
C413.4	1.8	3	1.2	
Course Name: 15ECS86				
Course Outcomes	**Target for Current AY**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C414.1	1.8	3	1.2	All COs achieved the target
C414.2	1.8	3	1.2	
C414.3	1.8	3	1.2	
C414.4	1.8	3	1.2	

Attainment of Program Outcomes and Program Specific Outcomes

Program shall set Program Outcome attainment levels for all POs & PSOs.

(The attainment levels by direct (student performance) and indirect (surveys) are to be presented through Program level Course – PO & PSO matrix as indicated).

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101												
C102												

C409												
Direct attainment												
Indirect Attainment												
Over all PO attainment												

Note: Similar table is to be prepared for PSOs

C101, C102 are indicative courses in the first year. Similarly, C409 is final year course. First numeric digit indicates year of study and remaining two digits indicate course nos. in the respective year of study.

1. Direct attainment level of a PO & PSO is determined by taking average across all courses addressing that PO and/or PSO. Fractional numbers may be used up to two decimal places.
2. Indirect attainment level of PO & PSO is determined based on the student exit surveys, employer surveys and Alumni survey.

Calculation of PO attainment:

Following are the steps need to be followed to obtain the PO attainment.

Step 1: Course coordinator should enter the Course articulation matrix as per the course module in Sheet 4 of the CO-PO-PSO assessment tool.

Step 2: CO attainment from the Internal assessment is multiplied with the CAM and reduced percentage in the subsequent table and based on the target level set the percentage are converted to the scale 1 to 3.

Step 3: PO attainment through University Examination results is also considered and reduced to level points 1 to 3.

Step 4: PO and PSO attainment through direct assessment is thus calculated by putting the weightage 70% to attainment through University Exams and 30% to attainment through IA.

Step 5: Indirect Assessment of PO and PSO is calculated by considering the surveys such as Alumni Survey, Program Exit Survey and Employer Survey.

- In each survey the average values of individual POs and PSOs of all the courses in the program are taken.
- Then the overall average of PO1-PO12 and PSOs are taken. Then the final average value is converted and represented in percentage.

Step 6: Above step is carried out for all the three surveys and the final average value of the percentage obtained is converted to Level 1 to 3.

Step 1: Course coordinator should enter the Course articulation matrix (CAM) as per the course module in Sheet 4 of the CO-PO-PSO assessment tool.

	CO - PO - PSO Mapping														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	-	PSO1	PSO2
C310.1	3	1	1	1	1	-	-	-	1	1	-	2	-	3	1
C310.2	3	2	2	2	1	-	-	-	1	2	-	2	-	3	1
C310.3	3	2	2	2	1	-	-	-	1	2	-	2	-	2	2
C310.4	3	2	2	2	1	-	-	-	1	2	-	2	-	3	2
C310.5	3	2	2	2	2	-	-	-	1	2	-	2	-	2	2
													-		
Course-PO-PSO	3	1.8	1.8	1.8	1.2	X	X	X	1	1.8	X	2		2.6	1.6

Page 1

Fig.1: CAM of the respective Course

Step 2: CO attainment from the Internal assessment is multiplied with the CAM and reduced percentage in the subsequent table and based on the target level set the percentage are converted to the scale 1 to 3.

Step 3: PO attainment through University Examination results is also considered and reduced to level points 1 to 3.

CO Attainment		
COs	%	L1/L2/L3
C310.1	0	X
C310.2	0	X
C310.3	93	3.00
C310.4	96	3.00
C310.5	92	3.00

Step 4: PO and PSO attainment through direct assessment is thus calculated by putting the weightage 70% to attainment through University Exams and 30% to attainment through IA

	PO & PSO Attainment															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	-	PSO1	PSO2	
C310.1	0	0	0	0	0	-	-	-	0	0	-	0	-	0	0	
C310.2	0	0	0	0	0	-	-	-	0	0	-	0	-	0	0	
C310.3	93	62	62	62	31	-	-	-	31	62	-	62	-	62	62	
C310.4	96	64	64	64	32	-	-	-	32	64	-	64	-	96	64	
C310.5	92	61	61	61	61	-	-	-	31	61	-	61	-	61	61	
													-			
% Attainment	94	62	62	62	41	0	0	0	31	62	0	62	0	73	62	

CO Attainment = 70 % of VTU Exam + 30 % of IA.

Alumni Survey-%	65
Course Feedback-%	92
G. Exit Survey-%	81
Employer Feedback-%	72
	77.50
FC & FCD in UNV. Exam (%)	
	100.00

. Fig 2: PO-PSO attainment reduced to percentage

	Attainment through IA																
L1 / L2 / L3	3	2	2	2	0	X	X	X	0	2	X	2	X	3	2		
	Attainment through VTU Exam																
L1 / L2 / L3	3	3	3	3	3	X	X	X	3	3	X	3	3	3	3		
	PO & PSO Attainment - Direct Assessment																
70% weightage	3	2.7	2.7	2.7	2.1	X	X	X	2.1	2.7	X	2.7	###	3	2.7		

Attainments	IA	UNV.
L1	>=50%	>=50%
L2	>=60%	>=60%
L3	>=70%	>=70%

Direct =70 % of VTU Exam +30% of IA

Fig 3: PO-PSO attainment through Direct Assessment

Step 5: Indirect Assessment of PO and PSO is calculated by considering the surveys such as Alumni Survey, Program Exit Survey and Employer Survey.

- In each survey the average values of individual POs and PSOs of all the courses in the program are taken.
- Then the overall average of PO1-PO12 and PSOs are taken. Then the final average value is converted and represented in percentage.

Step 6: Above step is carried out for all the three surveys and the final average value of the percentage obtained is converted to Level 1 to 3.

	Attainment through VTU Exam																
L1 / L2 / L3	3	3	3	3	3	X	X	X	3	3	X	3	3	3	3		
	PO & PSO Attainment - Direct Assessment																
70% weightage	3	2.7	2.7	2.7	2.1	X	X	X	2.1	2.7	X	2.7	###	3	2.7		
	PO & PSO Attainment - Indirect Assessment																
30% Weightage	3	3	3	3	3	X	X	X	3	3	X	3	3	3	3		
Overall PO & PSO Attainment																Overall = 70 % of Direct + 30% Indirect	
Final Attainment	3	2.79	2.79	2.79	2.37	X	X	X	2.37	2.79	X	2.79	###	3	2.79		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	-	PSO1	PSO2		

Direct =70 % of VTU Exam +30% of IA

Fig 4: Overall PO-PSO attainment (Direct+ Indirect)

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Survey data are as follows:

USN Number	Namein SSLC	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
4AD16EC070	SNEHA HM	3	3	3	3	3	3	3	3	3	3	3	3
4AD16EC085	YASHASWINI L	3	3	3	3	3	3	3	3	3	3	3	3
4AD16EC041	NEHA D	3	3	3	3	3	3	3	3	3	3	3	3
4AD17EC404	DARSHAN B S	3	3	3	3	3	3	3	3	3	3	3	3
4AD16EC073	SUHAS P	3	3	3	2	3	3	3	2	3	3	3	3
4AD16EC078	TEJAS KUMAR M	3	3	3	3	3	3	3	3	3	3	3	3
4AD16EC063	SANJANA N	3	3	3	3	3	3	3	3	3	3	3	3
4AD17EC411	MEGHASAJJAN P R	2	2	2	2	2	2	2	2	2	2	2	2
4AD16EC020	Gowthami H K	3	3	3	3	2	3	2	3	3	3	3	3
4AD15EC003	AISHWARYA V KUMAR	3	2	3	2	2	3	2	2	3	3	1	3
4AD17EC424	SHIVA S	2	2	2	3	2	2	2	2	2	2	2	3
4AD16EC006	ANUSHA B E	3	3	2	3	3	3	2	2	2	3	3	3
4AD16EC010	BHOOMIKA M S	3	3	3	3	3	3	3	3	3	3	3	3

Fig 5: Exit survey

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Dear Alumni,

For each of the Program Outcomes (PO1-PO12) given below, indicate the level / strength to which it has contributed to your understanding. Please include any comments.

Q1: Before each statement, indicate the answer 1 through 5 which most closely fits this statement for you:

1	2	3	4	5
No contribution	Poor contribution	Some contribution	Average contribution	Strong contribution

PO	Programme Outcomes Description	Answer
PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.	
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.	
PO3	**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.	
PO4	**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.	
PO5	**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.	
PO6	**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.	
PO7	**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.	
PO8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	
PO9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	
PO10	**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.	
PO11	**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.	
PO12	**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.	

Fig 6: Alumni Survey Template

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ATME College of Engineering, Mysuru, Karnataka

EMPLOYERS: SURVEY QUESTIONNARE

Dear Sir,

The Institute is applying for Accreditation of various Programmes which is outcome based in conformity with the International practices. The assessment of the outcomes has to be through a survey. The following questions need your valued consideration. Please find some time and send us your answers to these questions. This response will be kept confidential.

Company Name: CENPACT		
Mailing Address:		
City, HYDERABAD	State, TS	Pin code: 500019
Employment details: Year 2020		Email:

Questions	Answers
1. What are the strengths of our under graduates?	DISCIPLINED
2. What are the weaknesses of our undergraduates?	INTROVERT
3. What areas are most/least important to your company? Following Departments are under assessment.	ALL
1. Computers / 2. Civil / 3. Electronics	
4. Electrical / 5. Mechanical / --	
3. Is consideration being given to addition of other programs? If so, what area(s)?	
4. What additional experiences / preparations do you expect/value?	
5. What on-the-job training do you provide?	BUSINESS PROCESS
6. Do you see any changes that may need to be made or considered with the program Specific outcomes[1]? If so, what would be your suggestion?	COMMUNICATION TRAINING
7. Do you see any changes that may need to be made or considered with the program Educational objectives? If so, what would be your suggestion?[2]	
8. Do you see any other issues that may need to be discussed?	

Name & Signature

HR DEPT

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OVERALL PO ATTAINMENT

Overall attainment of PO and PSO course wise is obtained by considering Direct and Indirect Attainment with the weightage of 70% and 30% respectively.

PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
Direct Attainment	2.29	2.03	2.08	1.98	2.17	1.96	1.86	1.65	2.08	2.00	1.85	2.04	2.00	1.88	1.01	0.90
Indirect Attainment	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Overall Attainment	2.51	2.32	2.36	2.28	2.42	2.27	2.21	2.05	2.36	2.30	2.19	2.33	2.30	2.22	1.61	1.53

Sample Calculation:

$$\textbf{Overall PO1 attainment} = 0.7 * \textbf{Direct Attainment} + 0.3 * \textbf{Indirect Attainment}$$

$$\textbf{Overall PO1 attainment} = 0.7 * 2.29 + 0.3 * 3$$

$$\textbf{Overall PO1 attainment} = 2.51$$

Overall attainment of the POs and PSOs is obtained by considering the overall PO & PSO attainment of all the courses of the batch under consideration and taking the average of them. The values thus obtained are the attainment of POs and PSOs for that batch.

The attainment values of the POs are then compared with the set target levels. If the targets are met by the POs and PSOs then, the PO and PSO is said to be attained for that batch. If not then the respective PO and PSO is not attained for the batch and need to address.

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DEPARTMENT OF CIVIL ENGINEERING

The Department follows a structured Guidelines handbook for Outcome evaluation followed commonly across the institution

Overall CO attainment is calculated by considering CO attainment (IA+SEE)

In order to obtain the CO attainment of the respective course:

Direct attainment is based on performance of the students in the Internal Assessment (30%) and semester end Examinations (70%)

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Detail procedure for Obtaining CO attainment:

STEP 1: All the faculties handling the courses will map the student performance in the internal assessment to the **excel sheet** as and when the blue books are valued.

CO-PO-PSO ATTAINMENT TOOL																	
Note 1: In case a question (Ex: 2d) is not present in QP, keep the column blank.																	
Note 2: If the student is not attempted a question, leave the cell blank. Do not fill with ZERO.																	
Note 3: Fill only the cells with ORANGE & AQUA color. Do not alter the cells with other colors.																	
Note 4: If a question maps to multiple CO's, write them separated by commas. Ex: If a question maps to CO-1 and CO-4, write CO1,4.																	
Subject: 15CV71					IA-I (2019-20)					Course Coordinator: Shashank P							
S.No.	USN	PART-A								PART-B							
		1	2	3						4	5					<= Question No.	
		CO2	CO3	CO2						CO1	C01					<= CO Mapping	
		10	10	10						5	5					<= Max. Marks	
1	4AD16CV001		10	10						3						23	<= IA
2	4AD16CV003		5	5						1						11	
3	4AD16CV004		10	10						4						24	
4	4AD16CV005		10	10						5	5					25	
5	4AD16CV006		5	10						5						20	
6	4AD16CV007		10	10						2						22	
7	4AD16CV008															0	
8	4AD16CV009		5	10						2						17	

Fig. 1: Mapping of IA marks in excel sheet

No. cleared	27	25	57	0	0	0	0	0	27	6	0	0	0	0	47	>16
No. attended	31	27	59	0	0	0	0	0	50	8	0	0	0	0	58	>9
%	87.10	92.59	96.61						54.00	75.00					10	<10
Course Outcomes	CO2	CO3	CO2						CO1	C01						

% of Contribution of each question to CO's																
	1	2	3						4	5					10	0 to 9
CO1									54.00	75.00					11	10 to 16
CO2	87.10		96.61												47	16 to 25
CO3		92.59													0	Absent
CO4															68	Total
CO5															17.09	Avg.
CO6															8.22	St. D.
															67.54	Coe. V.

% of Attainment	CO1	57	CO2	93	CO3	93	CO4	0	CO5	0	CO6	0	IA1	Actual Average

Fig.2: Calculation over all CO attainment Question wise and Actual Average of COs in the IA-1

STEP 2: All the three IA including the improvement test is listed and the attainment is available as shown in the below figure. Attainment is calculated in the scale of 0 to 3 based on the percentage of Overall CO attainment

CO attainment %	Attainment Level
<50	0
≥50 but <60	1
≥60 but <70	2
≥70	3

% of Attainment	CO1	0	CO2	97	CO3	98	CO4	96	CO5	0	CO6	0	IA3
% of Attainment	CO1	0	CO2	0	CO3	87	CO4	89	CO5	0	CO6	0	IA2
% of Attainment	CO1	57	CO2	93	CO3	93	CO4	0	CO5	0	CO6	0	IA1
AVERAGE		57		95		93		93		0		0	

	CO Attainment through IA											
L1 / L2 / L3	CO1	1	CO2	3	CO3	3	CO4	3	CO5	0	CO6	0

Fig.3: Overall attainment of CO through Internal Assessment

STEP 3: Attainment Level in University Examination

Attainment Level 1: 50% students scoring more than 50 % maximum marks in the final examination.

Attainment Level 2: 60% students scoring more than 50 % maximum marks in the final examination.

Attainment Level 3: 70% students scoring more than 50 % maximum marks in the final examination.

Enter the university Examination (SEE) percentage of students scored more than 50% of the maximum marks.

Example: If the maximum marks for the Course is 125, then the target marks is 63.

If the maximum marks for the course is 100, then the target marks is 50.

➢ The University result once again reduced to the scale 0 to 3.

STEP 4: The excel calculates the overall attainment of the COs by considering 30%weightage to Internal Assessment and 70% of the weightage to Sessional End Examination

	CO Attainment through IA											
L1 / L2 / L3	CO1	1	CO2	3	CO3	3	CO4	3	CO5	0	CO6	0
	CO Attainment through VTU Exam											
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	3	CO5	0	CO6	-
	Overall CO Attainment											
L1 / L2 / L3	CO1	2.4	CO2	3	CO3	3	CO4	3	CO5	0	CO6	-

% Students above 50% in VTU Exam
97.05

Fig.4: Overall CO Attainment Method

ATME College of Engineering

DEPARTMENT OF CIVIL ENGINEERING

Course Outcome Attainment of Academic Year 2019-2020

DEPARTMENT OF CIVIL ENGINEERING

Course Outcome Attainment of Academic Year 2019-20

III Semester

Strength of Materials (18CV32)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C302.1	**1.80**	2.20	0.40	**All CO's Achieved the Target Level**
C302.2		2.65	0.85	
C302.3		2.20	0.40	
C302.4		2.50	0.70	
C302.5		2.50	0.70	

Fluid Mechanics (18CV33)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C303.1	**1.80**	1.70	-0.10	**All CO's Achieved the Target Level except CO1**
C303.2		2.15	0.35	
C303.3		2.30	0.50	
C303.4		2.30	0.50	
C303.5		2.30	0.50	

Building Materials & Construction (18CV34)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C304.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C304.2		2.85	1.05	
C304.3		3.00	1.20	
C304.4		3.00	1.20	

Basic Surveying (18CV35)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C305.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C305.2		3.00	1.20	
C305.3		3.00	1.20	
C305.4		3.00	1.20	

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Engineering Geology (18CV36)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C306.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C306.2		3.00	1.20	
C306.3		3.00	1.20	
C306.4		3.00	1.20	
C306.5		3.00	1.20	

Computer Aided Building Planning & Drawing (18CVL37)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C307.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C307.2		3.00	1.20	
C307.3		3.00	1.20	

Basic Material Testing Lab (18CVL38)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C308.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C308.2		3.00	1.20	
C308.3		3.00	1.20	

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IV Semester

Analysis of Determinate Structures (18CV42)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C402.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C402.2		3.00	1.20	
C402.3		3.00	1.20	
C402.4		3.00	1.20	

Applied Hydraulics (18CV43)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C403.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C403.2		3.00	1.20	
C403.3		3.00	1.20	
C403.4		3.00	1.20	

Concrete Technology (18CV44)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C404.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C404.2		3.00	1.20	
C404.3		3.00	1.20	
C404.4		3.00	1.20	
C404.5		3.00	1.20	

Basic Geotechnical Engineering (18CV45)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C405.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C405.2		3.00	1.20	
C405.3		3.00	1.20	
C405.4		3.00	1.20	

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Advance Surveying (18CV46)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C406.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C406.2		3.00	1.20	
C406.3		3.00	1.20	
C406.4		3.00	1.20	

Engineering Geology Lab (18CVL47)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C407.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C407.2		3.00	1.20	
C407.3		3.00	1.20	
C407.4		3.00	1.20	
C407.5		3.00	1.20	

Fluid Mechanics & Hydraulic Machines Lab (18CV46)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C408.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C408.2		3.00	1.20	

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V Semester

Design of RC Structural Elements (17CV51)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C501.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C501.2		2.40	0.40	
C501.3		3.00	1.00	
C501.3		3.00	1.00	

Analysis of Indeterminate Structures (17CV52)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C502.1	**2.00**	2.40	0.40	**All CO's Achieved the Target Level**
C502.2		2.10	0.10	
C502.3		2.40	0.40	
C502.4		2.10	0.10	
C502.5		2.40	0.40	

Applied Geotechnical Engineering (17CV53)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C503.1	**1.42**	3.00	1.58	**All CO's Achieved the Target Level**
C503.2		3.00	1.58	
C503.3		3.00	1.58	
C503.4		3.00	1.58	
C503.5		3.00	1.58	

Computer Aided Building Planning & Drawing (17CV54)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C504.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C504.2		3.00	1.00	
C504.3		3.00	1.00	
C504.4		3.00	1.00	

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Railway, Harbour, Tunnelling & Airport (17CV552)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C505.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C505.2		3.00	1.00	
C505.3		3.00	1.00	
C505.4		3.00	1.00	

Remote Sensing & GIS (17CV563)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C506.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C506.2		3.00	1.00	
C506.3		3.00	1.00	
C506.4		3.00	1.00	

Geotechnical Engineering Lab (17CVL57)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C507.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C507.2		3.00	1.00	
C507.3		3.00	1.00	
C507.4		3.00	1.00	
C507.5		3.00	1.00	

Concrete & Highway Material Testing Lab (17CVL58)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C508.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C508.2		3.00	1.00	
C508.3		3.00	1.00	
C508.4		3.00	1.00	
C508.5		3.00	1.00	
C508.6		3.00	1.00	

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VI Semester

Construction Management & Entrepreneurship (17CV62)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C601.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C601.2		3.00	1.00	
C601.3		3.00	1.00	
C601.4		3.00	1.00	

Design of Steel Structural Elements (17CV62)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C602.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C602.2		3.00	1.00	
C602.3		3.00	1.00	
C602.4		3.00	1.00	
C602.5		3.00	1.00	

Highway Engineering (17CV63)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C603.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C603.2		3.00	1.00	
C603.3		3.00	1.00	
C603.4		3.00	1.00	

Water Supply & Sanitary Engineering (17CV64)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C604.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C604.2		3.00	1.00	
C604.3		3.00	1.00	
C604.4		3.00	1.00	

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Ground Improvement Techniques (17CV654)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C605.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C605.2		3.00	1.20	
C605.3		2.1	0.30	

Water Resource Engineering (17CV661)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C606.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C606.2		3.00	1.00	
C606.3		3.00	1.00	
C606.4		3.00	1.00	
C606.5		3.00	1.00	

Software Application Lab (17CVL67)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C607.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C607.2		3.00	1.00	
C607.3		3.00	1.00	
C607.4		3.00	1.00	

Extensive Survey Practice (17CVL68)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C608.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C608.2		3.00	1.00	
C608.3		3.00	1.00	
C608.4		3.00	1.00	
C608.5		3.00	1.00	
C608.6		3.00	1.00	

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VII Semester

Municipal and Industrial Waste Water Engineering (15CV71)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C701.1	**2.00**	2.40	0.40	**All CO's Achieved the Target Level**
C701.2		3.00	1.00	
C701.3		3.00	1.00	
C701.4		3.00	1.00	

Design of RCC & Steel Structures (15CV72)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C702.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C702.2		3.00	1.00	

Hydrology and Irrigation Engineering (15CV73)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C703.1	**2.00**	2.70	0.70	**All CO's Achieved the Target Level**
C703.2		3.00	1.00	
C703.3		3.00	1.00	
C703.4		3.00	1.00	
C703.5		3.00	1.00	
C703.6		3.00	1.00	

Ground Water & Hydraulics (15CV742)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C704.1	**1.80**	3.00	1.20	**All CO's Achieved the Target Level**
C704.2		3.00	1.20	
C704.3		3.00	1.20	
C704.4		3.00	1.20	

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Urban Transportation and Planning (15CV751)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C705.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C705.2		3.00	1.00	
C705.3		3.00	1.00	
C705.4		3.00	1.00	

Environmental Engineering Lab (15CVL76)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C706.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C706.2		3.00	1.00	
C706.3		3.00	1.00	
C706.4		3.00	1.00	

Computer Aided Detailing of Structures Lab (15CVL77)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C707.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C707.2		3.00	1.00	
C707.3		3.00	1.00	

Project Phase-I (15CVP78)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C708.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C708.2		3.00	1.00	

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VIII Semester

Quantity Surveying and Contracts Management (15CV81)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C801.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C801.2		3.00	1.00	
C801.3		3.00	1.00	

Design of Pre Stressed Concrete Elements (15CV82)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C802.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C802.1		3.00	1.00	
C802.1		3.00	1.00	
C802.1		3.00	1.00	
C802.1		3.00	1.00	

Pavement Design (15CV83)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C803.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C803.2		3.00	1.00	
C803.3		3.00	1.00	
C803.4		3.00	1.00	

Internship /Professional Practice (15CV84)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C804.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C804.2		3.00	1.00	
C804.3		3.00	1.00	

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Project Phase-II (15CVP85)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C805.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C805.2		3.00	1.00	

Seminar (15CVS85)				
Course Outcomes	**Target for Current Academic year**	**Attainment Level of Current Exam**	**Gap**	**Gap Analysis**
C806.1	**2.00**	3.00	1.00	**All CO's Achieved the Target Level**
C806.2		3.00	1.00	

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Attainment of Program Outcomes and Program Specific Outcomes

Program shall set Program Outcome attainment levels for all POs & PSOs.

(The attainment levels by direct (student performance) and indirect (surveys) are to be presented through Program level Course – PO & PSO matrix as indicated).

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101												
C102												

C409												
Direct attainment												
Indirect Attainment												
Over all PO attainment												

Note: Similar table is to be prepared for PSOs
C101, C102 are indicative courses in the first year. Similarly, C409 is final year course. First numeric digit indicates year of study and remaining two digits indicate course nos. in the respective year of study.

1. Direct attainment level of a PO & PSO is determined by taking average across all courses addressing that PO and/or PSO. Fractional numbers may be used up to two decimal places.
2. Indirect attainment level of PO & PSO is determined based on the student exit surveys, employer surveys and Alumni survey.

Calculation of PO attainment:

Following are the steps need to be followed to obtain the PO attainment.

Step 1: Course coordinator should enter the Course articulation matrix as per the course module in Sheet 4 of the CO-PO-PSO assessment tool.

Step 2: CO attainment from the Internal assessment is multiplied with the CAM and reduced percentage in the subsequent table and based on the target level set the percentage are converted to the scale 1 to 3.

Step 3: PO attainment through University Examination results is also considered and reduced to level points 1 to 3.

Step 4: PO and PSO attainment through direct assessment is thus calculated by putting the weightage 70% to attainment through University Exams and 30% to attainment through IA.

Step 5: Indirect Assessment of PO and PSO is calculated by considering the surveys such as Alumni Survey, Program Exit Survey and Employer Survey.
• In each survey the average values of individual POs and PSOs of all the courses in the program are taken.
• Then the overall average of PO1-PO12 and PSOs are taken. Then the final average value is converted and represented in percentage.

Step 6: Above step is carried out for all the three surveys and the final average value of the percentage obtained is converted to Level 1 to 3.

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Step 1: Course coordinator should enter the Course articulation matrix(CAM) as per the course module in Sheet 4 of the CO-PO-PSO assessment tool.

	CO - PO - PSO Mapping																	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	-	PSO1	PSO2	PSO3	PSO4	PSO5
C701.1	2	2	2	1	-	1	1	-	-	1	1	1	-	1	1	-	2	-
C701.2	2	1	1	1	-	1	1	-	-	1	1	1	-	1	1	-	1	-
C701.3	2	2	2	1	-	1	1	-	-	1	1	1	-	1	1	-	2	-
C701.4	2	1	1	1	-	1	1	-	-	1	1	1	-	1	1	-	1	-
													-					
													-					
Course-PO-PSO	2	1.5	1.5	1	X	1	1	X	X	1	1	1	X	1	1	X	1.5	X

Fig.1: CAM of the respective Course

Step 2: CO attainment from the Internal assessment is multiplied with the CAM and reduced percentage in the subsequent table and based on the target level set the percentage are converted to the scale 1 to 3.

Step 3: PO attainment through University Examination results is also considered and reduced to level points 1 to 3.

CO Attainment		
COs	%	L1/L2/L3
C701.1	57	2.40
C701.2	95	3.00
C701.3	93	3.00
C701.4	93	3.00

Step 4: PO and PSO attainment through direct assessment is thus calculated by putting the weightage 70% to attainment through University Exams and 30% to attainment through IA.

	PO & PSO Attainment																	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	-	PSO1	PSO2	PSO3	PSO4	PSO5
C701.1	38	38	38	19	-	19	19	-	-	19	19	19	-	19	19	-	38	-
C701.2	63	32	32	32	-	32	32	-	-	32	32	32	-	32	32	-	32	-
C701.3	62	62	62	31	-	31	31	-	-	31	31	31	-	31	31	-	62	-
C701.4	62	31	31	31	-	31	31	-	-	31	31	31	-	31	31	-	31	-
													-					
													-					
% Attainment	56	41	41	28	0	28	28	0	0	28	28	28	0	28	28	0	41	0

CO Attainment = 70 % of VTU Exam + 30 % of IA.	
Alumni Survey-%	86
Course Feedback-%	
G. Exit Survey-%	71
Employer Feedback-%	87
	81.33
FC & FCD in UNV. Exam (%)	
	97.05

Fig 2:PO-PSO attainment reduced to percentage

	Attainment through IA																	
L1 / L2 / L3	1	0	0	0	X	0	0	X	X	0	0	0	X	0	0	X	0	X
	Attainment through VTU Exam																	
L1 / L2 / L3	3	3	3	3	X	3	3	X	X	3	3	3	X	3	3	X	3	X
	PO & PSO Attainment - Direct Assessment																	
70% weightage	2.4	2.1	2.1	2.1	X	2.1	2.1	X	X	2.1	2.1	2.1	X	2.1	2.1	X	2.1	X

Attainments	IA	UNV.
L1	>=50%	>=50%
L2	>=60%	>=60%
L3	>=70%	>=70%

Direct =70 % of VTU Exam +30% of IA

Fig 3: PO-PSO attainment through Direct Assessment

Step 5: Indirect Assessment of PO and PSO is calculated by considering the surveys such as Alumni Survey, Program Exit Survey and Employer Survey.

• In each survey the average values of individual POs and PSOs of all the courses in the program are taken.

• Then the overall average of PO1-PO12 and PSOs are taken. Then the final average value is converted and represented in percentage.

Step 6: Above step is carried out for all the three surveys and the final average value of the percentage obtained is converted to Level 1 to 3.

	Attainment through VTU Exam																	
L1 / L2 / L3	3	3	3	3	X	3	3	X	X	3	3	3	X	3	3	X	3	X
	PO & PSO Attainment - Direct Assessment																	
70% weightage	2.4	2.1	2.1	2.1	X	2.1	2.1	X	X	2.1	2.1	2.1	X	2.1	2.1	X	2.1	X
	PO & PSO Attainment - Indirect Assessment																	
30% Weightage	3	3	3	3	X	3	3	X	X	3	3	3	X	3	3	X	3	X
Overall PO & PSO Attainment																	Overall = 70 % of Direct + 30% Indirect	
Final Attainment	2.58	2.37	2.37	2.37	X	2.37	2.37	X	X	2.37	2.37	2.37	X	2.37	2.37	X	2.37	X
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	-	PSO1	PSO2	PSO3	PSO4	PSO5

Direct =70 % of VTU Exam +30% of IA

Fig 4: Overall PO-PSO attainment (Direct+ Indirect)

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Sl. No	USN Number	Name in SSLC	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	4AD16CV021	MADHURA C	3	3	3	3	3	3	3	3	3	3	3	3
2	4AD17CV403	AYMAN MEHRAJ	3	3	3	3	3	3	3	3	3	3	3	3
3	4AD17CV416	PRAJWAL B U	3	3	3	3	3	3	3	3	3	3	3	3
4	4AD16CV008	ANUSHA M S	3	3	3	3	3	3	3	3	3	3	3	3
5	4AD17CV407	HARSHARAJ J	3	3	3	3	3	3	3	3	3	3	3	3
6	4AD17CV421	SALMAN SHARIFF	3	3	3	3	3	3	3	3	3	3	3	3
7	4AD17CV425	SHILPA B R	3	3	3	3	3	3	3	3	3	3	3	3
8	4AD16CV026	NANDISH K R	3	3	3	3	3	3	3	3	3	3	3	3
9	4AD16CV015	DILEEP KUMAR J	3	3	3	3	3	3	3	3	3	3	3	3
10	4AD16CV037	SAHANA P	3	3	3	3	3	3	3	3	3	3	3	3
11	4AD17CV401	AKASH S	3	3	3	3	3	3	3	3	3	3	3	3
12	4AD17CV415	PAVITHRA H C	3	3	3	3	3	3	3	3	3	3	3	3
13	4AD16CV010	BHAGYAJYOTI	3	3	3	3	3	3	3	3	3	3	3	3
14	4AD17CV413	MOHAMMED SAQIB	3	3	3	3	3	3	3	3	3	3	3	3
15	4AD14CV050	SOUJANYA R	3	3	3	3	3	3	3	3	3	3	3	3
16	4AD16CV007	ANUSHA A S	3	3	3	3	3	3	3	3	3	3	3	3
17	4AD16CV009	ASHRITHA M L	3	3	2	2	2	2	2	3	3	2	2	3
18	4AD16CV016	HARSHA N R	3	3	3	3	3	3	3	3	3	3	3	3
19	4AD17CV412	MITHAVACHANA BJ	3	3	2	2	3	2	2	3	3	2	2	3
20	4AD17CV426	SHILPASHREE K S	3	3	3	3	3	3	3	3	3	3	3	3
21	4AD16CV041	SURABHI K N	3	3	3	3	3	3	3	3	3	3	3	3
22	4AD17CV405	GHANAVI M K	3	3	3	3	3	3	3	3	3	3	3	3
23	4AD16CV001	A NIKITH	3	3	3	3	3	3	3	3	3	3	3	3
24	4AD17CV404	DIVAKAR M	3	3	2	3	3	2	2	3	3	2	2	3
25	4AD17CV420	RAVIKUMAR S	3	3	3	3	3	3	3	3	3	3	3	2
26	4AD17CV427	TEJAS D P	3	3	3	3	3	3	3	3	3	3	3	3

Fig 5.1: PO Exit survey

SL. No	USN Number	Namein SSLC	PSO1	PSO2	PSO3	PSO4	PSO5
1	4AD16CV021	MADHURA C	3	3	3	3	3
2	4AD16CV025	NAMITHA B V	3	2	3	3	3
3	4AD16CV030	PRAJWAL A R	3	2	3	3	3
4	4AD16CV023	MANOJ S L	3	2	3	3	3
5	4AD17CV422	SANTHOSH KUMAR A S	3	2	3	3	3
6	4AD17CV406	HARISH K R	3	2	3	3	3
7	4AD16CV008	ANUSHA M S	3	3	3	3	3
8	4AD15CV010	DEVARAJU C	3	2	3	3	3
9	4AD17CV403	AYMAN MEHRAJ	3	2	3	3	3
10	4AD17CV407	HARSHARAJ J	3	3	3	3	3
11	4AD17CV421	SALMAN SHARIFF	3	3	3	3	3
12	4AD16CV014	DEEPAK M P	3	2	2	2	2
13	4AD17CV425	SHILPA B R	3	3	3	3	3
14	4AD17CV418	PRAJWAL M R	3	2	3	3	2
15	4AD16CV011	CHANDANA N	3	2	3	3	2
16	4AD17CV402	ARPITHA H P	3	2	3	3	3
17	4AD16CV018	HITESH BM	3	1	3	3	2
18	4AD16CV037	SAHANA P	3	3	3	3	3
19	4AD16CV015	DILEEP KUMAR J	3	3	3	3	3
20	4AD16CV027	Navya T J	3	2	3	3	3
21	4AD17CV401	AKASH S	3	3	2	3	2
22	4AD16CV024	MOHAMMED HANNAN	3	2	3	3	3
23	4AD17CV415	PAVITHRA H C	3	2	3	3	3
24	4AD15CV035	SACHIN C	3	3	3	3	3
25	4AD16CV010	BHAGYAJYOTI	3	3	3	3	3

SL. No	USN Number	Namein SSLC	PSO1	PSO2	PSO3	PSO4	PSO5
26	4AD16CV007	ANUSHA A S	3	2	3	3	3
27	4AD16CV017	HEMANTH	3	2	3	3	2
28	4AD14CV023	MAMATHA M K	3	2	3	3	2
29	4AD16CV005	ANIL G N	3	1	3	3	2
30	4AD16CV026	NANDISH K R	3	3	3	3	3
31	4AD17CV413	MOHAMMED SAQIB	2	2	2	2	2
32	4AD17CV419	PUNEETH M	3	2	3	3	3
33	4AD14CV050	SOUJANYA R	3	2	3	3	3
34	4AD17CV405	GHANAVI M K	3	3	3	3	3
35	4AD17CV411	MANJUNATH K S	3	2	3	3	3
36	4AD17CV414	MOHAMMED SAQIBULLA	3	2	3	3	2
37	4AD17CV417	PRAJWAL K M	3	2	3	3	2
38	4AD16CV006	ANJANA M K	3	2	3	3	2
39	4AD14CV027	MEGHANA N	3	2	3	3	3
40	4AD16CV003	AKASH T C	3	2	3	3	2
41	4AD17CV423	SANTHOSH P	3	2	3	3	3
42	4AD16CV009	ASHRITHA M L	3	2	3	3	3
43	4AD16CV012	DARSHAN B	3	2	3	3	3
44	4AD16CV016	HARSHA N R	3	2	3	3	2
45	4AD16CV034	RAMITHA H E	3	2	3	3	2
46	4AD16CV001	A NIKITH	3	3	3	3	3
47	4AD17CV404	DIVAKAR M	3	2	3	3	3
48	4AD17CV410	MANIKANTA R	3	2	3	3	2
49	4AD16CV033	RAJATHA B L	3	2	3	3	2
50	4AD17CV412	MITHAVACHANA BJ	3	2	3	3	2
51	4AD17CV426	SHILPASHREE K S	3	3	3	3	3

5.2: PSO Exit survey

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ATME COLLEGE OF ENGINEERING

Department of Civil Engineering

ALUMNI SURVEY QUESTIONNAIRE

Degree Received: 2015		Year of Graduation: 2014	
Name: Mohan Kumar.C		Signature:	
Mailing Address: mohankumarc2435@gmail.com			
City: Mysore	State: Karnataka	Pin code: 570019	
Employment details:		Email:	
Company and Designation: Skilltech Engineers & Contractors Pvt Ltd Mysore			

Dear Alumni,

For each of the Program Outcomes (1-12) given below, indicate the level / strength to which it has contributed to your understanding. Please include any comments.

Q1: Before each statement, indicate the answer 0 through 3 which most closely fits this statement for you:

0: No contribution:	1: Weak contribution:	2: Average contribution:	3: Strong contribution:

My UG education at ATME College of Engineering has given me:

PO	Answer	Program Outcomes
PO1	3	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	3	Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	2	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.
PO4	2	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.
PO5	2	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.
PO6	1	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.
PO7	2	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	2	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	3	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	2	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.
PO11	2	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.
PO12	3	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.

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Fig 6: Alumni survey Template

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ATME College of Engineering, Mysuru, Karnataka

EMPLOYERS: SURVEY QUESTIONNARE

Dear Sir,

The Institute is applying for Accreditation of various Programmes which is outcome based in conformity with the International practices. The assessment of the outcomes has to be through a survey. The following questions need your valued consideration. Please find some time and send us your answers to these questions. This response will be kept confidential.

Company Name: INFOSYS			
Mailing Address: ELECTRONICS CITY			
City. BANGALORE	State. KARNATAKA	Pin code:	560066
Employment details: Year 2020		Email:	

Questions	Answers
1. What are the streagths of our under graduates?	Confidence
2. What are the weaknesses of our undergraduates?	core knowledge
3. What areas are most/least important to your company? Following Departments are under assessment.	
1. Computers 2. Civil 3. Electronics	All
4. Electrical 5. Mechanical ---	
3. Is consideration being given to addition of other programs? If so, what area(s)?	Bootstrap, domain specific
4. What additional experiences / preparations do you expect/value?	
5. What on-the-job training do you provide?	
6. Do you see any changes that may need to be made or considered with the program Specific outcomes? If so, what would be your suggestion?	
7. Do you see any changes that may need to be made or considered with the program Educational objectives? If so, what would be your suggestion??	
8. Do you see any other issues that may need to be discussed?	

Name & Signature

Fig 7: Employer survey Template

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OVERALL PO ATTAINMENT

DEPARTMENT OF CIVIL ENGINEERING

Overall attainment of PO and PSO ***course wise*** is obtained by considering Direct and Indirect Attainment with the weightage of 70% and 30% respectively.

Direct Attainment	2.53	2.31	2.23	2.16	2.42	1.94	1.94	2.09	2.57	2.01	2.09	2.29	2.36	2.57	2.91	2.08	2.21
Indirect Attainment	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Overall PO-PSO Attainment	**2.67**	**2.52**	**2.46**	**2.41**	**2.59**	**2.26**	**2.26**	**2.36**	**2.70**	**2.31**	**2.36**	**2.50**	**2.55**	**2.70**	**2.94**	**2.36**	**2.45**

Sample Calculation:

Overall PO1 attainment = 0.7 x Direct Attainment + 0.3 x Indirect Attainment

= 0.7 x 2.53 + 0.3 x 3

= 2.67

Overall attainment of the POs and PSOs is obtained by considering the overall PO & PSO attainment of all the courses of the batch under consideration and taking the average of them. The values thus obtained are the attainment of POs and PSOs for that batch.

The attainment values of the POs are then compared with the set target levels. If the targets are met by the POs and PSOs then, the PO and PSO is said to be attained for that batch. If not, then the respective PO and PSO is not attained for the batch and need to addressed

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The Department follows a structured Guidelines handbook for Outcome evaluation followed commonly across the institution

Overall CO attainment is calculated by considering CO attainment (IA+SEE)

In order to obtain the CO attainment of the respective course:

Direct attainment is based on performance of the students in the Internal Assessment (30%) and semester end Examinations (70%)

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Detail procedure for Obtaining CO attainment:

STEP 1: All the faculties handling the courses will map the student performance in the internal assessment to the **excel sheet** as and when the blue books are valued.

CO-PO-PSO ATTAINMENT TOOL														
Note 1: In case a question (Ex: 2d) is not present in QP, keep the column blank.														
Note 2: If the student is not attempted a question, leave the cell blank. Do not fill with ZERO.														
Note 3: Fill only the cells with YELLOW / ORANGE, AQUA, PURPLE color. Do not alter the cells with other colors.														
Note 4: If a question maps to multiple CO's, write them separated by commas. Ex: If a question maps to CO-1 and CO-4, write CO1,4.														
IA 1(IOT)													FACULTY NAME:NASREEN FATHIMA	
S.No.	USN	1a	2a	2b	3	4	5	6						<= Question No.
		CO1	CO1	CO1	CO1	CO1	CO3	CO3	-	-	-	-	-	<= CO Mapping
		10	5	5	10	10	5	5	-	-	-	-	-	<= Max. Marks
1	4AD16CS002		5	5	8		5							23
2	4AD16CS004		4	4	9		4							27
3	4AD16CS005		5	5	9		4							38
4	4AD16CS006		5	5	9		5							21
5	4AD16CS007		5	5	9		4							29
6	4AD16CS008		5	5	9			6						26
7	4AD16CS009		5	5	10		5							15
8	4AD16CS010		5	5	9		5							32
9	4AD16CS011		5	4	9		5							26
10	4AD16CS012		5	5	8		4							32
11	4AD16CS013		5	5	10		5							29
12	4AD16CS016		5	4	9		4							33

Fig. 1: Mapping of IA marks in excel sheet

No. cleared	0	100	96	98	3	91	5						
No. attended	0	101	98	98	3	94	7						
%	0.00	99.01	97.96	100.00	100.00	96.81	71.43						
Course Outcomes	CO1	CO1	CO1	CO1	CO1	CO3	CO3						

% of Contribution of each question to CO's													
	1a	1b	1c	1d	2a	2b	2c	2d	3a	3b	3c	3d
CO1	0.00	99.01	97.96	100.00	100.00							
CO2												
CO3						96.81	71.43					
CO4												
CO5												
CO6												

% of Attainment	CO1	99.00	CO2	0.00	CO3	95	CO4	0	CO5	0	CO6	0

Fig.2: Calculation over all CO attainment Question wise and Actual Average of COs in the IA-1

STEP 2: All the three IA including the improvement test is listed and the attainment is available as shown in the below figure. Attainment is calculated in the scale of 0 to 3 based on the percentage of Overall CO attainment

CO attainment %	Attainment Level
<50	0
≥50 but <60	1
≥60 but <70	2
≥70	3

% of Attainment	CO1	0.00	CO2	100.00	CO3	99.00	CO4	0	CO5	0	CO6	0	IA3
% of Attainment	CO1	0	CO2	98	CO3	0	CO4	0	CO5	0	CO6	0	IA2
% of Attainment	CO1	99	CO2	0	CO3	95	CO4	0	CO5	0	CO6	0	IA1
AVERAGE		99		99		97		0		0		0	
	CO Attainment through IA												
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	0	CO5	0	CO6	0	

Fig.3: Overall attainment of CO through Internal Assessment

STEP 3: Attainment Level in University Examination

Attainment Level 1: 50% students scoring more than 50 % maximum marks in the final examination.

Attainment Level 2: 60% students scoring more than 50 % maximum marks in the final examination.

Attainment Level 3: 70% students scoring more than 50 % maximum marks in the final examination.

Enter the university Examination (SEE) percentage of students scored more than 50% of the maximum marks.

Example: If the maximum marks for the Course is 125, then the target marks is 63.

If the maximum marks for the course is 100, then the target marks is 50.

➢ The University result once again reduced to the scale 0 to 3.

STEP 4: The excel calculates the overall attainment of the COs by considering 30%weightage to Internal Assessment and 70% of the weightage to Sessional End Examination.

	CO Attainment through IA											
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	0	CO5	0	CO6	0
											VTU Exam Result-%	
	CO Attainment through VTU Exam										95	
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	0	CO5	0	CO6	-
	Overall CO Attainment											
L1 / L2 / L3	CO1	3.00	CO2	3.00	CO3	3.00	CO4	0.00	CO5	0.00	CO6	

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Fig.4: Overall CO Attainment Method

ATME College of Engineering

Department of Computer Science & Engineering

Course Outcome Attainment of Academic Year 2019-2020

Department of Computer Science & Engineering

Course Outcome Attainment of Academic Year 2019-20

III Semester

Course Name : Data Structures & Applications (18CS32)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C202.1	1.8	3	1.2	All COs achieved the target level
C202.2		3	1.2	
C202.3		3	1.2	
C202.4		3	1.2	
Course Name : Analog and Digital Electronics (18CS33)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C203.1	1.8	3	1.2	All COs achieved the target level
C203.2		3	1.2	
C203.3		3	1.2	
C203.4		3	1.2	
C303.5		3	1.2	
Course Name : Computer Organization (18CS34)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C204.1	1.8	2.70	0.90	All COs achieved the target level
C204.2		3	1.2	
C204.3		3	1.2	
C204.4		3	1.2	
Course Name : Software Engineering(18CS35)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C205.1	1.8	3	1.2	All COs achieved the target level
C205.2		3	1.2	
C205.3		3	1.2	
C205.4		3	1.2	
C205.5		2.7	0.9	
Course Name : Discrete Mathematical Structures (18CS36)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C206.1	1.8	3	1.2	All COs achieved the target level
C206.2		3	1.2	
C206.3		3	1.2	
C206.4		3	1.2	
C206.5		3	1.2	

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Course Name : Analog & Digital Electronics Laboratory – I (18CSL37)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C207.1	1.8	3.00	1.2	All COs achieved the target level
C207.2		3.00	1.2	
C207.3		3.00	1.2	
C207.4		3.00	1.2	
Course Name : Data Structures Laboratory (18CSL38)				
Course Outcomes	**Target for current exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C208.1	1.8	3.00	1.2	All COs achieved the target level
C208.2		3.00	1.2	
C208.3		3.00	1.2	
C208.4		3.00	1.2	

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IV Semester

Course Name : Design & Analysis of Algorithms (18CS42)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C210.1	1.8	3.00	1.2	All COs achieved the target level
C210.2		3.00	1.2	
C210.3		3.00	1.2	
Course Name : Operating System(18CS43)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C211.1	1.8	3.00	1.2	All COs achieved the target level
C211.2		3.00	1.2	
C211.3		3.00	1.2	
C211.4		3.00	1.2	
Course Name : Microcontroller & Embedded System (18CS44)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C212.1	1.8	3.00	1.2	All COs achieved the target level
C212.2		3.00	1.2	
C212.3		3.00	1.2	
C212.4		3.00	1.2	
C12.5		3.00	1.2	
Course Name : Object Oriented Concepts (18CS45)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C213.1	1.8	3.00	1.2	All COs achieved the target level
C213.2		3.00	1.2	
C213.3		3.00	1.2	
Course Name : Data Communication(18CS46)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C214.1	1.80	3.00	1.2	All COs achieved the target level
C214.2		3.00	1.2	
C214.3		3.00	1.2	
C214.4		3.00	1.2	

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Course Name : Design & Analysis of Algorithm Laboratory (18CSL47)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C215.1	1.8	3.00	1.2	All COs achieved the target level
C215.2		3.00	1.2	
C215.3		3.00	1.2	
C215.4		3.00	1.2	
Course Name : Microcontroller and Embedded Systems Laboratory (18CSL48)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C216.1	1.8	3.00	1.2	All COs achieved the target level
C216.2		3.00	1.2	

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V Semester

Course Name : Management and Entrepreneurship (17CS51)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C301.1	2.00	3.00	1.00	All COs achieved the target level
C301.2		2.70	0.70	
C301.3		3.00	1.00	
Course Name : Computer Networks (17CS52)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C302.1	2.00	2.70	0.70	All COs achieved the target level
C302.2		3.00	1.2	
C302.3		3.00	1.2	
C302.4		3.00	1.2	
C302.5		3.00	1.2	
Course Name : Database Management System (17CS53)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C303.1	2.00	2.70	0.70	All COs achieved the target level
C303.2		3.00	1.00	
C303.3		3.00	1.00	
C303.4		3.00	1.00	
Course Name : Automata Theory & Compatibility (17CS54)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C304.1	2.00	3.00	1.00	All COs achieved the target level
C304.2		2.70	0.70	
C304.3		3.00	1.00	
C304.4		3.00	1.00	
C304.5		3.00	1.00	

Course Name : Advance JAVA & J2EE (17CS552)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C305.1	2.00	3.00	1.00	All COs achieved the target level
C305.2		3.00	1.00	
C305.3		3.00	1.00	
C305.4		3.00	1.00	
C305.5		3.00	1.00	
Course Name : .NET Framework for Application Development(17CS563)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C306.1	2.00	3.00	1.00	All COs achieved the target level
C306.2		3.00	1.00	
C306.3		3.00	1.00	
C306.4		3.00	1.00	
C306.5		3.00	1.00	
Course Name : Computer Networks Laboratory (17CSL57)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C307.1	2.00	3.00	1.00	All COs achieved the target level
C307.2		3.00	1.00	
C307.3		3.00	1.00	
Course Name : DBMS Laboratory with Mini Project(17CSL58)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C308.1	2.00	3.00	1.00	All COs achieved the target level
C308.2		3.00	1.00	
C308.3		3.00	1.00	

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VI Semester

Course Name : Cryptography Network Security & Cyber Law (17CS61)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C309.1	2.00	3.00	1.00	All COs achieved the target level
C309.2		3.00	1.00	
C309.3		3.00	1.00	
Course Name : Computer Graphics (17CS62)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C310.1	2.00	3.00	1.00	All COs achieved the target level
C310.2		3.00	1.00	
C310.3		3.00	1.00	
C310.4		3.00	1.00	
Course Name : System Software & Compiler Design (17CS63)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C.311.1	2.00	3.00	1.00	All COs achieved the target level
C311.2		3.00	1.00	
C311.3		3.00	1.00	
Course Name : Operating System (17CS64)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C312.1	2.00	3.00	1.00	All COs achieved the target level
C312.2		3.00	1.00	
C312.3		3.00	1.00	
C312.4		3.00	1.00	

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Course Name : Data Mining & Data Warehousing (17CS651)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C313.1	2.00	3.00	1.00	All COs achieved the target level
C313.2		3.00	1.00	
C313.3		3.00	1.00	
Course Name : Python Application Programming (17CS664)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C314.1	2.00	3.00	1.00	All COs achieved the target level
C314.2		3.00	1.00	
C314.3		3.00	1.00	
C314.4		3.00	1.00	
C314.5		3.00	1.00	
Course Name : System Software & Compiler Design Laboratory (17CSL67)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C315.1	2.00	3.00	1.00	All Cos achieved the target level
C315.2		3.00	1.00	
Course Name : Computer Graphics Laboratory with Mini Project (17CSL68)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C316.1	2.00	3.00	1.00	All COs achieved the target level
C316.2		3.00	1.00	
C316.3		3.00	1.00	

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VII Semester

Course Name : Web Technology & its Applications (15CS71)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C401.1	2.00	3	1.00	All Cos achieved the target level
C401.2		2.7	0.70	
C401.3		3	1.00	
C401.4		3	1.00	
C401.5		3	1.00	
Course Name : Advance Computer Architecture (15CS72)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C402.1	2.00	2.30	0.30	All COs achieved the target level
C402.2		2.30	0.30	
C402.3		2.30	0.30	
Course Name : Machine Learning (15CS73)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C403.1	2.00	3.00	1.00	All COs achieved the target level
C403.2		3.00	1.00	
C403.3		3.00	1.00	
Course Name : Information Network Security(15CS743)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C404.1	2.00	3.00	1.00	All COs not achieved the target level
C404.2		3.00	1.00	
C404.3		3.00	1.00	

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Course Name : Storage Area Networks (15CS754)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C405.1	2.00	3.00	1.00	All COs achieved the target level
C405.2		3.00	1.00	
C405.3		3.00	1.00	
C405.4		3.00	1.00	
Course Name : Machine Learning Lab (15CSL76)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C406.1	2.00	3.00	1.00	All COs achieved the target level
C406.2		3.00	1.00	
C406.3		3.00	1.00	
C406.4		3.00	1.00	
Course Name : Web Technology Lab(15CSL77)				
Course Outcomes	**Target for current academic Year m**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C407.1	2.00	3.00	1.00	All COs achieved the target level
C407.2		3.00	1.00	
C407.3		3.00	1.00	
Course Name : Project Work Phase – I (15CSP78)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C408.1	2.00	3.00	1.00	All COs achieved the target level
C408.2		3.00	1.00	
C408.3		3.00	1.00	
C408.4		3.00	1.00	
C408.5		3.00	1.00	

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VIII Semester

Course Name : Internet of Things (15CS81)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C409.1	2.00	3.00	1.00	All COs achieved the target level
C409.2		3.00	1.00	
C409.3		3.00	1.00	
Course Name : Big Data Analytics (15CS82)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C410.1	2.00	3.00	1.00	All COs achieved the target level
C410.2		3.00	1.00	
C410.3		3.00	1.00	
C410.4		3.00	1.00	
C410.5		3.00	1.00	
Course Name : Network Management (15CS833)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C411.1	2.00	3.00	1.00	All COs achieved the target level
C411.2		3.00	1.00	
C411.3		3.00	1.00	
C411.4		3.00	1.00	
C411.5		3.00	1.00	
C411.6		3.00	1.00	
Course Name : Internship/Professional Practice (15CS84)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C412.1	2.00	3.00	1.00	All COs achieved the target level
C412.2		3.00	1.00	
C412.3		3.00	1.00	
C412.4		3.00	1.00	
C412.5		3.00	1.00	
Course Name : Project Work Phase - II (15CSP85)				
Course Outcomes	**Target for current academic Year**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C413.1	2.00	3.00	1.00	All COs achieved the target level
C413.2		3.00	1.00	
C413.3		3.00	1.00	
C413.4		3.00	1.00	
C413.5		3.00	1.00	

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Course Name : Seminar (15CSS86)				
Course Outcomes	**Attainment Level for last exam**	**Attainment Level of current exam**	**Gap**	**Gap Analysis**
C414.1	2.00	3.00	1.00	All COs achieved the target level
C414.2		3.00	1.00	
C414.3		3.00	1.00	
C414.4		3.00	1.00	
C414.5		3.00	1.00	

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Attainment of Program Outcomes and Program Specific Outcomes

Program shall set Program Outcome attainment levels for all POs & PSOs.
(The attainment levels by direct (student performance) and indirect (surveys) are to be presented through Program level Course – PO & PSO matrix as indicated).

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101												
C102												

C409												
Direct attainment												
Indirect Attainment												
Over all PO attainment												

Note: Similar table is to be prepared for PSOs
C101, C102 are indicative courses in the first year. Similarly, C409 is final year course. First numeric digit indicates year of study and remaining two digits indicate course nos. in the respective year of study.

1. Direct attainment level of a PO & PSO is determined by taking average across all courses addressing that PO and/or PSO. Fractional numbers may be used up to two decimal places.
2. Indirect attainment level of PO & PSO is determined based on the student exit surveys, employer surveys and Alumni survey.

Calculation of PO attainment:

Following are the steps need to be followed to obtain the PO attainment.
Step 1: Course coordinator should enter the Course articulation matrix as per the course module in Sheet 4 of the CO-PO-PSO assessment tool.

Step 2: CO attainment from the Internal assessment is multiplied with the CAM and reduced percentage in the subsequent table and based on the target level set the percentage are converted to the scale 1 to 3.

Step 3: PO attainment through University Examination results is also considered and reduced to level points 1 to 3.

Step 4: PO and PSO attainment through direct assessment is thus calculated by putting the weightage 70% to attainment through University Exams and 30% to attainment through IA.

Step 5: Indirect Assessment of PO and PSO is calculated by considering the surveys such as Alumni Survey, Program Exit Survey and Employer Survey.
• In each survey the average values of individual POs and PSOs of all the courses in the program are taken.
• Then the overall average of PO1-PO12 and PSOs are taken. Then the final average value is converted and represented in percentage.

Step 6: Above step is carried out for all the three surveys and the final average value of the percentage obtained is converted to Level 1 to 3.

Step 1: Course coordinator should enter the Course articulation matrix(CAM) as per the course module in Sheet 4 of the CO-PO-PSO assessment tool.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	pso1	pso2	pso3
C409.1	1	1	2	0	0	0	0	0	0	0	0	2	0	0	0
C409.2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C409.3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Course0PO0psc	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0

Page 1

Fig.1: CAM of the respective Course

Step 2: CO attainment from the Internal assessment is multiplied with the CAM and reduced percentage in the subsequent table and based on the target level set the percentage are converted to the scale 1 to 3.

Step 3: PO attainment through University Examination results is also considered and reduced to level points 1 to 3.

CO Attainment		
COs	%	L1/L2/L3
C409.1	99	3.00
C409.2	99	3.00
C409.3	97	3.00

Step 4: PO and PSO attainment through direct assessment is thus calculated by putting the weightage 70% to attainment through University Exams and 30% to attainment through IA.

	PO & PSO Attainment														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	pso1	pso2	pso3
C409.1	33	33	66	0	0	0	0	0	0	0	0	66	0	0	0
C409.2	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C409.3	32	32	32	0	0	0	0	0	0	0	0	0	0	0	0
% Attainment	33	33	49	0	0	0	0	0	0	0	0	66	0	0	0

CO Attainment : 70% of Exam + 30 % of IA.	
Alumni Survey0%	70.52051
Course Feedback0%	
G. Exit Survey0%	70.31672
Employer Feedback0%	71.06667
	70.63
FC & FCD in UNV. Exam (%)	
	95.00

Fig 2:PO-PSO attainment reduced to percentage

	Attainment through IA														
L1 / L2 / L3	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
	Attainment through VTU Exam														
L1 / L2 / L3	3	3	3	0	0	0	0	0	0	0	0	3	0	0	0
	PO & PSO Attainment 0 Direct Assessment														
	2.10	2.10	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70	0.00	0.00	0.00

Attainments	IA	UNV.
L1	>=50%	>=50%
L2	>=60%	>=60%
L3	>=70%	>=70%

Direct = 70 % of VTU Exam + 30% of IA

Fig 3: PO-PSO attainment through Direct Assessment

Step 5: Indirect Assessment of PO and PSO is calculated by considering the surveys such as Alumni Survey, Program Exit Survey and Employer Survey.

• In each survey the average values of individual POs and PSOs of all the courses in the program are taken.

• Then the overall average of PO1-PO12 and PSOs are taken. Then the final average value is converted and represented in percentage.

Step 6: Above step is carried out for all the three surveys and the final average value of the percentage obtained is converted to Level 1 to 3.

	PO & PSO Attainment 0 Direct Assessment														
	2.10	2.10	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.70	0.00	0.00	0.00
	PO & PSO Attainment 0 Indirect Assessment														
	3	3	3	0	0	0	0	0	0	0	0	3	0	0	0
	Overall PO & PSO Attainment														
	2.37	2.37	2.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.79	0.00	0.00	0.00

Direct = 70 % of VTU Exam + 30% of IA

Overall = 70 % of Direct + 30 % of Indirect.

Fig 4: Overall PO-PSO attainment (Direct+ Indirect)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
USN Number	Student Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
4AD15CS001	ABHISHEK V	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD15CS026	HAMEEDA BANU	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD15CS028	HARSHITHA S	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD15CS055	POOJA C	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD15CS060	RACHANA S D	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD15CS086	THEJA K	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3
4AD15CS094	ZUHAD M	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2
4AD16CS002	ADITHYA V	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD16CS004	AKKAMAHADEVI C J	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD16CS005	AKSHATA DUNDESH RUDRAGOUDAR	3	3	3	3	3	3	3	3	3	3	3	3	2	1	1
4AD16CS006	AMEENA KOUSAR	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD16CS007	ARVIND S	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD16CS009	BHAVANA M R	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD16CS010	BRUNDHA S S	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD16CS011	CHAITHRA V	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2
4AD16CS013	CHANDANA M	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD16CS016	CHANDRASHEKHAR M N	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD16CS017	CHINTHANA M N	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2
4AD16CS020	GEETHA	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4AD16CS021	HARSHITHA URS K	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Fig 5: Exit survey

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Dear Alumni,

For each of the Program Outcomes (PO1-PO12) given below, indicate the level / strength to which it has contributed to your understanding. Please include any comments.

Q1: Before each statement, indicate the answer 1 through 5 which most closely fits this statement for you:

1	2	3	4	5
No contribution	Poor contribution	Some contribution	Average contribution	Strong contribution

PO	Programme Outcomes Description	Answer
PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.	
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.	
PO3	**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.	
PO4	**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.	
PO5	**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.	
PO6	**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.	
PO7	**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.	
PO8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	
PO9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	
PO10	**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.	
PO11	**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.	
PO12	**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.	

Fig 6: Alumni survey Template

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2019-20

ATME College of Engineering, Mysuru, Karnataka

EMPLOYERS: SURVEY QUESTIONNAIRE

Dear Sir,

The Institute is applying for Accreditation of various Programmes which is outcome based in conformity with the International practices. The assessment of the outcomes has to be through a survey. The following questions need your valued consideration. Please find some time and send us your answers to these questions. This response will be kept confidential.

Company Name: EUTHISSA		
Mailing Address: bhagyashreereema@gmail.com.		
City:	State: Karnataka	Pin code:
Employment details: Year 2020		Email:

Questions	Answers
1. What are the strengths of our under Graduates?	Programming knowledge.
2. What are the weaknesses of our Undergraduates?	Communication.
3. What areas are most/least important to your company? Following Departments are under assessment.	
1. Computers 2. Civil 3. Electronics	1. Computers.
4. Electrical 5. Mechanical	2. Electrical.
4. Is consideration being given to addition of other programs? If so, what area(s)?	
5. What additional experiences / preparations do you expect/value?	
6. What on-the-job training do you provide?	
7. Do you see any changes that may need to be made or considered with the program Specific outcomes[1]? If so, what would be your suggestion?	
8. Do you see any changes that may need to be made or considered with the program Educational objectives[2]? If so, what would be your suggestion??	
9. Do you see any other issues that may need to be discussed?	

List of Programme specific outcomes[1] and programme Educational Objectives[2] is appended for your reference

Fig 7: Employer survey Template

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OVERALL PO ATTAINMENT

Overall attainment of PO and PSO ***course wise*** is obtained by considering Direct and Indirect Attainment with the weightage of 70% and 30% respectively.

Direct Attainment	2.48	2.37	2.41	2.27	2.34	2.01	2.04	2.02	2.02	1.96	1.98	2.32	2.07	2.34	2.32	2.48
Indirect Attainment	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Overall attainment	2.64	2.57	2.59	2.49	2.54	2.31	2.33	2.32	2.32	2.28	2.29	2.53	2.35	2.54	2.53	2.64

Sample Calculation:

Overall PO1 attainment =0.7 x Direct Attainment + 0.3 x Indirect Attainment
= 0.7 x 2.48 + 0.3 x 3
= 2.64

Overall attainment of the POs and PSOs is obtained by considering the overall PO & PSO attainment of all the courses of the batch under consideration and taking the average of them. The values thus obtained are the attainment of POs and PSOs for that batch.

The attainment values of the POs are then compared with the set target levels. If the targets are met by the POs and PSOs then, the PO and PSO is said to be attained for that batch. If not then the respective PO and PSO is not attained for the batch and need to addressed.

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The Department follows a structured Guidelines handbook for Outcome evaluation followed commonly across the institution

Overall CO attainment is calculated by considering CO attainment (IA+SEE)

In order to obtain the CO attainment of the respective course:

Direct attainment is based on performance of the students in the Internal Assessment (30%) and semester end Examinations (70%).

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Detail procedure for Obtaining CO attainment:

STEP 1: All the faculties handling the courses will map the student performance in the internal assessment to the **excel sheet** as and when the blue books are valued.

CO-PO-PSO ATTAINMENT TOOL

Note 1: In case a question (Ex: 2d) is not present in QP, keep the column blank.
Note 2: If the student is not attempted a question, leave the cell blank. Do not fill with ZERO.
Note 3: Fill only the cells with ORANGE & AQUA color. Do not alter the cells with other colors.
Note 4: If a question maps to multiple CO's, write them separated by commas. Ex: If a question maps to CO-1 and CO-4, write CO1,4.

Subject: Dynamics of Machinery,17ME52 | **IA-I (2019-20)** | **Course Coordinator: SURESH KUMAR S**

S.No.	USN	PART-A														
		1	2	3	4											<= Question No.
		CO1	CO2	CO1	CO2											<= CO Mapping
		12	12	3	3											<= Max. Marks
1	4AD16ME012	12	12	1	3										28	<= IA
2	4AD17ME001	12	12	3											27	
3	4AD17ME002	12	12	3	3										30	
4	4AD17ME005	11	7	5	5										28	
5	4AD17ME006	7	10	3	2										22	
6	4AD17ME007		9	8	3										20	
7	4AD17ME009	7	8	2	3										20	
8	4AD17ME011	12	12	2	3										29	
9	4AD17ME013	9	8	3											20	
10	4AD17ME014	8	7	3	3										21	
11	4AD17ME015	12	8	3	3										26	
12	4AD17ME016	11	12	3	3										29	
13	4AD17ME017	6	6	2	3										17	
14	4AD17ME018	11	11	3	3										28	
15	4AD17ME023		10	3	3										16	
16	4AD17ME024	12	12	3	3										30	

Fig. 1: Mapping of IA marks in excel sheet

No. cleared	31	30	39	30	0	0	0	0	0	0	0	0	0	0	0	≥40
No. attended	43	42	43	31	0	0	0	0	0	0	0	0	0	0	15	≥30,<840
%	72.09	71.43	90.70	96.77											31	<30
Course Outcomes	CO1	CO2	CO1	CO2												

% of Contribution of each question to CO's																
	1	2	3	4											31	0 to 23
CO1	72.09		90.70												15	24 to 32
CO2		71.43		96.77											0	33 to 40
CO3															0	Absent
CO4															46	Total
CO5															19.11	Avg.
CO6															7.73	St. D.
															59.74	Coe. V.

% of Attainment	CO1	81	CO2	82	CO3	0	CO4	0	CO5	0	CO6	0	IA1	Actual Average

Fig.2: Calculation over all CO attainment Question wise and Actual Average of COs in the IA-1

STEP 2: All the three IA including the improvement test is listed and the attainment is available as shown in the below figure. Attainment is calculated in the scale of 0 to 3 based on the percentage of Overall CO attainment.

CO attainment %	Attainment Level
<50	0
≥50 but <60	1
≥60 but <70	2
≥70	3

% of Attainment	CO1	0.00	CO2	100.00	CO3	99.00	CO4	0	CO5	0	CO6	0	IA3
% of Attainment	CO1	0	CO2	98	CO3	0	CO4	0	CO5	0	CO6	0	IA2
% of Attainment	CO1	99	CO2	0	CO3	95	CO4	0	CO5	0	CO6	0	IA1
AVERAGE		99		99		97		0		0		0	
	CO Attainment through IA												
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	0	CO5	0	CO6	0	

Fig.3: Overall attainment of CO through Internal Assessment

STEP 3: Attainment Level in University Examination

Attainment Level 1: 50% students scoring more than 50 % maximum marks in the final examination. Attainment Level 2: 60% students scoring more than 50 % maximum marks in the final examination. Attainment Level 3: 70% students scoring more than 50 % maximum marks in the final examination.

Enter the university Examination (SEE) percentage of students scored more than 50% of the maximum marks.

Example: If the maximum marks for the Course is 125, then the target marks is 63. If the maximum marks for the course is 100, then the target marks is 50.

➢ The University result once again reduced to the scale 0 to 3.

STEP 4: The excel calculates the overall attainment of the COs by considering 30%weightage to Internal Assessment and 70% of the weightage to Sessional End Examination.

	CO Attainment through IA												
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	0	CO5	0	CO6	0	
													VTU Exam Result-%
	CO Attainment through VTU Exam												95
L1 / L2 / L3	CO1	3	CO2	3	CO3	3	CO4	0	CO5	0	CO6	-	
	Overall CO Attainment												
L1 / L2 / L3	CO1	3.00	CO2	3.00	CO3	3.00	CO4	0.00	CO5	0.00	CO6		

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Fig.4: Overall CO Attainment Method

Course Outcome Attainment of Academic Year 2019-2020

ATME College of Engineering

Department of Mechanical Engineering

Course Outomes attainment summary AY:2019-20 [II-year]

Course Name: Transform calculus, fourier series and Numerical techniques[18MAT31]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C201.1	1.5	0.3	-1.2	No CO's Attained as the End sem results are very poor.
C201.2		0	-1.5	
C201.3		0	-1.5	
C201.4		0.6	-0.9	
C201.5		0.9	-0.6	
Course Name: Mechanics of Materials [18ME32]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C202.1	1.8	3	1.2	All CO's attained
C202.2		2.7	0.9	
C202.3		3	1.2	
C202.4		3	1.2	
C202.5		NA	NA	
Course Name: Basic Thermodynamics [18ME33]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C203.1	1.8	1.4	-0.4	CO3,CO4, CO5 are attained CO1 and CO2 are not attained
C203.2		1.7	-0.1	
C203.3		2	0.2	
C203.4		2.3	0.5	
C203.5		2.3	0.5	
Course Name: Material Science [18ME34]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C204.1	2	3	1	All CO s attained
C204.2		2.1	0.1	
C204.3		3	1	
C204.4		3	1	
C204.5		3	1	
Course Name: Metal cutting and forming [18ME35A/45A]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C205.1	1.8	3	1.2	All CO s attained
C205.2		3	1.2	
C205.3		2.7	0.9	
C205.4		3	1.2	
C205.5		3	1.2	
Course Name: Metal Casting and welding [18ME35B/45B]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C206.1	2	3	1	All CO s attained
C206.2		3	1	
C206.3		3	1	
C206.4		3	1	
C206.5		3	1	
Course Name: Computer Aided Machine Drawing [18ME36A/46A]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C207.1	2	3	1	All CO s attained
C207.2		3	1	
C207.3		3	1	
C207.4		3	1	
C207.5		NA	NA	
Course Name: Mechanical Measurements & Metrology [18ME36B/46B]				

Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C208.1	2	3	1	All CO's attained
C208.2		3	1	
C208.3		3	1	
C208.4		3	1	
C208.5		3	1	
Course Name: Material Testing Lab [18MEL37A/47A]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C210.1	2	3	1	All CO's attained
C210.2		3	1	
C210.3		3	1	
C210.4		NA	NA	
C210.5		NA	NA	
Course Name: Mechanical Measurements & Metrology Lab [18MEL37B/47B]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C211.1	2	3	1	All CO's attained
C211.2		3	1	
C211.3		3	1	
C211.4		3	1	
C211.5		3	1	
Course Name: Workshop and Machine shop practice Lab [18MEL38A/48A]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C212.1	2	3	1	All CO's attained
C212.2		3	1	
C212.3		3	1	
C212.4		3	1	
C212.5		3	1	
Course Name: Foundry, Forging and Welding lab [18MEL38B48B]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C213.1	2	3	1	All CO's attained
C213.2		3	1	
C213.3		3	1	
C213.4		3	1	
C213.5		3	1	
Course Name: Applied Thermodynamics [18ME42]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C217.1	2	3	1	All CO's attained
C217.2		3	1	
C217.3		3	1	
C217.4		3	1	
C217.5		NA	NA	
Course Name: Fluid Mechanics [18ME43]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C218.1	1.8	3	1.2	All CO's attained
C218.2		3	1.2	
C218.3		3	1.2	
C218.4		3	1.2	
C218.5		3	1.2	
Course Name: Kinematics of Machines [18ME44]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C219.1	2	3	1	All CO's attained
C219.2		3	1	
C219.3		3	1	
C219.4		3	1	
C219.5		NA	NA	
Course Name: Complex Analysis,Probability and Stastical Methods [18MAT41]				

Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C209.1	2	3	1	All CO's attained
C209.2		3	1	
C209.3		3	1	
C209.4		3	1	
C209.5		3	1	

ATME College of Engineering

Department of Mechanical Engineering

Course Outomes attainment summary AY:2019-20 [III-Year]

Course Name: Management and Engineering Economics [17ME51]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C301.1	2	3	1	All CO's attained
C301.2		3	1	
C301.3		3	1	
Course Name: Dynamics of Machines [17ME52]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C302.1	2	3	1	All CO's attained
C302.2		3	1	
C302.3		3	1	
C302.4		3	1	
Course Name: Turbo machines [17ME53]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C303.1	2	3	1	All CO's attained
C303.2		3	1	
C303.3		3	1	
C303.4		3	1	
Course Name: Design of Machine Elements - I [17ME54]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C304.1	1.5	1	-0.5	CO1, CO2 and CO3 is not attained CO4 and CO5 attained
C304.2		1.3	-0.2	
C304.3		1	-0.5	
C304.4		1.6	0.1	
C304.5		1.6	0.1	
Course Name: Non Traditional Machining [17ME554]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C305.4.1	2	3	1	All CO's attained
C305.4.2		3	1	
C305.4.3		3	1	
C305.4.4		3	1	
C305.4.5		3	1	
Course Name: Energy and Environment [17ME562]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C306.2.1	2	3	1	All CO's attained
C306.2.2		2.7	0.7	
C306.2.3		3	1	
C306.2.4		3	1	
C306.2.5		3	1	
Course Name: Fluid Mechanics and Machinery Lab [17MEL57]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C307.1	2	3	1	All CO's Attained
C307.2		3	1	
C307.3		3	1	
C307.4		3	1	
C307.5		3	1	
Course Name: Energy Conversion Lab [17MEL58]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C308.1	2	3	1	All CO's Attained
C308.2		3	1	
C308.3		3	1	
Course Name: Finite Element Analysis [17ME61]				

Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C309.1	2	3	1	All CO's Attained
C309.2		3	1	
C309.3		3	1	
C309.4		3	1	
Course Name: Computer Integrated Manufacturing [17ME62]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C310.1	2	3	1	All COs are achieved the target level
C310.2		3	1	
C310.3		3	1	
C310.4		3	1	
C310.5		3	1	
Course Name: Heat Transfer [17ME63]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C311.1	2	3	1	All COs attained
C311.2		3	1	
C311.3		3	1	
C311.4		3	1	
C311.5		3	1	
C311.6		3	1	
Course Name: Design of Machine Elements-II[17ME64]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C312.1	2	3	1	All CO's Attained
C312.2		3	1	
C312.3		3	1	
Course Name: Metal Forming [17ME653]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C313.3.1	2	3	1	All COs attained
C313.3.2		3	1	
C313.3.3		3	1	
C313.3.4		3	1	
Course Name: Total Quality Management[17ME664]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C315.4.1	2	3	1	All CO's attained
C315.4.2		3	1	
C315.4.3		3	1	
C315.4.4		3	1	
C315.4.5		3	1	
Course Name: Heat and Mass Transfer Lab [17MEL67]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C316.1	2	3	1	All CO's attained
C316.2		3	1	
C316.3		3	1	
C316.4		3	1	
C316.5		3	1	
C316.6		3	1	
Course Name: Modeling and Analysis Lab [17MEL68]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C317.1	2	3	1	All COs are achieved the target level
C317.2		3	1	
C317.3		3	1	
C317.4		3	1	
C317.5		3	1	

Course Outomes attainment summary AY:2019-20[IV-Year]

Course Name: Energy Engineering [15ME71]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C401.1	2	3	1	All COs atained
C401.2		3	1	
C401.3		3	1	
C401.4		3	1	
C401.5		2.7	0.3	
Course Name: Fluid Power Systems [15ME72]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C402.1	2	3	1	All COs attained
C402.2		3	1	
C402.3		3	1	
C402.4		3	1	
Course Name: Control Engineering [15ME73]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C403.1	2	3	1	All COs attained
C403.2		2.1	0.1	
C403.3		3	1	
Course Name: Design Lab [15MEL76]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C406.1	2	3	1	All COs attained
C406.2		3	1	
C406.3		3	1	
C406.4		3	1	
C406.5		3	1	
C406.6		3	1	
Course Name: Computer Integrated Manufacturing Lab [15MEL77]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C407.1	2	3	1	All COs attained
C407.2		3	1	
C407.3		3	1	
C407.4		3	1	
C407.5		3	1	
C407.6		3	1	
Course Name: Project Work Phase 1 [15MEP78]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C408.1	2	3	1	All COs attained
C408.2		3	1	
C408.3		3	1	
C408.4		3	1	
Course Name: Operations Research [15ME81]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C409.1	1.8	0	-1.8	C409.1 and C409.4 are not attained
C409.2		3	1	
C409.3		3	1	
C409.4		0	-1.8	
C409.5		3	1	
Course Name: Additive Manufacturing [15ME82]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C410.1		3	1	

C410.2	2	3	1	All COs attained
C410.3		3	1	
Course Name: Internship [15ME84]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C412.1	2	3	1	All COs attained
C412.2		3	1	
C412.3		3	1	
Course Name: Project Work Phase 2 [15MEP85]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C413.1	2	3	1	All COs attained
C413.2		3	1	
C413.3		3	1	
C413.4		3	1	
Course Name: Seminar [15MES86]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C414.1	2	3	1	All COs attained
C414.2		3	1	
C414.3		3	1	
Course Name: Tribology [15ME742]				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C404.2.1	2	3	1	All COs attained
C404.2.2		3	1	
C404.2.3		3	1	
C404.2.4		3	1	
Course Name: Mechatronics (15ME753)				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C405.3.1	2	3	1	All CO's attained
C405.3.2		3	1	
C405.3.3		3	1	
Course Name: Experimental Stress Analysis (15ME832)				
Course Outomes	Target for Current academic year	attainment level of Current Exam	Gap	Gap Analysis
C411.2.1	2	3	1	All CO's attained
C411.2.2		3	1	
C411.2.3		3	1	

Attainment of Program Outcomes and Program Specific Outcomes

Program shall set Program Outcome attainment levels for all POs & PSOs.
(The attainment levels by direct (student performance) and indirect (surveys) are to be presented through Program level Course – PO & PSO matrix as indicated).

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101												
C102												

C409												
Direct attainment												
Indirect Attainment												
Over all PO attainment												

Note: Similar table is to be prepared for PSOs
C101, C102 are indicative courses in the first year. Similarly, C409 is final year course. First numeric digit indicates year of study and remaining two digits indicate course nos. in the respective year of study.
1. Direct attainment level of a PO & PSO is determined by taking average across all courses addressing that PO and/or PSO. Fractional numbers may be used up to two decimal places.
2. Indirect attainment level of PO & PSO is determined based on the student exit surveys, employer surveys and Alumni survey.

Calculation of PO attainment:

Following are the steps need to be followed to obtain the PO attainment.
Step 1: Course coordinator should enter the Course articulation matrix as per the course module in Sheet 4 of the CO-PO-PSO assessment tool.
Step 2: CO attainment from the Internal assessment is multiplied with the CAM and reduced percentage in the subsequent table and based on the target level set the percentage are converted to the scale 1 to 3.
Step 3: PO attainment through University Examination results is also considered and reduced to level points 1 to 3.
Step 4: PO and PSO attainment through direct assessment is thus calculated by putting the weightage 70% to attainment through University Exams and 30% to attainment through IA.
Step 5: Indirect Assessment of PO and PSO is calculated by considering the surveys such as Alumni Survey, Program Exit Survey and Employer Survey.
• In each survey the average values of individual POs and PSOs of all the courses in the program are taken.
• Then the overall average of PO1-PO12 and PSOs are taken. Then the final average value is converted and represented in percentage.
Step 6: Above step is carried out for all the three surveys and the final average value of the percentage obtained is converted to Level 1 to 3.

Step 1: Course coordinator should enter the Course articulation matrix(CAM) as per the course module in Sheet 4 of the CO-PO-PSO assessment tool.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	pso1	pso2	pso3
C409.1	1	1	2	0	0	0	0	0	0	0	0	2	0	0	0
C409.2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C409.3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Course0PO0psc	1	1	1	0	0	0	0	0	0	0	0	1	0	0	0

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Fig.1: CAM of the respective Course

Step 2: CO attainment from the Internal assessment is multiplied with the CAM and reduced percentage in the subsequent table and based on the target level set the percentage are converted to the scale 1 to 3.

Step 3: PO attainment through University Examination results is also considered and reduced to level points 1 to 3.

CO Attainment		
COs	%	L1/L2/L3
C409.1	99	3.00
C409.2	99	3.00
C409.3	97	3.00

Step 4: PO and PSO attainment through direct assessment is thus calculated by putting the weightage 70% to attainment through University Exams and 30% to attainment through IA.

	PO & PSO Attainment																
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	-	PSO1	PSO2	PSO3	PSO4
C105.1	81	81	54	-	-	-	-	-	-	-	-	-	-	81	27	-	-
C105.2	82	82	55	-	-	-	-	-	-	-	-	-	-	82	27	-	-
C105.3	84	84	28	-	-	-	-	-	-	-	-	-	-	84	28	-	-
C105.4	82	82	82	-	-	-	-	-	-	-	-	-	-	82	27	-	-
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
													-				
% Attainment	82	82	55	0	0	0	0	0	0	0	0	0	0	82	27	0	0

Exam + 30 % of IA.	
Alumni Survey-%	65
Course Feedback-%	92
G. Exit Survey-%	81
Employer Feedback-%	72
	77.50
FC & FCD in UNV. Exam (%)	
	78.00

Fig 2:PO-PSO attainment reduced to percentage

	Attainment through IA																
L1 / L2 / L3	3	3	1	X	X	X	X	X	X	X	X	X	X	3	0	X	X
	Attainment through VTU Exam																
L1 / L2 / L3	3	3	3	X	X	X	X	X	X	X	X	X	X	3	3	X	X
	PO & PSO Attainment - Direct Assessment																
70% weightage	3	3	2.4	X	X	X	X	X	X	X	X	X	X	3	2.1	X	X

Attainments	IA	UNV.
L1	>=50%	>=50%
L2	>=60%	>=60%
L3	>=70%	>=70%

Direct =70 % of VTU Exam +30% of IA

Fig 3: PO-PSO attainment through Direct Assessment

Step 5: Indirect Assessment of PO and PSO is calculated by considering the surveys such as Alumni Survey, Program Exit Survey and Employer Survey.

• In each survey the average values of individual POs and PSOs of all the courses in the program are taken.

• Then the overall average of PO1-PO12 and PSOs are taken. Then the final average value is converted and represented in percentage.

Step 6: Above step is carried out for all the three surveys and the final average value of the percentage obtained is converted to Level 1 to 3.

	PO & PSO Attainment - Direct Assessment																
70% weightage	3	3	2.4	X	X	X	X	X	X	X	X	X	X	3	2.1	X	X
	PO & PSO Attainment - Indirect Assessment																
30% Weightage	3	3	3	X	X	X	X	X	X	X	X	X	X	3	3	X	X
Overall PO & PSO Attainment																Overall = 70 % of Direct + 30% Indirect	
Final Attainment	3	3	2.58	X	X	X	X	X	X	X	X	X	X	3	2.37	X	X
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	-	PSO1	PSO2	PSO3	PSO4

Direct =70 % of VTU Exam +30% of IA

Fig 4: Overall PO-PSO attainment (Direct+ Indirect)

HOD

	Program PO Exit Survey 2019-20													
Sl. NO	USN	Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	4AD15ME047	MANOJ A D	3	3	3	3	3	3	3	3	3	3	3	3
2	4AD15ME084	SAGAR D S	3	3	3	3	3	3	3	3	3	3	3	3
3	4AD16ME002	ABHISHEK N S	3	3	3	3	3	3	3	3	3	3	3	3
4	4AD16ME004	AKASH SINGH NEGI	3	3	3	3	3	3	3	3	3	3	3	3
5	4AD16ME005	AKHIL M U	2	2	2	2	2	2	2	2	2	2	2	2
6	4AD16ME006	AMRUTH KUMAR C	2	2	2	2	2	2	2	2	2	2	2	2
7	4AD16ME009	ASHA D	3	3	3	3	3	3	3	3	3	3	3	3
8	4AD16ME013	CHANDAN T C	3	3	3	3	3	3	3	3	3	3	3	3
9	4AD16ME014	CHARANPAUL R	3	3	3	3	3	3	3	3	3	3	3	3
10	4AD16ME015	CHETHAN M J	2	2	2	2	2	2	2	2	2	2	2	2
11	4AD16ME016	CHETHAN N S	3	3	3	3	3	3	3	3	3	3	3	3
12	4AD16ME020	FAHAD M P	2	2	2	2	2	2	2	2	2	2	2	2
13	4AD16ME021	FAWAAD URMAAN	3	3	3	3	3	3	3	3	3	3	3	3
14	4AD16ME022	GAUTHAM C M	3	3	3	3	3	3	3	3	3	3	3	3
15	4AD16ME023	GOPINATH U	2	2	3	2	2	2	2	2	2	2	2	2
16	4AD16ME024	IRFAN PASHA	3	3	3	3	3	3	3	3	3	3	3	3
17	4AD16ME025	JEEVAN ROY NOVAIS	3	1	3	3	2	3	1	2	3	3	3	2
18	4AD16ME029	KRISHNA PRASAD	3	3	3	3	3	2	2	3	3	2	3	2
19	4AD16ME032	MANOHAR S PRASAD	1	1	2	2	2	2	2	2	3	3	2	2
20	4AD16ME035	MANOJ M	3	3	3	3	3	3	3	3	3	3	3	3
21	4AD16ME037	MAYUR KRISHNA	3	3	3	3	3	3	3	3	3	3	3	3
22	4AD16ME038	MITHIN T R	3	3	3	3	3	3	3	3	3	3	3	3
23	4AD16ME039	MOHAMED FAISAL	3	3	3	3	3	3	3	3	3	3	3	3
24	4AD16ME040	MOHAMMED FARAAZ	2	2	2	3	3	3	3	3	2	2	3	3

Fig 5: Exit survey

ATME College of Engineering, Mysuru, Karnataka

EMPLOYERS: SURVEY QUESTIONNARE

Dear Sir,

The Institute is applying for Accreditation of various Programmes which is outcome based in conformity with the International practices. The assessment of the outcomes has to be through a survey. The following questions need your valued consideration. Please find some time and send us your answers to these questions. This response will be kept confidential.

Company Name: INFOSYS		
Mailing Address: ELECTRONIC CITY		
City, BANGALORE	State, KARNATAKA	Pin code: 560066
Employment details: Year 2020		Email: amoghvadiraj@infosys.com

Questions	Answers
1. What are the strengths of our under graduates?	confidence
2. What are the weaknesses of our undergraduates?	core knowledge
3. What areas are most/least important to your company? Following Departments are under assessment.	
1. Computers 2. Civil 3. Electronics	All
4. Electrical 5. Mechanical —	
3. Is consideration being given to addition of other programs? If so, what area(s)?	Bootstrap, domain specific
4. What additional experiences / preparations do you expect/value?	
5. What on-the-job training do you provide?	
6. Do you see any changes that may need to be made or considered with the program Specific outcomes[1]? If so, what would be your suggestion?	
7. Do you see any changes that may need to be made or considered with the program Educational objectives? If so, what would be your suggestion??	—
8. Do you see any other issues that may need to be discussed?	

Name & Signature

Amogh Vadiraj

Fig 6: Employer survey Template

ALUMNI: SURVEY QUESTIONNAIRE

Degree Received:		Year of Graduation:	
Name:		Signature:	
Mailing Address:			
City:	State:	Pin code:	
Employment details:		Email:	
Company and Designation:			

Dear Alumni,

For each of the Program Outcomes (PO1-PO9) given below, indicate the level / strength to which it has contributed to your understanding. Please include any comments.

Q1: Before each statement, indicate the answer 1 through 5 which most closely fits this statement for you:

1: No contribution:	2: Poor contribution:	3: Some contribution:	4: Average contribution:	5: Strong contribution:

Sl. No	Programme Outcomes	Answer
PO1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems	
PO2	**Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences	
PO3	**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	
PO4	**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	
PO5	**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	
PO6	**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	
PO7	**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	
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice	
PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings	
PO10	**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	
PO11	**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	
PO12	**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	

Fig 7: Alumni survey Template

OVERALL PO ATTAINMENT

Overall attainment of PO and PSO ***course wise*** is obtained by considering Direct and Indirect Attainment with the weightage of 70% and 30% respectively.

Direct Attainment	2.48	2.37	2.41	2.27	2.34	2.01	2.04	2.02	2.02	1.96	1.98	2.32	2.07	2.34	2.32	2.48
Indirect Attainment	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Overall attainment	2.64	2.57	2.59	2.49	2.54	2.31	2.33	2.32	2.32	2.28	2.29	2.53	2.35	2.54	2.53	2.64

Sample Calculation:

Overall PO1 attainment =0.7 x Direct Attainment + 0.3 x Indirect Attainment

= 0.7 x 2.48 + 0.3 x 3

=2.64

Overall attainment of the POs and PSOs is obtained by considering the overall PO & PSO attainment of all the courses of the batch under consideration and taking the average of them. The values thus obtained are the attainment of POs and PSOs for that batch.

The attainment values of the POs are then compared with the set target levels. If the targets are met by the POs and PSOs then, the PO and PSO is said to be attained for that batch. If not then the respective PO and PSO is not attained for the batch and need to addressed.

HOD