

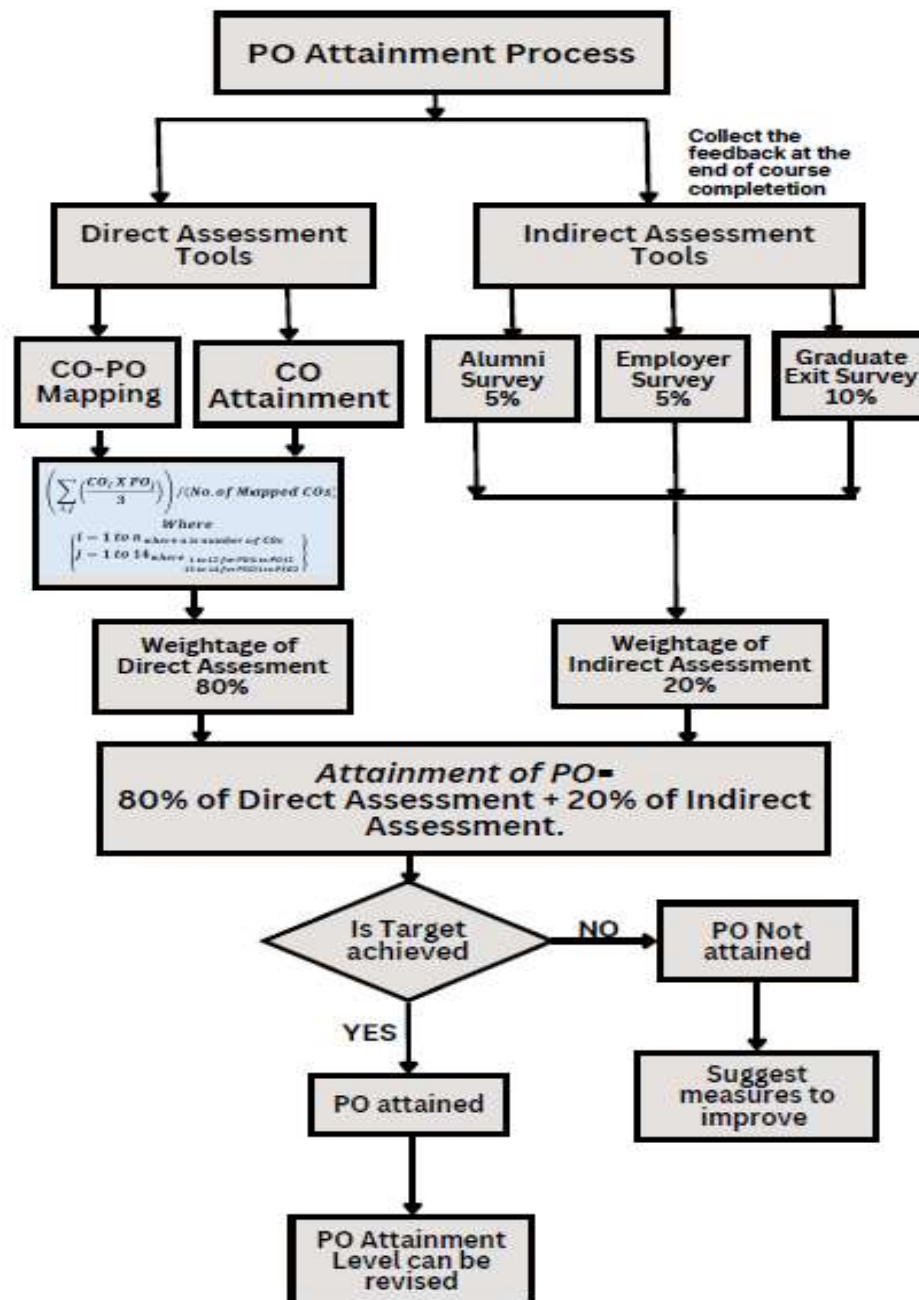


SRI VENKATESWARA COLLEGE OF ENGINEERING (Autonomous)

Karakambadi Road, Opposite LIC Training Centre, Tirupati – 517 507.
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PO ATTAINMENT TOOLS

Flow chart for PO Attainment Department of ECE





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Assessment Tools for measuring PO/PSO attainment:

Attainment of POs and PSOs is based on **direct assessment tools** as well as **indirect assessment tools**.

1. Direct Assessment Tools:

- Direct assessment of POs and PSOs is based on the students’ performance in both internal and End examinations for all courses.
- Based on the mapping of COs with POs and PSOs, the performance of every student in various assessments, such as internal exams, assignments, practical courses, technical seminars, project work, internships, community service projects, and end exams, contributes to the achievement of COs, which in turn leads in the attainment of POs and PSOs.

2. Indirect Assessment Tools:

- The indirect assessment tools that are used for attainment of POs and PSOs are
 - Graduate Exit Survey (GES) (10% weightage)
 - Alumni Survey (AS) (5% weightage)
 - Employer Survey (ES) (5% weightage)

The quality and Relevance of the Process used for measuring Attainment of POs and PSOs:

PO\PSO Attainment= **80%** of Direct Assessment+**20%** Indirect Assessment.

Step1: Direct Assessment

- POs and PSOs attainment at course level are calculated by taking the average of arithmetic multiplication of course outcomes attainment levels and CO-PO matrix.
- **PO Assessment=**

$$\left(\sum_{i,j} \left(\frac{CO_i \times PO_j}{3} \right) \right) / (\text{No. of Mapped COs})$$

Where

$$\left\{ \begin{array}{l} i = 1 \text{ to } n \text{ where } n \text{ is number of COs} \\ j = 1 \text{ to } 14 \text{ where } 1 \text{ to } 12 \text{ for PO1 to PO12} \\ \quad \quad \quad 13 \text{ to } 14 \text{ for PS01 to PS02} \end{array} \right\}$$



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Step2: Indirect Assessment:

Tools: Graduate Exit Survey, Alumni Survey and Employer Survey

Process: Evaluated weighted average of the above-mentioned surveys using the expression mentioned below.

$$\text{Indirect Survey} = \frac{G \times 3 + A \times 2 + S \times 1}{T}$$

G: Total Number of Students gave **GOOD**.

A: Total Number of Students gave **Moderate**.

S: Total Number of Students gave **Satisfactory**.

T: **Total** Number of Students.

Step3: Overall Attainment of POs and PSOs including Direct and Indirect Survey:

Attainment of POs and PSOs = 80% of Direct Assessment + 20% of Indirect assessment.

$$(0.8 * \text{Direct PO attainment} + 0.10 * \text{GES} + 0.05 * \text{AS} + 0.05 * \text{ES})$$

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Sample PO ATTAINMENT PROCESS of Digital Image Process

CO ATTAINMENT related to Digital Image Processing:

Mapping of Cos				Assig nmen t	Inter nal Evalu ation	Mapping of COs			Exter nal Evalu ation	Direc t Attai nmen t levels	Indirect Attainm ent Level (CES)	CO Attai ned	% CO Attain ed
CO	Mapping of Mid I & Mid II Term Examination					Mapping of End Term Examination							
C412.1	2.69	2.24	1.58	3.00	2.38	2.71	1.94	2.01	2.22	2.28	2.57	2.34	77.97
C412.2	1.33	1.00	2.47	3.00	1.95	2.50	1.99	2.55	2.35	2.19	2.56	2.26	75.45
C412.3	2.60	2.80		3.00	2.80	2.80	2.32	2.40	2.50	2.62	2.55	2.61	86.91
C412.4	2.08	1.40		3.00	2.16	2.78	1.98	2.74	2.50	2.36	2.55	2.40	80.02
C412.5	1.70	2.73		3.00	2.48	2.63	2.44	1.12	2.06	2.23	2.52	2.29	76.20

CO Mapping related to Digital Image Processing:

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C412.1	3	3										3	3	3
C412.2	3	3	3									3	3	3
C412.3	3	3	3									3	3	3
C412.4	3	3	3									3	3	3
C412.5	3	3	3									3	3	3

COPO Assessment:

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	CO Attained Levels
C412.1	3	3										3	3	3	2.34
C412.2	3	3	3									3	3	3	2.26
C412.3	3	3	3									3	3	3	2.61
C412.4	3	3	3									3	3	3	2.40
C412.5	3	3	3									3	3	3	2.29
TOTAL	5	5	4	0	0	0	0	0	0	0	0	5	5	5	

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO- PO	2.38	2.38	2.39									2.38	2.38	2.38
% CO- PO	79.3	79.3	79.6									79.3	79.3	79.3



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46	Computer Architecture & Organization (CS20AOE502)	C314	2.0 5	2.1 9	2.1 7									2.17
47	Control System Engineering (EE20APE502)	C315	2.4 3	2.4 3	2.4 3									
48	Digital Communications Lab (EC20APC504)	C316		2.6 9	2.6 9	2.6 9	2.6 9							
49	Microprocessors & Microcontrollers Lab (EC20APC505)	C317												
50	PCB Design and Prototype Development (EC20ASC50)	C318	2.7 6											
51	Constitution of India (BA20AMC50)	C319					2.5 1		2.5 1	2.5 1				
52	Technical Seminar Presentation-I (EC20ATS501)	C31A	2.9 2	2.4 3					0.9 7	2.4 3	2.92			2.92
53	Evaluation of Community Service Project (EC20ACS501)	C31B		2.9 3			2.9 2	2.9 3	2.9 3	2.9 3	2.92	2.92		
54	Digital Signal Processing (EC20APC601)	C321	2.3 7	2.3 4	2.3 4	2.1 5								
55	Microwave Engineering and Optical Communications (EC20APC602)	C322	2.3 2	2.0 5	1.0 6									
56	VLSI Design (EC20APC603)	C323	2.3 0	1.8 4	2.2 6	2.1 5								



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57	Electronic Measurements and Instrumentation (EC20APE601)	C324	2.5 5	2.5 5	2.5 5									
58	JAVA Programming (CS20AOE602)	C325	2.2 0	2.1 7	1.5 9		2.1 7							
59	Digital Signal Processing Lab (EC20APC604)	C326		2.6 7	2.6 7	2.4 4	2.6 7							
60	Microwave and Optical Communications Lab (EC20APC605)	C327		2.5 6	2.5 6	2.5 6								
61	VLSI Design Lab (EC20APC606)	C328		2.5 7	2.5 7	2.5 7	2.5 7							
62	Graphical System Design Using Lab-view / CISCO (EC20ASC601)	C329	2.5 2	2.5 2	2.5 2	1.6 8	2.5 2							
63	Intellectual Property Rights & Patents (BA20AMC502)	C32A	2.6 0					2.6 0		2.6 0				
64	Technical Seminar Presentation-II (EC20ATS601)	C32B	2.6 3	2.1 9						0.8 8	2.1 9	2.63		2.63
65	Low Power VLSI Circuits and Systems (EC20APE703)	C411	2.5 9	2.5 9										2.59
66	Digital Image Processing (EC20APE704)	C412	2.3 8	2.3 8	2.3 9									2.38
67	Satellite Communications (EC20APE708)	C413	2.2 6	1.8 3	1.8 1	2.1 0								



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68	Embedded Systems (EE20AOE701)	C414	2.6 5	2.6 5										
69	Cyber Security Techniques (AM20AOE701)	C415	2.3 1	2.3 1										
70	Management Science (BA20AHS705)	C416	2.6 5	2.6 5									2.65	
71	IoT and Industrial Automation (EC20ASC701)	C417		2.8 7	2.8 7		2.8 7							2.87
72	Technical Seminar Presentation-III (EC20ATS701)	C418	2.9 1	2.4 2						0.9 7	2.4 2	2.91		2.90
73	Project Work Stage-I (EC20APW701)	C419	2.0 5	2.1 0	2.8 0	2.2 4	2.0 5	2.2 4	2.1 0	2.1 8	2.1 0	2.05	2.33	1.86
74	Evaluation of Industrial / Research Mini Project (EC20AIP70)	C41A.5	2.1 3	2.1 3	1.9 4	2.1 3	2.1 3	2.1 3	2.1 3	2.3 2	2.1 3	2.13	2.13	2.13
75	Project Work Stage-II (EC20APW801)	C421	2.1 1	2.1 6	2.8 8	2.3 0	2.1 1	2.3 0	2.1 6	2.2 4	2.1 6	2.11	2.40	1.92
PO Assessment Level			2.4 4	2.4 2	2.3 8	2.3 6	2.5 6	2.5 0	2.4 5	2.0 3	2.4 2	2.53	2.48	2.42



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PSO Assessment:

S. No	Course Name	CO-PO	PSO1	PSO2
1	Linear Algebra and Calculus (MA20ABS101)	C111		
2	Applied Physics (PH20ABS103)	C112		
3	Communicative English (EG20AHS101)	C113		
4	Fundamentals of Electrical Circuits (EE20AES103)	C114		2.30
5	Engineering Drawing (ME20AES102)	C115		
6	Engineering Graphics Lab (ME20AES103)	C116		
7	Applied Physics Lab (PH20ABS104)	C117		
8	Communicative English Lab (EG20AHS102)	C118		
9	Fundamentals of Electrical Circuits Lab (EE20AES104)	C119		2.82
10	LOGICAL SKILLS FOR PROFESSIONALS-I (MA20AMC102)	C11A	2.39	
11	Differential Equations and Vector Calculus (MA20ABS201)	C121		
12	Chemistry (CH20ABS103)	C122		
13	Problem Solving using C (CS20AES10)	C123		
14	Electronic Devices & Circuits (EC20AES201)	C124	2.33	2.33
15	Engineering Workshop (ME20AES101)	C125		
16	IT Workshop (CS20AES103)	C126		
17	Problem Solving using C Lab (CS20AES102)	C127		
18	Chemistry Lab (CH20ABS104)	C128		
19	Electronic Devices & Circuits Lab (EC20AES202)	C129		2.76
20	Environmental Science (CH20AMC201)	C12A		
21	Speech & Oral Communication (EG20AMC101)	C12B		
22	Complex Variables & Transforms (MA20ABS302)	C211		
23	Digital Logic Design (EC20APC301)	C212	2.30	2.30
24	Electronic Circuit -Analysis and Design (EC20APC302)	C213	2.42	2.42
25	Signals & Systems (EC20APC303)	C214	2.40	2.40
26	Managerial Economics and Financial Analysis (BA20AHS301)	C215		
27	Basic Simulation Lab (EC20APC304)	C216		2.63



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28	Digital Logic Design Lab (EC20APC305)	C217		2.64
29	Electronic Circuit -Analysis and Design Lab (EC20APC306)	C218		2.58
30	Application Development using Python (IT20ASC30)	C219		
31	Biology for Engineers (CH20AMC301)	C21A		
32	Logical Skills for Professionals-II (MA20AMC301)	C21B	2.61	
33	Data Structures using C (CS20AES40)	C221		
34	Probability Theory and Stochastic Processes (MA20ABS402)	C222	2.36	2.36
35	Analog Communications (EC20APC401)	C223	2.34	2.34
36	Electromagnetic Waves and Transmission Lines (EC20APC402)	C224	2.42	2.42
37	Linear & Digital IC Applications (EC20APC403)	C225	2.48	2.48
38	Analog Communications Lab (EC20APC404)	C226		2.62
39	Data Structures using C Lab (CS20AES402)	C227		
40	Linear & Digital IC Applications Lab (EC20APC405)	C228		2.63
41	Skill oriented course-Soft Skills (EG20ASC30)	C229		
42	Universal Human Values (BA20AMC201)	C22A		
43	Antennas and Wave Propagation (EC20APC501)	C311	2.43	2.43
44	Digital Communications (EC20APC502)	C312	1.93	2.07
45	Microprocessors & Microcontrollers (EC20APC503)	C313	1.97	1.97
46	Computer Architecture & Organization (CS20AOE502)	C314	2.19	2.19
47	Control System Engineering (EE20APE502)	C315	2.43	2.43
48	Digital Communications Lab (EC20APC504)	C316		2.69
49	Microprocessors & Microcontrollers Lab (EC20APC505)	C317		
50	PCB Design and Prototype Development (EC20ASC50)	C318		
51	Constitution of India (BA20AMC50)	C319		
52	Technical Seminar Presentation-I (EC20ATS501)	C31A		2.44
53	Evaluation of Community Service Project (EC20ACS501)	C31B		1.95
54	Digital Signal Processing (EC20APC601)	C321	2.37	2.37
55	Microwave Engineering and Optical Communications (EC20APC602)	C322	2.32	2.32
56	VLSI Design (EC20APC603)	C323	2.30	2.30
57	Electronic Measurements and Instrumentation (EC20APE601)	C324	2.55	2.55




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58	JAVA Programming (CS20AOE602)	C325		
59	Digital Signal Processing Lab (EC20APC604)	C326		2.67
60	Microwave and Optical Communications Lab (EC20APC605)	C327		2.56
61	VLSI Design Lab (EC20APC606)	C328		2.57
62	Graphical System Design Using Lab-view / CISCO (EC20ASC601)	C329		1.68
63	Intellectual Property Rights & Patents (BA20AMC502)	C32A		
64	Technical Seminar Presentation-II (EC20ATS601)	C32B		2.19
65	Low Power VLSI Circuits and Systems (EC20APE703)	C411	2.59	2.59
66	Digital Image Processing (EC20APE704)	C412	2.38	2.38
67	Satellite Communications (EC20APE708)	C413	2.26	2.26
68	Embedded Systems (EE20AOE701)	C414	2.65	2.47
69	Cyber Security Techniques (AM20AOE701)	C415		
70	Management Science (BA20AHS705)	C416		
71	IoT and Industrial Automation (EC20ASC701)	C417	2.87	2.87
72	Technical Seminar Presentation-III (EC20ATS701)	C418		2.42
73	Project Work Stage-I (EC20APW701)	C419	1.87	2.00
74	Evaluation of Industrial / Research Mini Project (EC20AIP70)	C41A.5		1.94
75	Project Work Stage-II (EC20APW801)	C421	1.92	2.06
PO Assessment Level			2.35	2.39


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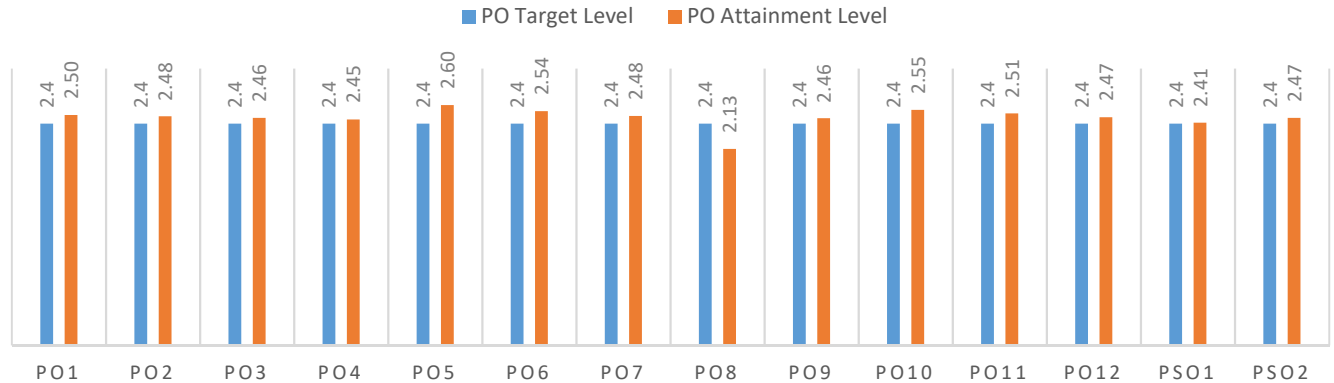

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PO ATTAINMENT 2020-2024




ANALYSIS:

Based on the above result it was found that all PO8 had not reached the target attainment level.

SUGGESTION:

- The faculty members are motivated to attend workshops, seminars on subjects like universal Human Values and Social values & Ethics by giving more awareness to students.
- Recommended to include Ethics as part of the curriculum.
- Students are made aware of industry roles and polices through pre-placement talks by experts.


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