CO, PO & PSO ASSESSMENT MANUAL

3.2. Attainment of Course Outcomes (75)

3.2.1. Describe the assessment tools and processes used to gather the data upon which the evaluation of Course Outcome is based (10)

Describe different assessment tools (semester end examinations, mid-semester tests, laboratory examinations, student portfolios etc) to measure the student learning and hence attainment of course outcomes. (Student portfolio is a collection of artifacts that demonstrate skills, personal characteristics and accomplishments created by the student during study period.)

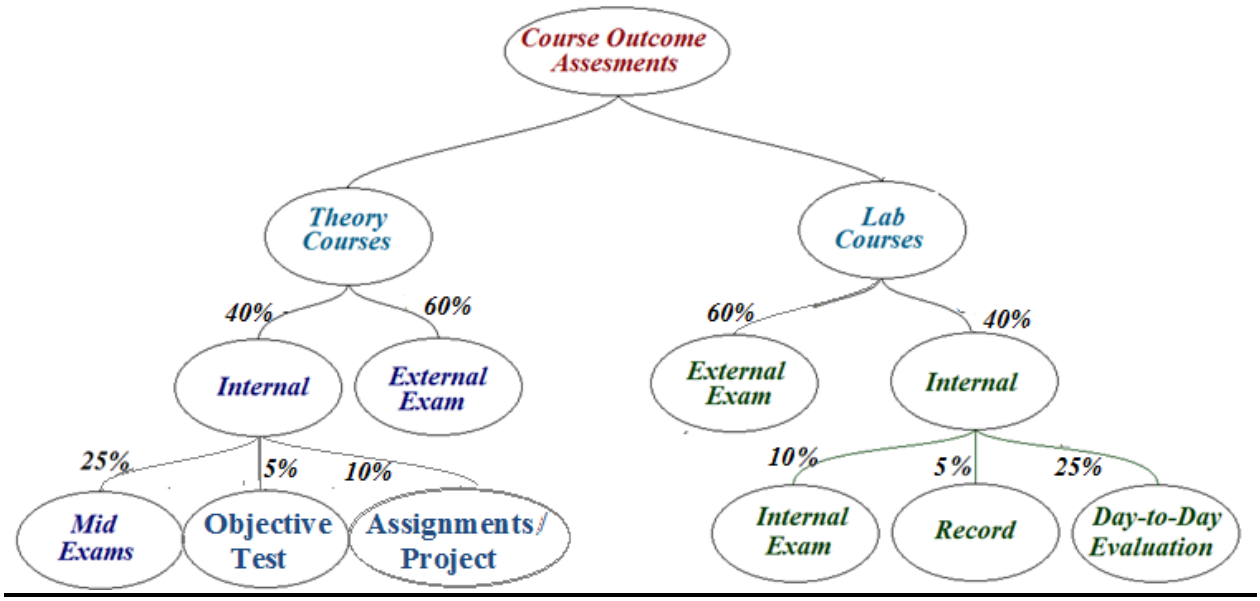
The process adopted to map the assessment questions, parameters of assessment rubrics etc. to the course outcomes to be explained with examples. The process of data collection from different assessment tools and the analysis of collected data to arrive at CO attainment levels need to be explained with examples.

Assessment Parameters:

The performance of a student in each semester shall be evaluated Course–wise with

* **100** marks for theory course
* **75** marks for laboratory and other courses.

CO-wise assessments are done in the same ratios as internal and external marks are evaluated.



Theory course: For theory courses, the distribution shall be

40 marks for **Internal Continuous evaluation** and

60 marks for **External End-Examinations.**

- **Internal Continuous Evaluation:** Out of 40 internal midterm marks, 15 marks for **Continuous Assessment Tests** and **25** marks are allotted for **Descriptive Mid-Exam.**
  - **Process of conducting ASSESSMENT TEST**: The assessment test will be conducted for 5 marks. Teacher should give 5 questions after completion of **one and half** units to the students, from which the student has to answer any one of the questions suggested by the teacher in the classroom itself. Similarly there will be another two assessment tests after completion of **three** units and **four and half** units from prescribed syllabus. The average marks of these **three** tests will be considered for 5 marks for the continuous assessment tests finally.
  - **CO assessment** is done calculated on the marks obtained in each of the assignment tests. Each question in the assignment tests is mapped to specific CO. Thus the **assessment test** contribution for a student towards a specific CO is calculated as follows.

$$COV_{AT} = \frac{\text{(sum of marks obtained against Qs mapped to the specific CO)}}{\text{(sum of max marks for same Qs mapped to the specific CO)}} * 5$$

- **Process of conducting MID-EXAMINATIONS:** For theory courses of each semester, there shall be **2** Midterm exams. Each descriptive exam is to be held for **25** marks with the duration of **120** minutes. For final calculation of internal marks, weightage of 80% will be given to the student who performed well either in first Mid or second Mid and 20% weightage will be given to other Mid examinations. Mid paper contains descriptive type questions for forty marks and contain four questions. The student should answer 3 out of 4 questions. Each question carries 10 marks (3@10=30M). The first Midterm examination to be conducted usually after 8 weeks of instruction or after completion of 50 percent syllabus, the second Midterm examination to be conducted usually at the end of instruction after completion of remaining 50 percent syllabus.
  - **CO assessment for Mid-Exams**: Each question in the Mid-exam is mapped to specific CO. **CO assessment** is calculated basing on the marks obtained for the total number of questions attempted which are mapped to the specific CO.

    Example, let, in a mid-exam, out of 4 questions, let there be 2 questions (20 marks) mapped to a particular CO2. As choice, if the student attempts to write 3 questions, which contain only 1 question (10 marks) mapped to CO2, then the CO2 for that student is assessed for 1 Question only. In the same mid-exam, if another student attempts to write 3 questions, which include 2 questions (20 marks) mapped to CO2, then the CO2 for that student is assessed for 2 Questions.

    Finally, the CO2 assessment value is calculated by scaling the marks obtained each student to 25.Thus the Mid-exam contribution for a student towards a specific CO is calculated as follows.

$$COV_{Mid} = \frac{\text{(sum of marks obtained against Qs mapped to the specific CO)}}{\text{(sum of max marks for same Qs mapped to the specific CO)}} * 25$$

Example:

If the first student scores 7/10, then CO-value = 7/10*25 = 17.5

If the second student scores 16/20, then CO-value = 16/20*25 = 20.0

- **Process of conducting EXTERNAL END EXAMINATIONS:** The question paper shall have descriptive type questions for70 marks. There shall be one question from each unit with internal choice. Each question carries 14 marks. Each course shall consist of five units of syllabus. The student should answer total 5 questions.
  - **CO assessment for External Exams**: As there is internal choice of questions within the same unit, the best marks obtained for each unit is evaluated. Hence, the COs corresponding to best questions which are evaluated are only considered for assessment.

  Finally, the CO assessment value is calculated by scaling the marks obtained each student to 70. Thus the External-exam contribution for a student towards a specific CO is calculated as follows.

$$COV_{ext} = \frac{\text{(sum of marks obtained against Qs mapped to the specific CO)}}{\text{(sum of max marks for same Qs mapped to the specific CO)}} * 70$$

Overall CO-wise mark: The Final CO attainment is calculated by combining the Internal attainment and External attainment**.** For each CO, as per regulations,

- the marks obtained in Mid exam questions is scaled to 25.
- the marks obtained in Assessment Test is scaled to 5.
- the marks obtained in External exams questions is scaled to 70.

The total marks for each CO is calculated in this manner.

Final CO-wise mark = 25% of Midterm + Assignment marks+ 70% of External Exam

$$= COV_{AT} + COV_{Mid} + COV_{ext}$$

*** SPECIAL CASE :** If a student leaves a question as a choice (3 out of 4) which is the only mapped question to a specific CO, then the Final CO attainment is calculated by combining the Assessment Test marks (5marks) and External attainment marks (70marks), which sum up to 75. This total is then scaled to 100.

- the marks obtained in Assignment questions is scaled to 5.
- the marks obtained in External exams questions is scaled to 70.

The total marks for each CO is calculated in this manner.

Final CO-wise mark = (Assignment marks+ 70% of External Exam) * 4/3

$$= (COV_{AT} + COV_{ext}) * 4/3$$

CO-wise assessment Rubrics: Finally, for every CO, a CO-wise cutoff value is taken based on the Class average mark for that CO and the **number of students** with their overall CO-wise marks above the cutoff value is considered for rating the CO attainment.

No. of students having marks > cutoff	Rating in 3 scale (I)
>=55%	3
45%-55%	2
40%-45%	1
<40%	0

CO ASSESSMENT: Sample

Name of the Course **: IMAGE PROCESSING** Year & Semester **: IV Year I sem**
Year of study **: 2019-20**

I) Question-wise Actual Marks scored in Mid-Exams:

R.No	Mid-1									Mid-2							
	Q1		Q2		Q3		Q4			Q1		Q2		Q3		Q4	
	a	b	a	B	a	b	A	b		a	b	a	b	a	b	a	b
	CO1	CO1	CO2	CO2	CO2	CO2	CO3	CO3		CO3	CO3	CO4	CO4	CO5	CO5	CO5	-
	5	5	5	5	5	5	5	5		5	5	4	6	5	5	10	-
16A51A0501	2	1			1	0	0	2		3	4	0	2			5	
16A51A0502	0	1			1	0	0	0		3	5			2	0	4	
16A51A0503	5	5	4	0	4	5				3	0	0	2	2	0	3	
16A51A0504	4	4			1	3	1	0		1	2	5	5			5	
16A51A0505	5	5	5	1			3	5		A	A	A	A			A	
……	…	…	…	…	…	…	…	…		…	…	…	…	…		…	

CO-wise Actual Marks scored in Mid-Exams:

i.) It can be seen that Q1[10M] of Mid-1 is mapped to CO1. And every student has attempted.

ii.) It can be seen that Q2[10M] & Q3[10M] of Mid-1 are mapped to CO2.
   a. Student 501 left Q2 as choice and has attempted Q3 and scored 1/10.
   b. Student 503 has attempted Q2 and Q3 and scored 13/20.
   c. Student 505 has attempted Q2 and scored 6/10.

iii.) It can be seen that Q4[10M] of Mid-1 and Q1[10M] of Mid-2 are mapped to CO3.
   a. Student 501 has attempted both and scored 9/20.
   b. Student 503 left Q4 as choice and has attempted Q1 of Mid-2 and scored 3/10.
   c. Student 505 has attempted Q4 of Mid-1. 505 was absent for Mid-2. So marks were considered as '0' for the corresponding questions of Mid-2. Hence, scored 8/20 for CO3.

iv.) It can be seen that Q2[10M] of Mid-2 is mapped to CO4.
   a. Student 501 has attempted and scored 2/10.
   b. Student 502 left Q2 as choice. So it is considered as not attempted. Here, mid-marks contribution for CO4 will be considered under Special case.
   c. Student 504 has attempted and scored 10/10.
   d. 505 was absent for Mid-2. So marks were considered as '0' for the corresponding questions of Mid-2. Hence, scored 0/10 for CO4.

v.) It can be seen that Q3[10M] and Q4[10M] of Mid-2 is mapped to CO5.
   a. Student 501 left Q3 as choice and has attempted only Q4 and scored 5/10.
   b. Student 502 has attempted both and scored 6/20.
   c. Student 504 left Q3 as choice and has attempted only Q4 and scored 5/10.
   d. 505 was absent for Mid-2. So marks were considered as '0' for the corresponding questions of Mid-2. Hence, scored 0/10 for CO5.

	CO1		CO2		CO3		CO4		CO5	
	Obt	**Att**	**Obt**	**Att**	**Obt**	**Att**	**Obt**	**Att**	**Obt**	**Att**
16A51A0501	3	10	1	10	9	20	2	10	5	10
16A51A0502	1	10	1	10	8	20	0	0	6	20
16A51A0503	10	10	13	20	3	10	2	10	5	20
16A51A0504	8	10	4	10	4	20	10	10	5	10
16A51A0505	10	10	6	10	8	20	0	10	0	10

CO-wise Marks scaled to 25 in Mid-Exams:

	CO1	CO2	CO3	CO4	CO5
16A51A0501	**8**	**3**	**12**	**5**	**13**
16A51A0502	**3**	**3**	**10**	**CH**	**8**
16A51A0503	**25**	**17**	**8**	**5**	**7**
16A51A0504	**20**	**10**	**5**	**25**	**13**
16A51A0505	**25**	**15**	**10**	**0**	**0**

The CO-wise mid-marks are scaled to 25 by using the formulae::

$$\frac{\text{(Marks Obtained)}}{\text{(Marks Attempted)}} \times 25$$

Thus , for CO1: 501 has got 3/10X25 → 3* 2.5 → 7.5 → 8
503 has got 10/10X25 → 10* 2.5 → 25
504 has got 8/10X25 → 8* 2.5 → 20
Thus , for CO2: 501 has got 1/10X25 → 1* 2.5 → 2.5 → 3
503 has got 13/20X25 → 13* 1.25 → 16.25 → 17
504 has got 4/10X25 → 4* 2.5 → 10
Similarly other COs are assessed.

Here "CH" denotes the choice that the student has taken, which makes the Mid-exam contribution to CO4 to be ignored. This comes under the **Special Case** of Mid assessments.

II) Question-wise Actual Marks scored in 3 Assessment Tests (A1, A2, A3):

	A1		A2		A3	
	CO1	CO2	CO2	CO3	CO4	CO5
	5	5	5	5	5	5
16A51A0501	5	5	5	5	5	5
16A51A0502	5	5	5	5	5	5
16A51A0503	5	5	5	5	0	0
16A51A0504	5	5	5	5	5	5
16A51A0505	5	5	5	5	5	5

It can be seen that the Questions in A1 related to CO1 have been evaluated for 5 marks. And the students have scored respective marks out of 5.

It can be seen that the Questions in A1 and A2 related to CO2 have been evaluated for 10 marks. And the students have scored respective marks out of 10.

It can be seen that the Questions in A2 related to CO3 have been evaluated for 5 marks. And the students have scored respective marks out of 5.

It can be seen that the Questions in A3 related to CO4 have been evaluated for 5 marks. And the students have scored respective marks out of 5.

It can be seen that the Questions in A3 related to CO5 have been evaluated for 5 marks. And the students have scored respective marks out of 5.

CO-wise Marks scaled to 5 in Assessment Tests:

The CO-wise Assessment Tests marks are scaled to 5 by using the formulae:

$$\frac{\text{(Marks Obtained)}}{\text{(Marks Attempted)}} \times 5$$

	CO1	CO2	CO3	CO4	CO5
16A51A0501	**5**	**5**	**5**	**5**	**5**
16A51A0502	**5**	**5**	**5**	**5**	**5**
16A51A0503	**5**	**5**	**5**	**0**	**0**
16A51A0504	**5**	**5**	**5**	**5**	**5**
16A51A0505	**5**	**5**	**5**	**5**	**5**

III) Question-wise Actual Marks scored in External -Exams:

	EXTERNAL EXAM				
	Q1 /Q2	Q3 /Q4	Q5 /Q6	Q7 /Q8	Q9 /Q10
	CO1	CO2	CO3	CO4	CO5
	14	14	14	14	14
16A51A0501	8	6	2	6	9
16A51A0502	2	4	2	2	4
16A51A0503	11	11	11	5	6
16A51A0504	8	5	5	4	4
16A51A0505	6	4	8	11	11

CO-wise Marks scaled to 70 in Assessment Tests:

Finally, the external marks are scaled to 70 in the following manner.

- All questions have their concerned COs.
- Thus the total marks for each CO will therefore be 14.
- This total is then multiplied by 5 to scale to 70.

The CO-wise Assessment Tests marks are scaled to 5 by using the formulae:

$$\frac{\text{(Marks Obtained)}}{\text{(Marks Attempted)}} \times 70$$

	CO1	CO2	CO3	CO4	CO5
16A51A0501	**40**	**30**	**10**	**30**	**45**
16A51A0502	**10**	**20**	**10**	**10**	**20**
16A51A0503	**55**	**55**	**55**	**25**	**30**
16A51A0504	**40**	**25**	**25**	**20**	**20**
16A51A0505	**30**	**20**	**40**	**55**	**55**

Overall CO-wise mark:

The Final CO attainment is calculated by combining the Internal attainment and External attainment**.** For each CO, as per regulations,

- the marks obtained in Mid exam questions is scaled to 25.
- the marks obtained in Assessment Test is scaled to 5.
- the marks obtained in External exams questions is scaled to 70.

The total marks for each CO is calculated in this manner.

Final CO-wise mark = 25% of Midterm + Assignment marks+ 70% of External Exam
= COV_{AT} + COV_{Mid} + COV_{ext}

For CO1: student 501 gets :: 8 + 5 + 40 = 53
student 502 gets :: 3 + 5 + 10 = 18
student 503 gets :: 25 + 5 + 55 = 85
student 504 gets :: 20 + 5 + 40 = 65
student 505 gets :: 25 + 5 + 30 = 60

Similarly for other COs, the overall marks are calculated.

For CO4, under Special Case, 502 taking CO4 related question as choice in Mid-exam, the components of Assessment Test and External exams only is considered. Thus, CO4 assessment value is taken as (5 + 10) * 4 / 3 = 15 * 4 / 3 = 5 * 4 = 20

Thus, by adding the scaled marks from Mid-exams, Assessment Test and External exams, the students score their assessment values for each Course Outcome.

CO-wise Final attainment					
	CO1	CO2	CO3	CO4	CO5
	100	**100**	**100**	**100**	**100**
16A51A0501	53	38	27	40	63
16A51A0502	18	28	25	20	33
16A51A0503	85	77	68	30	37
16A51A0504	65	40	35	50	38
16A51A0505	60	40	55	60	60
----	...	...	...	...	...

Finally, after calculating all students CO values, and taking the **"Class Average"** as cutoff mark for each CO, the following is the CO-wise attainment.

*** Here, the class average for each CO is different.

C402	**IMAGE PROCESSING**				
	CO1	CO2	CO3	CO4	CO5
CO-wise Cut-off (Class Average) T:	77	60	71	65	69
NO. OF STUDENTS ASSESSED (A):	175	175	175	175	175
No. Of students SCORED >= Threshold (T):	102	100	101	90	96
CO Attainment Value (E):	58%	57%	58%	51%	55%
Attainment Level:	3	3	3	2	2

(CO ASSESSMENTS) **IMAGE PROCESSING**

IV-I CSE-A **MARKS (INTERNAL & EXTERNAL)** **AY: 2019-20**

R.No	Mid-1								Mid-2								Assessment Test						EXTERNAL EXAM				
	Q1		Q2		Q3		Q4		Q1		Q2		Q3		Q4		A1		A2		A3		Q1	Q3	Q5	Q7	Q9
	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	CO1	CO2	CO2	CO3	CO4	CO5	/Q2	/Q4	/Q6	/Q8	/Q10
	CO1	CO1	CO2	CO2	CO2	CO2	CO3	CO3	CO3	CO3	CO4	CO4	CO5	CO5	CO5		CO1	CO2	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
	5	5	5	5	5	5	5	5	5	5	4	6	5	5	10		5	5	5	5	5	5	14	14	14	14	14
16A51A0501	2	1			1	0	0	2	3	4	0	2			5		5	5	5	5	5	5	8	6	2	6	9
16A51A0502	0	1			1	0	0	0	3	5			2	0	4		5	5	5	5	5	5	2	4	2	2	4
16A51A0503	5	5	4	0	4	5			3	0	0	2	2	0	3		5	5	5	5	0	0	11	11	11	5	6
16A51A0504	4	4			1	3	1	0	1	2	5	5			5		5	5	5	5	5	5	8	5	5	4	4
16A51A0505	5	5	5	1			3	5	a	a	a	a			a		5	5	5	5	5	5	6	4	8	11	11
16A51A0506	5	5	5	2			2	5	5	5	4	6			10		5	5	5	5	5	5	12	13	14	11	14
16A51A0507	5	5	5	5			5	5	5	5	4	6			10		5	5	5	5	5	5	12	14	12	13	11
16A51A0508	5	5	5	5			3	5	5	5	4	6			10		5	5	5	5	5	5	12	13	12	13	11
16A51A0509	5	5	5	5	2	2			5	4	4	6			8		5	5	5	5	5	5	10	12	11	6	13
16A51A0510	5	5	1	5	0	3	3	3	3	5	4	5			10		5	5	5	5	5	5	8	8	4	4	10
16A51A0511	5	5	5	1			0	5	3	5	4	4			8		5	5	5	5	5	5	14	7	10	11	11
16A51A0512	5	5	2	4	1	4			5	5	4	6			10		5	5	5	5	5	5	11	14	9	12	6
16A51A0513	5	5	5	0			5	5	5	5	4	6			10		5	5	5	5	5	5	12	11	14	14	13
16A51A0514	5	2	3	1	1	0	1	2	4	4	3	2	3	1	5		5	5	5	5	5	5	10	7	3	2	6
16A51A0515	4	3	4	0	1	4	3	5	5	5	4	6	0	5	10		5	5	5	5	5	5	10	10	8	4	11
16A51A0516	5	5			0	1	0	0			4	3	2	2	5		5	5	5	5	5	5	11	7	6	12	6
16A51A0517	5	5			1	0	0	0	5	3	3	0	3	0			5	5	5	5	5	5	9	3	12	5	12
16A51A0518	5	5	1	0			0	3	2	5	4	4			4		5	5	5	5	5	5	9	2	7	6	5
16A51A0519	2	0			0	1	5	2	3	0	4	4	5	0			5	5	5	5	5	5	9	5	0	4	10
16A51A0520	5	5	2	0	1	3	1	2	5	5	4	6	3	2			5	5	5	5	5	5	8	6	7	9	4
16A51A0521	5	5	1	0	1	1			2	0	0	3	1	1	1		5	5	5	5	5	5	7	6	6	3	6
16A51A0522	5	5	0	3			0	2	3	5	4	6			10		5	5	5	5	5	5	12	13	7	6	4
16A51A0524	5	5	2	0	5	5			5	5	4	6			8		5	5	5	5	5	5	13	14	13	6	9
16A51A0525	5	5			1	5	5	5			4	6	4	6	10		5	5	5	5	5	5	14	14	14	14	14
16A51A0526	5	5	2	1			0	1	5	5	4	6			10		5	5	5	5	5	5	12	12	6	9	4
16A51A0527	3	5	1	0	1	4			5	5	4	6	4	3			5	5	5	5	5	5	10	9	4	8	12
16A51A0528	5	5	5	5	2	1			3	5	4	2	2	0	4		5	5	5	5	5	5	8	9	4	5	10
16A51A0529	4	3	2	5			0	0	1	4	4	6	4	0			5	5	5	5	5	5	8	7	4	9	10
16A51A0531	4	0	1	0			0	5	0	2	2	3			6		5	5	5	5	5	5	8	0	6	6	5
16A51A0532	5	5	0	2	1	5			5	5	4	6			10		5	5	5	5	5	5	12	10	14	14	7
16A51A0533	5	5	1	5			0	5	5	3	4	6			4		5	5	5	5	5	5	9	9	14	5	13
16A51A0534	5	5	2	0			3	5			4	6	4	6	10		5	5	5	5	5	5	13	14	12	14	11

16A51A0535	3	3			1	5	3	5				4	6	4	6	10			5	5	5	5	5	5		12	14	13	14	12
16A51A0536	5	5	5	4	1	5						4	6	4	6	10			5	5	5	5	5	5		12	9	10	12	11
16A51A0537	4	3			1	1	3	3		5	5	4	6	4	6	10			5	5	5	5	5	5		13	8	12	13	11
16A51A0538	5	5	2	0	2	5				5	5	4	6	4	6	10			5	5	5	5	5	5		12	12	10	12	7
16A51A0539	2	0			0	0	0	1		A	A	A	A	A	A	A			0	0	0	0	0	0		12	8	11	3	6
16A51A0540	3	5	2	0			2	2		5	5	4	6			10			5	5	5	5	5	5		10	9	10	11	6
16A51A0541	5	5			1	0	0	2		5	5	4	4	4	0				5	5	5	5	5	5		10	10	12	11	10
16A51A0542	5	5	0	4			0	5		4	5	4	5	4	0				5	5	5	5	5	5		11	5	11	11	10
16A51A0543	5	5			5	0	0	5		3	3	0	3			6			5	5	5	5	5	5		12	11	11	5	9
16A51A0544	5	5	2	0	1	5	2	5		5	5	4	6			10			5	5	5	5	5	5		12	10	12	10	11
16A51A0545	2	1			0	0	0	3		1	5	4	6	4	6	8			5	5	5	5	5	5		12	11	11	7	8
16A51A0546	3	3			1	2	5	5		5	5	4	5			4			5	5	5	5	5	5		12	10	8	10	6
16A51A0547	2	2			1	0	2	3		2	5	4	6			7			5	5	5	5	5	5		10	7	8	8	8
16A51A0548	5	5			1	5	0	5		5	5			4	6	10			5	5	5	5	5	5		12	11	12	10	10
16A51A0549	3	2			0	0	0	0		5	5			4	6	10			5	5	5	5	5	5		11	10	12	10	9
16A51A0550	5	5			0	5	5	5		5	5	4	6			10			5	5	5	5	5	5		12	13	12	10	11
16A51A0551	2	3			0	0	0	0		2	5	2	2			4			5	5	5	5	5	5		12	12	10	10	13
16A51A0552	5	5			3	5	4	5		5	5	4	6			10			5	5	5	5	5	5		12	12	12	12	11
16A51A0553	5	5			0	0	0	5		5	5	4	5			5			5	5	5	5	5	5		12	6	10	11	12
16A51A0554	2	3			2	3	2	3		4	3	4	4	4	2				5	5	5	5	5	5		10	2	6	9	4
16A51A0555	3	4			1	3	1	3		0	5	0	5			10			5	5	5	5	5	5		11	9	12	8	10
16A51A0556	A	A	A	A	A	A	A	A		5	5			4	4	4			5	5	5	5	5	5		11	11	10	12	11
16A51A0557	5	0			1	0	0	5		0	5	4	0			10			5	5	5	5	5	5		10	8	9	8	6
16A51A0558	5	5	3	0	0	5				5	5	4	6	4	3				5	5	5	5	5	5		11	10	7	5	8
16A51A0559	5	5	2	1			0	5		5	5			4	6	10			5	5	5	5	5	5		10	6	7	8	12
16A51A0560	5	5			0	5	3	5		5	5	4	6	4	6				5	5	5	5	5	5		14	10	12	12	10

COURSE OUTCOME ASSESSMENTS

IV-I CSE-A **IMAGE PROCESSING** **AY: 2019-20**

CO-WISE MARKS (INTERNAL & EXTERNAL)

R.NO	Mid-Marks					Assessment Test Marks					External-Marks					FINAL CO-WISE MARKS				
	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
	25	**25**	**25**	**25**	**25**	**5**	**5**	**5**	**5**	**5**	**70**	**70**	**70**	**70**	**70**	**100**	**100**	**100**	**100**	**100**
16A51A0501	8	3	12	5	13	5	5	5	5	5	40	30	10	30	45	53	38	27	40	63
16A51A0502	3	3	10	CH	8	5	5	5	5	5	10	20	10	10	20	18	28	25	20	33
16A51A0503	25	17	8	5	7	5	5	5	0	0	55	55	55	25	30	85	77	68	30	37
16A51A0504	20	10	5	25	13	5	5	5	5	5	40	25	25	20	20	65	40	35	50	38
16A51A0505	25	15	10	0	0	5	5	5	5	5	30	20	40	55	55	60	40	55	60	60
16A51A0506	25	18	22	25	25	5	5	5	5	5	60	65	70	55	70	90	88	97	85	100
16A51A0507	25	25	25	25	25	5	5	5	5	5	60	70	60	65	55	90	100	90	95	85
16A51A0508	25	25	23	25	25	5	5	5	5	5	60	65	60	65	55	90	95	88	95	85
16A51A0509	25	18	23	25	20	5	5	5	5	5	50	60	55	30	65	80	83	83	60	90
16A51A0510	25	12	18	23	25	5	5	5	5	5	40	40	20	20	50	70	57	43	48	80
16A51A0511	25	15	17	20	20	5	5	5	5	5	70	35	50	55	55	100	55	72	80	80
16A51A0512	25	14	25	25	25	5	5	5	5	5	55	70	45	60	30	85	89	75	90	60
16A51A0513	25	13	25	25	25	5	5	5	5	5	60	55	70	70	65	90	73	100	100	95
16A51A0514	18	7	14	13	12	5	5	5	5	5	50	35	15	10	30	73	47	34	28	47
16A51A0515	18	12	23	25	19	5	5	5	5	5	50	50	40	20	55	73	67	68	50	79
16A51A0516	25	3	0	18	12	5	5	5	5	5	55	35	30	60	30	85	43	35	83	47
16A51A0517	25	3	10	8	8	5	5	5	5	5	45	15	60	25	60	75	23	75	38	73
16A51A0518	25	3	13	20	10	5	5	5	5	5	45	10	35	30	25	75	18	53	55	40
16A51A0519	5	3	13	20	13	5	5	5	5	5	45	25	0	20	50	55	33	18	45	68
16A51A0520	25	8	17	25	13	5	5	5	5	5	40	30	35	45	20	70	43	57	75	38
16A51A0521	25	4	5	8	4	5	5	5	5	5	35	30	30	15	30	65	39	40	28	39
16A51A0522	25	8	13	25	25	5	5	5	5	5	60	65	35	30	20	90	78	53	60	50
16A51A0524	25	15	25	25	20	5	5	5	5	5	65	70	65	30	45	95	90	95	60	70
16A51A0525	25	15	25	25	25	5	5	5	5	5	70	70	70	70	70	100	90	100	100	100
16A51A0526	25	8	14	25	25	5	5	5	5	5	60	60	30	45	20	90	73	49	75	50
16A51A0527	20	8	25	25	18	5	5	5	5	5	50	45	20	40	60	75	58	50	70	83
16A51A0528	25	17	20	15	8	5	5	5	5	5	40	45	20	25	50	70	67	45	45	63
16A51A0529	18	18	7	25	10	5	5	5	5	5	40	35	20	45	50	63	58	32	75	65
16A51A0531	10	3	9	13	15	5	5	5	5	5	40	0	30	30	25	55	8	44	48	45
16A51A0532	25	10	25	25	25	5	5	5	5	5	60	50	70	70	35	90	65	100	100	65
16A51A0533	25	15	17	25	10	5	5	5	5	5	45	45	70	25	65	75	65	92	55	80
16A51A0534	25	5	20	25	25	5	5	5	5	5	65	70	60	70	55	95	80	85	100	85
16A51A0535	15	15	20	25	25	5	5	5	5	5	60	70	65	70	60	80	90	90	100	90

16A51A0536	25	19	CH	25	25	5	5	5	5	5	60	45	50	60	55	90	69	73	90	85
16A51A0537	18	5	20	25	25	5	5	5	5	5	65	40	60	65	55	88	50	85	95	85
16A51A0538	25	12	25	25	25	5	5	5	5	5	60	60	50	60	35	90	77	80	90	65
16A51A0539	5	0	2	0	0	0	0	0	0	0	60	40	55	15	30	65	40	57	15	30
16A51A0540	20	5	18	25	25	5	5	5	5	5	50	45	50	55	30	75	55	73	85	60
16A51A0541	25	3	15	20	10	5	5	5	5	5	50	50	60	55	50	80	58	80	80	65
16A51A0542	25	10	18	23	10	5	5	5	5	5	55	25	55	55	50	85	40	78	83	65
16A51A0543	25	13	14	8	15	5	5	5	5	5	60	55	55	25	45	90	73	74	38	65
16A51A0544	25	10	22	25	25	5	5	5	5	5	60	50	60	50	55	90	65	87	80	85
16A51A0545	8	0	12	25	23	5	5	5	5	5	60	55	55	35	40	73	60	72	65	68
16A51A0546	15	8	25	23	10	5	5	5	5	5	60	50	40	50	30	80	63	70	78	45
16A51A0547	10	3	15	25	18	5	5	5	5	5	50	35	40	40	40	65	43	60	70	63
16A51A0548	25	15	19	CH	25	5	5	5	5	5	60	55	60	50	50	90	75	84	73	80
16A51A0549	13	0	13	CH	25	5	5	5	5	5	55	50	60	50	45	73	55	78	73	75
16A51A0550	25	13	25	25	25	5	5	5	5	5	60	65	60	50	55	90	83	90	80	85
16A51A0551	13	0	9	10	10	5	5	5	5	5	60	60	50	50	65	78	65	64	65	80
16A51A0552	25	20	24	25	25	5	5	5	5	5	60	60	60	60	55	90	85	89	90	85
16A51A0553	25	0	19	23	13	5	5	5	5	5	60	30	50	55	60	90	35	74	83	78
16A51A0554	13	13	15	20	15	5	5	5	5	5	50	10	30	45	20	68	28	50	70	40
16A51A0555	18	10	12	13	25	5	5	5	5	5	55	45	60	40	50	78	60	77	58	80
16A51A0556	0	0	13	CH	15	5	5	5	5	5	55	55	50	60	55	60	60	68	87	75
16A51A0557	13	3	13	10	25	5	5	5	5	5	50	40	45	40	30	68	48	63	55	60
16A51A0558	25	10	25	25	18	5	5	5	5	5	55	50	35	25	40	85	65	65	55	63
16A51A0559	25	8	19	CH	25	5	5	5	5	5	50	30	35	40	60	80	43	59	60	90
16A51A0560	25	13	23	25	25	5	5	5	5	5	70	50	60	60	50	100	68	88	90	80

"A" SECTION ASSESSMENTS

	Final CO-wise Assessment				
	CO1	CO2	CO3	CO4	CO5
Class Average	78	59	67	68	67
# >= Cl. Avg	33	31	34	32	30
Total Strength	58	58	58	58	58
Attainment %	57%	53%	59%	55%	52%
Level Att	3	2	3	3	2

COMBINED SECTIONS ASSESSMENTS

	Final CO-wise Assessment				
	CO1	CO2	CO3	CO4	CO5
Class Average	77	60	71	65	69
# >= Cl. Avg	102	100	101	90	96
Total Strength	175	175	175	175	175
Attainment %	58%	57%	58%	51%	55%
Level Att	3	3	3	2	2

2. Laboratory Courses:

(i) Pattern for Internal Lab Examinations: For practical subjects, there shall be continuous internal evaluation during the semester for 25 internal marks. Out of the 25 marks for internal: 10 marks for day to day work, 5 for record and 10 marks to be awarded by conducting an internal laboratory test.

(ii) Pattern for External Examinations: For practical subjects, there shall be 50 semester end examination marks. The end examination shall be conducted by the teacher concerned and external examiner from outside the college.

(iii) **Overall CO-wise mark**: The Final CO attainment is calculated by combining the Internal attainment and External attainment in a ratio of 25 :50. Then the total mark is scaled to 100.

Final CO-wise mark = (Internal mark +External mark) * 4 / 3

CO-wise assessment Rubrics:

Every experiment is mapped to a specific CO.
Thereafter, a CO-wise cutoff value is taken the **"Class Average" mark** for that CO and the **number of students** with their internal mark above the cutoff value is considered for rating the CO attainment.

No. of students having marks > cutoff	Rating in 3 scale (I)
>=55%	3
45%-55%	2
40%-45%	1
<40%	0

Lab CO ASSESSMENT: Sample

Name of the Course **: Operating Systems LAB** Year & Semester**: II Year II sem**
Year of study **: 2017-18**

Roll.NO	Record marks											
	EXP1	EXP2	EXP3	EXP4	EXP5	EXP6	EXP7	EXP8	EXP9	EXP10	EXP11	EXP12
	CO1	CO1	CO2	CO3	CO3	CO4	CO4	CO4	CO5	CO5	CO5	CO5
	5	5	5	5	5	5	5	5	5	5	5	5
16A51A0501	5	5	5	5	5	5	5	5	5	5	5	5
16A51A0502	5	5	5	5	5	5	5	5	5	5	5	5
16A51A0503	5	5	5	5	5	5	5	5	5	5	5	5
16A51A0504	5	5	5	5	5	5	5	5	5	5	5	5

Roll.NO	Internal exam (10)
16A51A0501	10
16A51A0502	10
16A51A0503	10
16A51A0504	5

Roll.NO	Day-To Day Evaluation											
	EXP1	EXP2	EXP3	EXP4	EXP5	EXP6	EXP7	EXP8	EXP9	EXP10	EXP11	EXP12
	CO1	CO1	CO2	CO3	CO3	CO4	CO4	CO4	CO5	CO5	CO5	CO5
	10	10	10	10	10	10	10	10	10	10	10	10
16A51A0501	7	7	9	8	7	9	7	8	7	8	8	8
16A51A0502	10	8	9	10	7	8	9	10	8	9	7	7
16A51A0503	6	8	10	9	9	10	7	10	8	9	7	7
16A51A0504	6	5	6	6	8	7	7	7	8	8	7	7

Roll.NO	EXTERNALEXAM (50)
16A51A0501	48
16A51A0502	40
16A51A0503	48
16A51A0504	35

Final CO-wise marks:

For CO1, the student 16A51A0501 scored 10 + 5 + 7 + 48 = 70 out of 75.

This is 94 out of 75 is scaled to 100 by multiplying with 4 / 3. Therefore, CO1 value is 94 (70 * 4 /3 = 94 out of 100.)

Roll.NO	CO1	CO2	CO3	CO4	CO5
	100	100	100	100	100
16A51A0501	94	95	94	94	95
16A51A0502	85	84	86	84	83
16A51A0503	95	96	95	95	93
16A51A0504	68	69	69	70	69

Finally, after calculating all students CO values, and taking the **"Class Average"** as cutoff mark for each CO, the following is the CO-wise attainment.

C217	Operating Systems LAB				
	CO1	CO2	CO3	CO4	CO5
CO-wise Cut-off (Class Average) T:	86%	86%	86%	86%	86%
NO. OF STUDENTS ASSESSED (A):	178	178	178	178	178
No. Of students SCORED >= Threshold (T):	123	123	127	123	122
CO Attainment Value (E):	69%	69%	71%	69%	69%
Attainment Level:	3	3	3	3	3

Lab CO ASSESSMENT: Sample

MARKS (INTERNAL & EXTERNAL)

Name of the Course **: Operating Systems LAB** Year & Semester**: II Year II sem** Year of study**: 2017-18**

	Ex1	Ex2	Ex3	Ex4	Ex5	Ex6	Ex7	Ex8	Ex9	Ex 10	Ex 11	Ex 12	Ex1	Ex2	Ex3	Ex4	Ex5	Ex6	Ex7	Ex8	Ex9	Ex 10	Ex 11	Ex 12	Int Mrk	Ext Mrk
	CO1	CO1	CO1	CO2	CO2	CO2	CO3	CO3	CO4	CO4	CO4	CO5	CO1	CO1	CO1	CO2	CO2	CO2	CO3	CO3	CO4	CO4	CO4	CO5		
	5	5	5	5	5	5	5	5	5	5	5	5	10	10	10	10	10	10	10	10	10	10	10	10	10	50
16A51A0501	5	5	5	5	5	5	5	5	5	5	5	5	7	7	9	8	7	9	7	8	7	8	8	8	10	48
16A51A0502	5	5	5	5	5	5	5	5	5	5	5	5	10	8	9	10	7	8	9	10	8	9	7	7	10	40
16A51A0503	5	5	5	5	5	5	5	5	5	5	5	5	6	8	10	9	9	10	7	10	8	9	7	7	10	48
16A51A0504	5	5	5	5	5	5	5	5	5	5	5	5	6	5	6	6	8	7	7	7	8	8	7	7	5	35
16A51A0505	5	5	5	5	5	5	5	5	5	5	5	5	6	7	6	5	4	5	4	6	5	5	6	5	6	35
16A51A0506	5	5	5	5	5	5	5	5	5	5	5	5	10	10	8	8	10	10	10	9	10	7	7	7	10	49
16A51A0507	5	5	5	5	5	5	5	5	5	5	5	5	6	5	8	8	7	7	9	8	9	9	8	9	7	46
16A51A0508	5	5	5	5	5	5	5	5	5	5	5	5	6	7	6	6	8	9	9	8	9	8	7	7	8	32
16A51A0509	5	5	5	5	5	5	5	5	5	5	5	5	8	8	9	10	9	9	10	10	9	10	9	8	10	47
16A51A0510	5	5	5	5	5	5	5	5	5	5	5	5	6	7	6	6	7	7	8	5	6	5	7	7	2	30
16A51A0511	5	5	5	5	5	5	5	5	5	5	5	5	7	6	7	7	9	9	8	10	7	6	8	8	7	34
16A51A0512	5	5	5	5	5	5	5	5	5	5	5	5	6	8	7	7	8	7	8	8	7	8	7	7	6	30
16A51A0513	5	5	5	5	5	5	5	5	5	5	5	5	6	8	6	6	8	9	8	8	9	9	8	8	7	34
16A51A0514	5	5	5	5	5	5	5	5	5	5	5	5	8	10	8	10	10	8	7	10	8	10	8	9	7	48
16A51A0515	5	5	5	5	5	5	5	5	5	5	5	5	8	10	8	7	9	10	8	9	9	10	9	8	10	42
16A51A0516	5	5	5	5	5	5	5	5	5	5	5	5	7	8	7	7	6	8	9	7	7	8	7	7	10	47
16A51A0517	5	5	5	5	5	5	5	5	5	5	5	5	8	6	7	9	8	8	8	6	8	9	9	6	5	30

16A51A0518	5	5	5	5	5	5	5	5	5	5	5	5	6	5	6	6	5	5	5	5	5	6	5	5	5	38
16A51A0519	5	5	5	5	5	5	5	5	5	5	5	5	7	7	9	10	10	9	8	9	9	8	9	9	7	47
16A51A0520	5	5	5	5	5	5	5	5	5	5	5	5	7	8	8	7	8	8	6	9	7	7	7	8	10	47
16A51A0521	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6	5	4	5	7	5	6	5	7	5	2	30
16A51A0522	5	5	5	5	5	5	5	5	5	5	5	5	7	8	10	9	8	8	10	9	8	10	10	7	10	45
16A51A0523	5	5	5	5	5	5	5	5	5	5	5	5	8	10	9	8	7	8	10	7	8	10	7	10	10	48
16A51A0524	5	5	5	5	5	5	5	5	5	5	5	5	6	5	6	6	5	5	6	4	5	5	5	7	5	25
16A51A0525	5	5	5	5	5	5	5	5	5	5	5	5	6	7	8	6	7	8	9	9	7	8	9	7	10	48
16A51A0526	5	5	5	5	5	5	5	5	5	5	5	5	6	5	6	6	8	9	8	5	7	8	7	7	5	25
16A51A0527	5	5	5	5	5	5	5	5	5	5	5	5	7	8	7	6	8	8	7	7	8	7	7	7	7	32
16A51A0528	5	5	5	5	5	5	5	5	5	5	5	5	6	7	7	8	7	8	10	7	8	9	10	7	7	38
16A51A0529	5	5	5	5	5	5	5	5	5	5	5	5	9	8	7	9	10	9	8	10	8	8	7	9	10	48
16A51A0531	5	5	5	5	5	5	5	5	5	5	5	5	6	6	8	7	7	8	9	9	7	8	9	7	10	47
16A51A0532	5	5	5	5	5	5	5	5	5	5	5	5	8	10	9	9	10	10	10	10	9	7	9	7	10	49
16A51A0533	5	5	5	5	5	5	5	5	5	5	5	5	8	8	10	9	9	8	9	9	8	8	10	7	10	49
16A51A0534	5	5	5	5	5	5	5	5	5	5	5	5	10	7	8	8	9	9	8	8	9	10	7	10	10	49
16A51A0535	5	5	5	5	5	5	5	5	5	5	5	5	7	8	10	10	8	8	8	10	9	8	9	9	10	47
16A51A0536	5	5	5	5	5	5	5	5	5	5	5	5	8	7	7	9	7	7	6	9	7	7	7	7	7	46
16A51A0537	5	5	5	5	5	5	5	5	5	5	5	5	10	8	9	10	7	8	7	9	7	10	8	9	10	46
16A51A0538	5	5	5	5	5	5	5	5	5	5	5	5	7	7	10	10	8	7	9	8	9	10	10	7	10	46
16A51A0539	5	5	5	5	5	5	5	5	5	5	5	5	7	10	8	8	10	8	9	10	8	9	10	7	10	48
16A51A0540	5	5	5	5	5	5	5	5	5	5	5	5	5	7	5	4	6	4	5	5	5	6	7	5	3	22

16A51A0541	5	5	5	5	5	5	5	5	5	5	5	5	9	9	7	10	10	8	9	7	8	8	9	9	10	47
16A51A0542	5	5	5	5	5	5	5	5	5	5	5	5	6	5	5	6	5	5	6	5	6	5	5	5	6	27
16A51A0543	5	5	5	5	5	5	5	5	5	5	5	5	6	8	6	10	10	7	10	8	10	10	9	9	10	47
16A51A0544	5	5	5	5	5	5	5	5	5	5	5	5	6	7	8	7	8	7	7	7	8	7	7	7	7	46
16A51A0545	5	5	5	5	5	5	5	5	5	5	5	5	6	6	8	8	7	9	8	7	7	7	7	7	7	46
16A51A0546	5	5	5	5	5	5	5	5	5	5	5	5	9	8	10	10	10	10	9	10	10	8	7	7	10	49
16A51A0547	5	5	5	5	5	5	5	5	5	5	5	5	7	10	8	8	10	8	8	10	8	10	10	7	10	47
16A51A0548	5	5	5	5	5	5	5	5	5	5	5	5	6	10	9	8	10	10	8	7	9	10	9	9	10	48
16A51A0549	5	5	5	5	5	5	5	5	5	5	5	5	6	6	4	6	5	6	4	6	5	6	5	5	6	27
16A51A0550	5	5	5	5	5	5	5	5	5	5	5	5	8	10	9	10	10	9	10	10	10	8	7	7	10	49
16A51A0551	5	5	5	5	5	5	5	5	5	5	5	5	7	7	6	8	7	7	8	8	7	7	7	7	10	42
16A51A0552	5	5	5	5	5	5	5	5	5	5	5	5	7	7	8	8	9	7	8	6	5	8	7	7	10	40
16A51A0553	5	5	5	5	5	5	5	5	5	5	5	5	6	8	9	10	10	7	9	10	8	9	9	8	10	48
16A51A0554	5	5	5	5	5	5	5	5	5	5	5	5	6	7	6	8	7	7	6	6	7	7	7	7	6	46
16A51A0555	5	5	5	5	5	5	5	5	5	5	5	5	7	7	10	7	10	7	8	9	7	7	7	7	7	46
16A51A0556	5	5	5	5	5	5	5	5	5	5	5	5	8	7	7	9	7	8	6	9	7	7	10	7	7	35
16A51A0557	5	5	5	5	5	5	5	5	5	5	5	5	6	8	6	8	7	7	7	8	8	7	7	7	10	46
16A51A0558	5	5	5	5	5	5	5	5	5	5	5	5	6	8	8	9	7	7	8	8	9	9	7	7	7	40
16A51A0559	5	5	5	5	5	5	5	5	5	5	5	5	7	7	8	8	8	7	8	10	7	8	7	7	7	34
16A51A0560	5	5	5	5	5	5	5	5	5	5	5	5	7	7	6	7	8	7	8	7	7	8	7	7	7	46

COURSE OUTCOME FINAL ASSESSMENTS

II-II CSE-A **Operating Systems LAB** **AY: 2017-18**

	CO1	CO2	CO3	CO4	CO5
	100	100	100	100	100
16A51A0501	94	95	94	94	95
16A51A0502	85	84	86	84	83
16A51A0503	95	96	95	95	93
16A51A0504	68	69	69	70	69
16A51A0505	70	68	68	68	68
16A51A0506	98	98	98	96	95
16A51A0507	86	87	89	89	89
16A51A0508	68	70	71	71	69
16A51A0509	94	95	96	95	93
16A51A0510	58	58	58	57	59
16A51A0511	70	72	73	71	72
16A51A0512	64	64	65	64	64
16A51A0513	70	72	72	73	72
16A51A0514	92	92	91	92	92
16A51A0515	88	88	87	88	87
16A51A0516	92	92	93	92	92
16A51A0517	63	64	63	65	61
16A51A0518	72	71	71	71	71
16A51A0519	89	92	90	90	91
16A51A0520	93	93	93	92	93
16A51A0521	56	56	57	57	56

16A51A0522	91	91	93	92	89
16A51A0523	96	94	95	95	97
16A51A0524	54	54	53	53	56
16A51A0525	93	93	96	95	93
16A51A0526	54	57	55	56	56
16A51A0527	68	68	68	68	68
16A51A0528	76	77	78	79	76
16A51A0529	95	96	96	94	96
16A51A0531	92	92	95	93	92
16A51A0532	97	98	99	96	95
16A51A0533	97	97	97	97	95
16A51A0534	96	97	96	97	99
16A51A0535	94	94	95	94	95
16A51A0536	87	88	87	87	87
16A51A0537	93	92	92	92	93
16A51A0538	92	92	93	94	91
16A51A0539	95	96	97	96	93
16A51A0540	48	46	47	48	47
16A51A0541	94	95	93	94	95
16A51A0542	58	58	58	58	57
16A51A0543	92	95	95	96	95
16A51A0544	87	87	87	87	87
16A51A0545	86	88	87	87	87
16A51A0546	97	99	98	96	95
16A51A0547	94	94	95	95	92
16A51A0548	95	96	94	96	96

16A51A0549	58	58	57	58	57
16A51A0550	97	98	99	96	95
16A51A0551	85	86	87	85	85
16A51A0552	83	84	83	82	83
16A51A0553	94	96	97	96	95
16A51A0554	84	86	84	85	85
16A51A0555	88	88	89	87	87
16A51A0556	72	73	73	73	72
16A51A0557	90	91	91	91	91
16A51A0558	79	80	80	80	79
16A51A0559	71	72	73	71	71
16A51A0560	86	87	87	87	87

A - SECTION ASSESSMENTS

	Final CO-wise Assessment				
	CO1	CO2	CO3	CO4	CO5
Class Average	82	83	83	83	82
# >= Cl. Avg	39	39	38	38	39
Total Strength	59	59	59	59	59
Attainment %	66%	66%	64%	64%	66%
Level Att	3	3	3	3	3

COMBINED SECTIONS ASSESSMENTS

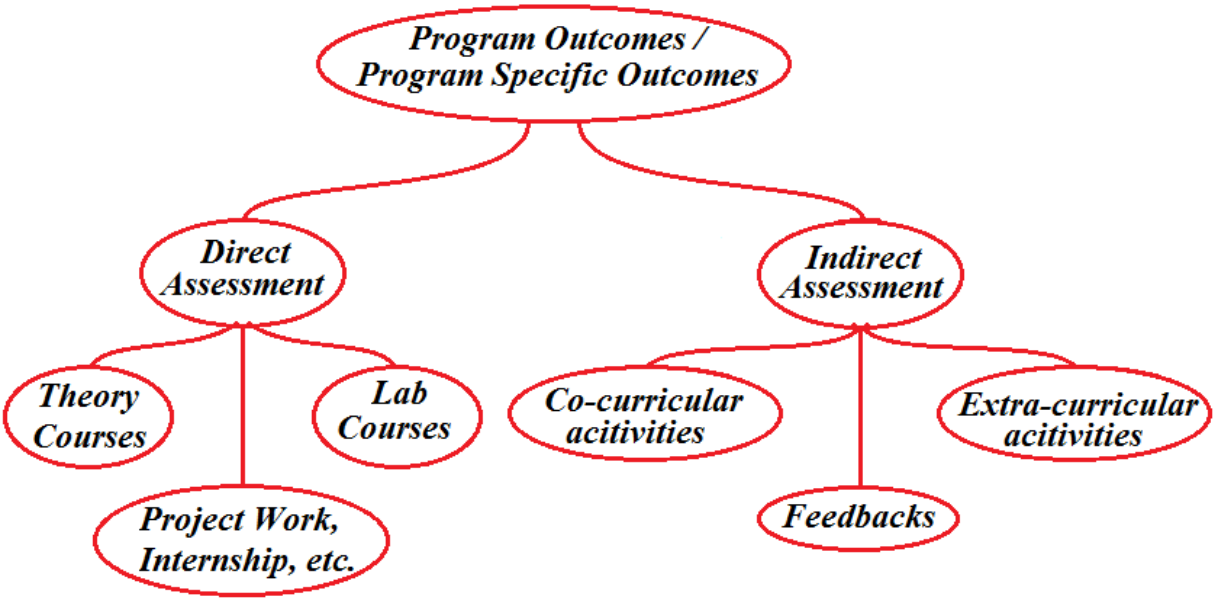
	Final CO-wise Assessment				
	CO1	CO2	CO3	CO4	CO5
Class Average	86	86	86	86	86
# >= Cl. Avg	123	123	127	123	122
Total Strength	178	178	178	178	178
Attainment %	69%	69%	71%	69%	69%
Level Att	3	3	3	3	3

3.3.1 POs , PSOs Assessment Procedure:

3.3.1. Describe assessment tools and processes used for measuring the attainment of each of the Program Outcomes and Program Specific Outcomes (10)

In Outcome based Education, assessment is done through one or more than one processes, carried out by the institution, that identify, collect, and prepare data to evaluate the achievement of Program Educational Objectives, Program Outcomes and Course Objectives and Outcomes.

PO ASSESSMENT TOOLS & ATTAINMENTS:



The Department Advisory Committee decided to categorize Assessment tools into **Direct** and **Indirect Methods** to assess **Program Outcomes** and **Program Specific Outcomes**.

The following PO Assessment methods for different POs and PSOs:

1) **Direct Assessment methods**: Theory Courses, Lab Courses, Project work and other courses like Employability skills, Internships, Self Learning Courses.

2) **Indirect Assessment methods:**

Feedbacks	: Students' Exit, Alumni & Industries Feedback
Co-curricular activities	: Guest Lectures, Add-on Courses, Project Exhibition, Project Models, Paper Presentation.
Extra-Curricular activities	: Programs and activities related to Ethics, IPR, Entrepreneurial, Personality Development, Health, Environment, Society, Sports, and Cultural activities.

Direct methods display the student's knowledge and skills from their performance in the continuous assessment tests, end–semester examinations, seminar presentations, and classroom assignments etc. These methods provide a sampling of what students know and/or can do and provide strong evidence of student learning.

Indirect methods such as surveys and interviews ask the stakeholders to reflect on student's learning. They assess opinions or thoughts about the graduate's knowledge or skills and their valued by different stakeholders.

DIRECT ASSESSMENT PROCESS:

A) **Theory & Lab Courses:** Since an outcome can be achieved in more than one course, while assessing a specific outcome, numbers of courses are assessed and both core and electives course are assessed. The Program outcomes are difficult to measure such as assessing critical thinking, creativity, analytical skills, and problem solving etc.

Hence the department has adopted Criterion Referenced Rubrics to assess the POs and COs wherever appropriate. The Rubric criteria are either developed by department faculty or sometimes even with consultation with students and distributed before an assignment, project or test.

Rubrics are used for both formative and summative assessment of students. Same rubric is used for assessing an outcome so that the faculty is able to assess student progress and maintain the record of the same for each student.

The rubrics are shared with students before being evaluated so that they are aware of the performance criteria and their weightage. Copies of Rubrics used for assessing POs are shown below table.

For each Program Outcome, the Department Advisory Committee (DAC) along with program and course coordinators define performance indicators (Assessment criteria) and their targets. Each performance indicator is aligned to the courses and targets set for each performance indicator. This is indicated in the Articulation Matrix or table. The faculty members then keep the POs in front of them develop COs (5-7 for each course) and then break each of their unit outcome into elements of Bloom's Taxonomy and define set of attributes for each outcome. These are used for planning lectures, assignments, tests, projects etc while developing their course files.

Ex: This is a Sample CO-PO&PSO mappings matrix of a Course.

CO – PO & PSO MAPPINGS Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		PSO1	PSO2	PSO3
C106.1	**3**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**		**3**	**3**	**-**
C106.2	**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**		**3**	**3**	**-**
C106.3	**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**		**3**	**3**	**-**
C106.4	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**		**3**	**3**	**-**
C106.5	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**		**3**	**3**	**-**

PROGRAM ARTICULATION MATRIX

COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
……	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
C106	3	3	3	3	2	0	0	0	0	0	0	3	3	3	0

Each outcome is assessed in several courses to ensure that students acquire an appropriate level in terms of knowledge/skills of an outcome. The course coordinators collect the qualitative and quantitative data and use these for outcome assessment in a continual process. Each faculty presets out targets for assessment of course outcomes and prepares analysis of their course outcome based on student performance and present the same to the DAC along with his/her suggestion for improvement.

Once the course assessment is done at both formative and summative levels, the DAC studies the course analysis report of each faculty and decides course of corrective action if required.

Record of all CO attainment Values for all the Courses:

CODE	CO1	CO2	CO3	CO4	CO5
……	……	……	……	……	……
C106	3	2	2	2	2
……	……	……	……	……	……

The PO and PSO attainments are calculated by using the level-correlation matrices of CO with PO. A PO/ PSO attainment value for a specific Course is calculated by using the formula:

$$\frac{\text{Sum of all } (CO_i\text{-att value} * \text{level of mapping})}{\text{No.of COs mapped} * 3}$$

PROGRAM OUTCOME ASSESSMENT

COURSE CODE	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
……	…	……	……	……	……	……	……	…	…	…	…	…	…	…	…
C106.CO1	…	3*2=6	3*2=6	3*3=9	3*2=6	3*0=0	3*0=0	…	…	…	…	…	…	…	…
C106.CO2	…	2*3=6	2*3=6	2*3=6	2*2=4	2*0=0	2*0=0	…	…	…	…	…	…	…	…
C106.CO3	…	2*3=6	2*3=6	2*3=6	2*2=4	2*0=0	2*0=0	…	…	…	…	…	…	…	…
C106.CO4	…	2*3=6	2*3=6	2*3=6	2*0=0	2*0=0	2*0=0	…	…	…	…	…	…	…	…
C106.CO5	…	2*3=6	2*2=4	2*3=3	2*0=0	2*0=0	2*0=0	…	…	…	…	…	…	…	…
C106	…	**30/15 =2.00**	**28/15 =1.87**	**30/15 =2.0**	**14/9 =1.56**	**0.00**	**0.00**	…	…	…	…	…	…	…	…
C106	**2.20**	**2.00**	**1.87**	**2.00**	**1.56**	**0**	**0**	**0**	**0**	**0**	**0**	**1.80**	**2.20**	**2.20**	**0**

Thus the attainment of each PO & PSO is attained by determining the weighted average of products of CO attainments and CO-PO mappings.

B) PROJECT EVALUATION & ASSESSMENTS:

Out of a total of 200 marks for the project work, **60** marks shall be for Project Internal Evaluation and **140** marks for the End Semester Examination. The End Semester Examination (Viva – Voce) shall be conducted by the committee. The evaluation of project work shall be conducted at the end of the IV year.

(i) Pattern for Internal Evaluation: The Internal Evaluation shall be done basing on: day-to-day progress and presentations. The day-to-day evaluation is done for 60 marks, and the presentations of their phase-wise status is reviewed 3 times for 30, 35, 35 marks respectively.

The assessment of a candidate's performance is taken on 60% of presentations and 40% of day-to-day evaluation. This is converted onto a 3 points scale.

(ii) Pattern for External Evaluation: The External assessment is done for 140 mrks and is scaled to 3 basing on the marks obtained by the candidate in the project external exam as given below. External attainment = ext-marks * 3 / 140.

The overall attainment is 30% of the internal attainments and 70% of external attainments.

Sample Project assessment

SL.No.	B.No	R1	R2	R3	Int	Int-Overall	Int-Level	Ext-marks	Ext-Level	Total-Level
	Out of	30	35	35	60	100	3	140	3	30% of int + 70% of ext
	Weightage	20%	20%	20%	40%	30%		70%		
1	16A51A0507	25	35	35	60	97%	2.90	138	2.96	2.94
2	16A51A0515	24	30	30	55	87%	2.61	133	2.85	2.78
3	16A51A0524	24	34	29	56	89%	2.68	132	2.83	2.78
4	16A51A0505	28	36	35	60	99%	2.98	138	2.96	2.96
5	16A51A0534	25	35	35	60	97%	2.90	137	2.94	2.93
6	16A51A0520	26	35	35	60	97%	2.92	138	2.96	2.95
7	16A51A0541	25	33	35	59	95%	2.85	134	2.87	2.86
8	16A51A0539	27	33	33	56	93%	2.79	134	2.87	2.85

Each Project is mapped with the POs specifically to different levels basing on the area and its relevance to the PO.

Once, the individual projects marks are evaluated, the POs attainments are determined by weighted multiplication of mappings and marks. Then the weighted average of each is calculated for each PO for Projects.

SL.No.	B.No	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
	Out of	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	16A51A0507	3	3	3	2	3	2	3	2	3	2	3	2	2	3	1
2	16A51A0515	3	3	3	2	3	2	3	2	3	2	3	2	2	3	1
3	16A51A0524	3	3	3	2	3	2	3	2	3	2	3	2	2	3	1
4	16A51A0505	3	3	3	2	3	2	3	2	3	2	3	2	2	3	1
5	16A51A0534	1	2	2	2	2	2	2	2	3	3	3	3	2	2	2
6	16A51A0520	1	2	2	2	2	2	2	2	3	3	3	3	2	2	2
7	16A51A0541	1	2	2	2	2	2	2	2	3	3	3	3	2	2	2
8	16A51A0539	1	2	2	2	2	2	2	2	3	3	3	3	2	2	2

Thus the PO attainment is calculated by taking average of Sum of products of the level mappings with the overall attainment value of all students of the batch.

SNo	R.No	Att value	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	16A51A0507	2.94	3	3	3	2	3	2	3	2	3	2	3	2	2	3	1
2	16A51A0515	2.78	3	3	3	2	3	2	3	2	3	2	3	2	2	3	1
3	16A51A0524	2.78	3	3	3	2	3	2	3	2	3	2	3	2	2	3	1
4	16A51A0505	2.96	3	3	3	2	3	2	3	2	3	2	3	2	2	3	1
Sum Of prod of att & mappings			34.4	34.4	34.4	22.9	34.4	22.9	34.4	22.9	34.4	22.9	34.4	22.9	22.9	34.4	11.5
No. of mapped values			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average attainment			2.87	2.87	2.87	1.91	2.87	1.91	2.87	1.91	2.87	1.91	2.87	1.91	1.91	2.87	0.96

Thus the PO attainment is calculated by taking average of Sum of products of the level mappings with the overall attainment value of all students of all batches.

C) Internship, Self Study Course(SSC)& Employability Skills Evaluation & Assessments:

- **Internship** All the students shall undergo the internship period of **4** weeks and the students have an option of choosing their own industry which may be related to their respective branch. A self study report for the internship shall be submitted and evaluated during the IV year II-Semester and will be evaluated for a total of **75** marks consists of **25** marks for internal assessment and **50** marks for end examination. Internal assessment for **25** marks shall be done by the internship supervisor. Semester end examination for **50** marks shall be conducted by committee consists of Head of the Department, internal supervisor and an external examiner.

PO Level Articulation Matrix with Internships

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
0	1	2	3	3	2	2	3	3	3	2	3	2	3	2

For calculating the PO attainment with **Internships,** the cutoff mark is taken as 80% of maximum. And basing on the number of students scoring above the cutoff, attainment level is determined.

- **Employability Skills:** Employability skills shall be evaluated for **75** marks. **25** marks for day-to-day evaluation and **50** marks on the basis of end (internal) examination. There is no external examination for employability skills.

PO Level Articulation Matrixwith Employability Skills

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
3	2	2	2	2	0	0	1	2	3	2	3	2	2	1

For calculating the PO attainment with **Employability Skills,** the cutoff mark is taken as 60% of maximum. And basing on the number of students scoring above the cutoff, attainment level is determined.

- **Self Study Course:** Four Periods per week (which includes library, e-learning, Internet and presentation) are allotted for this course. Self Study shall be evaluated for 75 Marks. Out of 75 Marks, 25 marks for day-to-day evaluation and 50 marks on the basis of end examination conducted by internal committee consisting of Head of the Department, Two Senior faculty Members of the department concerned. There shall be no external examination for self-study.

PO Level Articulation Matrix with Self Study Course

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
0	0	0	0	1	0	0	2	3	3	2	3	2	2	2

For calculating the PO attainment with **Self Study Course,** the cutoff mark is taken as 80% of maximum. And basing on the number of students scoring above the cutoff, attainment level is determined.

INDIRECT ASSESSMENT PROCESS:

It is observed that some POs are not mapped to even 40% by the Courses directly. It is suggested in DAC to conduct various Extra and Co-Curricular activities so that those POs can be inculcated into students indirectly. Co-curricular activities include Guest Lectures, Add-on Courses, Project Exhibition, Project Models, Paper Presentation. Extra-Curricular activities Programs and activities related to Ethics, IPR, Entrepreneurial, Personality Development, Health, Environment, Society, Sports, and Cultural activities.

Also, the DAC designs the survey questionnaires along with targets against which the POs are to be assessed and planned schedule for their assessment and submits the same to the PAC for initiating action of sending out survey instruments to relevant alumni, employers and other external stakeholders. The PAC initiates action of indirect assessment of POs based on the pre-defined and agreed schedule with each DAC.

The DAC analyzes the collected data. If the assessment meets the performance targets the outcome is attained. Otherwise, corrective actions are initiated and results presented to the IACC which then presents the same to Academic Council and seeks their suggestions and approval for corrective action.

S.No	Item	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Feed-backs	Exit Survey															
	Alumni Survey															
	Employer Survey															
Co-Curr	Guest Lecturers			3	3	3								3	3	
	Add-on Courses			3	3	3									3	3
	Students Seminars / Workshops						3			3	1					
	Prizes in PPTs/Quiz/ Poster presentations					3			1		3	3	3	3	3	
	Project exhibition & Models presented:	1	2	2	2	3	1	2	1	3	3	3	3		3	3
Extra-Curr	NSS activities: Environment, Health & Society related activities						3	3	3							
	Entrepreneurial, Professional Body, Leadership activities, Alumni Meets						3			3						
	Achievements: Sports, Cultural Meets									3						

INDIRECT ASSESSMENT:

I) FEEDBACK

a)* Exit Feedback *:

- The Exit Feedback questionnaire is prepared by the Program Assessment Committee in consultation with the Department Advisory Committee.
- The Exit Feedback questionnaire is distributed to the students at the end of every semester.
- The Surveys so gathered are assessed with a rating of 3 for **Substantial**, 2 for Moderate, and 1 for Slight.

The template for exit survey is given below:

Sl. No	Parameter for evaluation	Substantial (3)	Moderate (2)	Slight (1)
1	Apply the knowledge of mathematics, science, engineering fundamentals to solve complex electronics and communication engineering problems.			
2	Apply research based knowledge to design and conduct experiments, analyze, synthesize and interpret the data pertaining to Electronics and Communication Engineering problems and arrive at valid conclusions.			
3	Design solutions for electronics and communication engineering problems and design system components and processes that meet the specified needs with appropriate consideration for public health and safety.			
4	Function effectively either as a member or a leader in a multi disciplinary activities.			
5	Identify, formulate and analyze problems related to electronics and communication engineering and substantiate the conclusions using the first principles of sciences and engineering.			
6	Develop consciousness of professional, ethical and social responsibilities as experts in the field of Electronics and Communication Engineering.			
7	Communicate the engineering activities to engineering society for documentation and presentation.			
8	The broad education including management & finance necessary to understand the impact of engineering solutions in global, economic, environmental, and societal context			
9	Realize the need for lifelong learning and engage them to adopt technological changes in their specialized areas of electronics and communication engineering.			
10	Continuously update their knowledge on contemporary issues.			
11	Construct, choose and apply the techniques, resources and modern engineering tools required for Electronics and Communication Engineering applications.			
12	Qualify in competitive examinations like GATE, IES etc.			

Mapping of Exit Feedback questionnaire with POs and PSOs

S.No.	Parameter for evaluation	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	Apply the knowledge of mathematics, science, engineering fundamentals to solve complex electronics and communication engineering problems.	3												2	2	2
2	Apply research based knowledge to design and conduct experiments, analyze, synthesize and interpret the data pertaining to Electronics and Communication Engineering problems and arrive at valid conclusions.		3											2	2	
3	Design solutions for electronics and communication engineering problems and design system components and processes that meet the specified needs with appropriate consideration for public health and safety.			3											2	
4	Function effectively either as a member or a leader in a multi disciplinary activities.				3									2	2	
5	Identify, formulate and analyze problems related to electronics and communication engineering and substantiate the conclusions using the first principles of sciences and engineering.					3									2	
6	Develop consciousness of professional, ethical and social responsibilities as experts in the field of Electronics and Communication Engineering.						3									
7	Communicate the engineering activities to engineering society for documentation and presentation.							3						3		
8	The broad education including management & finance necessary to understand the impact of engineering solutions in global, economic, environmental, and societal context								3							
9	Realize the need for lifelong learning and engage them to10 adopt technological changes in their specialized areas of electronics and communication engineering.									3					2	
10	Continuously update their knowledge on contemporary issues.										3			3	2	3
11	Construct, choose and apply the techniques, resources and modern engineering tools required for Electronics and Communication Engineering applications.											3			2	2
12	Qualify in competitive examinations like GATE, IES etc.												3		2	2

(a) Alumni Survey:

- The Alumni Survey questionnaire is prepared by the Program Assessment Committee in consultations with the Department Advisory committee.
- The Alumni Survey questionnaire is published in the college website. The Survey is taken during the Alumni Meet held every year.
- The Surveys so gathered is assessed with a rating of 3 for Excellent (E), 2 for Good (G) and 1 for Poor (P).

Alumni Survey Questionnaire

Name:	Roll No:
Degree: B. Tech in Computer Science and Engineering	Batch:
Email:	Mobile:

E -> EXCELLENT G-> GOOD P-> POOR

Q1) Are you pursuing any higher studies?

E) Yes, I have already enrolled for higher studies.
G) I want to pursue higher studies in near future.
P) I have no plans for further studies.
If so, Please indicate your higher education details.

Q2) what is your current career position?

E) I am an entrepreneur and own a business.
G) I am employed right now.
P) I am trying to get employment.
If so, please give details of employment/entrepreneurship details.

Q3) Have you been working as a consultant adopting any new technologies /Entrepreneur?

E) Yes, I am working as consultant.
G) I am employed right now.
P) I am trying to get employment.

Q4) Are you enthusiastic in learning new technologies in the field of engineering?

E) Yes, I am very comfortable.
G) I am comfortable for the most part.
P) I am not very comfortable.

Q5) Are you able to apply knowledge and technical skills so as to carry out tasks in the engineering field as and when required by the job specifications?

E) Yes. It was very satisfying to apply the knowledge and skills.
G) I am learning to apply the knowledge and skills.
P) I still need to learn a lot on the job.

Q6) Are you able to understand the social and global issues to be considered while providing engineering solutions?

E) Yes. I fully understand.
G) I partly understand.
P) I am trying to understand.

Q7) Are there instances when you are able to improve upon the design that was originally suggested?

E) Many times.
G) Few times.
P) Waiting for the opportunity.

Q8) Are you able to integrate knowledge acquired to provide optimal solution to research problems?

E) Yes, I am able to integrate the knowledge acquired.
G) I am still figuring to come up with solutions.
P) I am still learning.

Q9) Do you use modern technologies, processes, and software / tools?

E) I always use tools to improve performance.
G) I try to use them sometimes.
P) I stick to traditional methods.

Q10) Are you able to vary communication in your professional transaction?

E) Yes, I can adapt comfortably.
G) Yes, I can manage.
P) I am trying.

Q11) Do you follow professional and ethical code of conduct to perform a given task?

E) Always.
G) Sometimes.
P) When convenient.

Q12) Do you participate in collaborative projects / working groups in your workplace to meet common goals?

E) Yes, I am working with different collaborations.
G) I am working comfortably with groups towards the project.
P) Sometimes.

Q13) Do you attend any conferences or seminars in your field to upgrade your skills?

E) Very often.
G) Often.
P) Once in a while.

Q14) How well did your education prepare you for personal development?

E) Well.
G) Adequate.
P) Not well.

Q15) Are you able to integrate engineering and management principles for implementation of the projects?

E) Yes, I was able to integrate the knowledge.
G) Sometimes.
P) I have difficulty in applying.

***End of Questionnaire**

The template for Alumni survey is given below:

S.No	Question/Parameter for evaluation	Substantial (3)	Moderate (2)	Slight (1)
1.	Are you pursuing any higher studies?			
2.	What is your current career position?			
3.	Have you been working as a consultant adopting any new technologies /Entrepreneur?			
4.	Are you enthusiastic in learning new technologies in the field of engineering?			
5.	Are you able to apply knowledge and technical skills so as to carry out tasks in the engineering field as and when required by the job specifications?			
6.	Are you able to understand the social and global issues to be considered while providing engineering solutions?			
7.	Are there instances when you are able to improve upon the design that was originally suggested?			
8.	Are you able to integrate the knowledge acquired to provide optimal solution to the research / real-time problems?			
9.	Do you use modern technologies, processes, and software / tools?			
10.	Are you able to vary communication in your professional transaction?			
11.	Do you follow professional and ethical code of conduct to perform a given task?			
12.	Do you participate in collaborative projects / working groups in your workplace to meet common goals?			
13.	Do you attend any conferences or seminars in your field to upgrade your skills?			
14.	How well did your education prepare you for personal development?			
15.	Are you able to integrate engineering and management principles for implementation of the projects?			

Mapping of Alumni Feedback questionnaire with POs and PSOs

S.No.	Parameter for evaluation	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	Are you pursuing any higher studies?												2			
2	What is your current career position?						3						2			2
3	Have you been working as a consultant adopting any new technologies /Entrepreneur?					3		3							3	3
4	Are you enthusiastic in learning new technologies in the field of engineering?					2									2	
5	Are you able to apply knowledge and technical skills so as to carry out tasks in the engineering field as and when required by the job specifications?	3	2	1	2										2	
6	Are you able to understand the social and global issues to be considered while providing engineering solutions?			1			1	2								
7	Are there instances when you are able to improve upon the design that was originally suggested?			3	3											
8	Are you able to integrate the knowledge acquired to provide optimal solution to the research / real-time problems?													3		3
9	Do you use modern technologies, processes, and software / tools?					3										
10	Are you able to vary communication in your professional transaction?										3					2
11	Do you follow professional and ethical code of conduct to perform a given task?								3							2
12	Do you participate in collaborative projects / working groups in your workplace to meet common goals?									3	2					
13	Do you attend any conferences or seminars in your field to upgrade your skills?												3			2
14	How well did your education prepare you for personal development?												2			
15	Are you able to integrate engineering and management principles for implementation of the projects?											3				2

(b) Employer Survey:

- The Employer Survey questionnaire is prepared by the Program Assessment Committee in consultations with the Department Advisory Committee and the Placement Cell Coordinator.
- The Employer Survey questionnaire is published in the college website. The Survey is also taken during the Placement activities held every year.
- The Surveys so gathered is assessed with a rating of 3 for Excellent (E), 2 for Good (G) and 1 for Poor (P).

Employer Survey Questionnaire

Name of the Company/Institution:
Address:
Contact Information:

Q1) Are AITAM graduates engaged in research and development activities?

E) They are excellent in that respect.
G) They have sufficient knowledge.
P) Motivation is required.

Q2) Are AITAM graduates in any key positions in your organization?

E) They are in good positions.
G) They have sufficient experience.
P) None.

Q3) Do you think AITAM graduates have the ability to work as a freelance consultant?

E) They can work.
G) They can manage.
P) They hesitate.

Q4) Do AITAM graduates have an understanding of professional and ethical responsibility in professional practice?

E) They follow very scrupulously.
G) They follow.
P) In general, they are good.

Q5) Do you think graduates from AITAM possess the technical knowledge and skill needed to fulfill the job function?

E) They are excellent in that respect.
G) They have sufficient knowledge.
P) They need to be trained.

Q6) Do AITAM graduates exhibit analytical skills?

E) They can analyze complicated situation.
G) They can analyze simple situations.
P) They need a little bit of orientation.

Q7) Do AITAM graduates possess the knowledge and skills to devise solutions to unfamiliar problems?

E) They exhibit innovativeness.
G) They give clever solutions sometimes.
P) They need a little bit more experience.

Q8) Did you find AITAM graduates able to learn a new tool or procedure or technique as and when required?

E) No. They are always eager.
G) They are interested in learning.
P) When the new technology is tedious, they are reluctant.

Q9) Are AITAM graduates aware of the importance of social & global aspects?

E) Very conscious of social and global aspects.
G) Aware of some of these aspects.
P) Mostly interested in aspects immediately connected with work.

Q10) How much are AITAM graduates aware of the effect of their work quality towards safety, society and environment?

E) They are very much aware.
G) They are aware to an extent.
P) They will update themselves when needed.

Q11) Do AITAM graduates work under stress well and are adaptable to changes in environment?

E) They respond well.
G) They respond moderately.
P) They are not adaptable to changes.

Q12) Do AITAM graduates perform as individual, in a team, and exhibit leadership qualities?

E) They possess leadership skills.
G) They can work well in a group.
P) They are excellent workers individually.

Q13) Can AITAM graduates vary their approach in written and verbal communication according to the person or situation?

E) They are very good at it.
G) They can manage.
P) They hesitate.

Q14) Do you feel graduates from AITAM are able to plan, organize & complete assigned projects?

E) They are very organized and effective.
G) They can manage.
P) They need life skills training.

Q15) Do graduates from AITAM upgrade their knowledge to address the contemporary issues?

E)They always upgrade.
G)They learn to an extent.
P) Will upgrade when compulsory.

******End of Questionnaire**

The template for Employer Survey is given below:

Sl No	Question/Parameter for evaluation	Substantial (3)	Moderate (2)	Slight(1)
1.	Are AITAM graduates engaged in research and development activities?			
2.	Are AITAM graduates in any key positions in your organization?			
3.	Do you think AITAM graduates have the ability to work as a freelance consultant?			
4.	Do AITAM graduates have an understanding of professional and ethical responsibility in Professional practice?			
5.	Do you think graduates from AITAM possess the technical knowledge and skill needed to fulfill the job function?			
6.	Do AITAM graduates exhibit analytical skills?			
7.	Do AITAM graduates possess the knowledge and skills to devise solutions to unfamiliar problems?			
8.	Did you find AITAM graduates able to learn a new tool or procedure or technique as and when required?			
9.	Are AITAM graduates aware of the importance of social & global aspects			
10.	How much are AITAM graduates aware of the effect of their work quality towards safety, society and environment?			
11.	Do AITAM graduates work under stress well and are adaptable to changes in environment?			
12.	Do AITAM graduates perform as individual, in a team, and exhibit leadership qualities?			
13.	Can AITAM graduates vary their approach in written and verbal communication according to the person or situation?			
14.	Do you feel graduates from AITAM are able to plan, organize & complete assigned projects?			
15.	Do graduates from AITAM upgrade their knowledge to address the contemporary issues?			

Mapping of Employers' Feedback questionnaire with POs and PSOs

S.No.	Parameter for evaluation	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	Are AITAM graduates engaged in research and development activities?			1	3									1		3
2	Are AITAM graduates in any key positions in your organization?							2	1	3	3	2		1		
3	Do you think AITAM graduates have the ability to work as a freelance consultant?		2				2	2	1	1	3	3	1	1		
4	Do AITAM graduates have an understanding of professional and ethical responsibility in Professional practice?						1		3							
5	Do you think graduates from AITAM possess the technical knowledge and skill needed to fulfill the job function?	3	2	2	3	3								3	3	
6	Do AITAM graduates exhibit analytical skills?	3	3	3	3									3		
7	Do AITAM graduates possess the knowledge and skills to devise solutions to unfamiliar problems?	3	3		3					3						
8	Did you find AITAM graduates able to learn a new tool or procedure or technique as and when required?					3										
9	Are AITAM graduates aware of the importance of social & global aspects						3	3								2
10	How much are AITAM graduates aware of the effect of their work quality towards safety, society and environment?						3	3								
11	Do AITAM graduates work under stress well and are adaptable to changes in environment?							1		1			3			
12	Do AITAM graduates perform as individual, in a team, and exhibit leadership qualities?									3						
13	Can AITAM graduates vary their approach in written and verbal communication according to the person or situation?										3					
14	Do you feel graduates from AITAM are able to plan, organize & complete assigned projects?											3			3	2
15	Do graduates from AITAM upgrade their knowledge to address the contemporary issues?												3			2

II) Assessment Rubrics of Co/Extra Curricular Activities and Students Participations:

*Assessment Rubrics of **Co-curricular Activities** and Students Participations*

Organizing :	Good (3)	Satisfactory (2)	Poor (1)	Mappings
Guest Lecturers Organized @2 GLs per semester, starting from II year.	>=10	>=6	>=3	PO3, PO4, PO5 PSO1, PSO2
Add-on Courses (Co-Curricular) * Organize Modular Programs * Organize APS Skill Dev. Programs * Organize Value-added * Organize Vocational Programs * Organize Adjunct Faculty	>=30 Hours	>=20 Hours	>=10 Hours	PO3, PO4, PO5 PSO2, PSO3
Students Participations/attended in Seminars/Workshops (no. of students) * Students with good academic record are encouraged to attend Seminars/ Workshops organized in other institutions.	>=50	>=30	>=20	PO6, PO9
Prizes in Paper Presentations (no. of prizes) * Students are motivated to participate and compete in various Events like Quiz/PPTs/Posters organized in other institutions.	>=10	>=7	>=4	PO10, PO11, PO12 PSO1, PSO2
Project exhibition & Models presented:	>=6	>=4	>=2	PO9, PO10, PO11, PO12 PSO2,PSO3

*Assessment Rubrics of **Extra Curricular Activities** and Students Participations*

Organizing :	Good (3)	Satisfactory (2)	Poor (1)	Mappings
Events Organized NSS activities: Environment, Health & Society related activities	10	7	4	PO6, PO7, PO8
Entrepreneurial, Professional Body, Leadership activities, Alumni Meets	15	10	5	PO6, PO9
Students Achievements: Sports, Cultural Meets	8	5	3	PO9