Criterion 3	COURSE OUTCOMES AND PROGRAM OUTCOMES	120

3.1 Establish the correlation between the courses and the Program Outcomes (POs) and Program Specific Outcomes (PSOs) (20)

PROGRAM OUTCOMES (POs):

Engineering Graduates will be able to:

1. Ability to apply the knowledge of mathematics, science, engineering fundamentals to solve engineering problems.
2. Ability to Identify, review research literature and analyze Engineering problems.
3. Ability to design solutions for complex engineering problems with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Ability to conduct experiments, analyse data, interpret data and synthesis the information to provide valid conclusions.
5. Ability to Create, select and use modern tools in developing solutions.
6. Ability to apply reasoning to evaluate societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice..
7. Ability to understand the impact of the engineering solutions in societal and environmental contexts and the need for sustainable development.
8. Ability to apply ethical principles in your responsibilities
9. Ability to Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
10. Ability to articulate ideas, communicate effectively, in writing and verbally.
11. Ability to work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Ability to engage in independent and life-long learning

PROGRAM SPECIFIC OBJECTIVES (PSOs)

1. Exhibit design and programming skills to build and automate business solutions using cutting edge technologies
2. Strong theoretical foundation leading to excellence and excitement towards research, to provide elegant solutions to complex problems.
3. Ability to work effectively with various engineering fields as a team to design, build and develop system applications

3.1.1 Course Outcomes(COs)(SAR should include course outcomes of one course from each semester of study, however, should be prepared for all courses and made available as evidence, if asked) (5)

Course Name: DATA STRUCTURES				**Course Year : 2022 – 2023**
SEMESTER	**COURSE CODE**	**COURSE NAME**	**CO NO**	**COURSE OUTCOME**
3	C204	**DATA STRUCTURES**	C204.1	Define linear and non-linear data structures.
			C204.2	Implement linear and non–linear data structure operations.
			C204.3	Use appropriate linear/non–linear data structure operations for solving a given problem.
			C204.4	Apply appropriate graph algorithms for graph applications
			C204.5	Analyze the various searching and sorting algorithms.

Course Name: DATABASE MANAGEMENT SYSTEMS				**Course Year : 2022-2023**
SEMESTER	**COURSE CODE**	**COURSE NAME**	**CO NO**	**COURSE OUTCOME**
4	C211	**DATABASE MANAGEMENT SYSTEMS**	C211.1	Construct SQL Queries using relational algebra
			C211.2	Design database using ER model and normalize the database
			C211.3	Construct queries to handle transaction processing and maintain consistency of the database
			C211.4	Compare and contrast various indexing strategies and apply the knowledge to tune the performance of the database
			C211.5	Appraise how advanced databases differ from Relational Databases and find a suitable database for the given requirement

Course Name: CRYPTOGRAPHY AND CYBERSECURITY				Course Year : 2023 – 2024
SEMESTER	**COURSE CODE**	**COURSE NAME**	**CO NO**	**COURSE OUTCOME**
5	C303	**CRYPTOGRAPHY AND CYBERSECURITY**	C303.1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
			C303.2	Apply the different cryptographic operations of symmetric cryptographic algorithms
			C303.3	Apply the different cryptographic operations of public key cryptography
			C303.4	Apply the various Authentication schemes to simulate different applications.
			C303.5	Understand various cyber crimes and cyber security.

Course Name: EMBEDDED SYSTEMS AND IOT				Course Year : 2023 – 2024
SEMESTER	**COURSE CODE**	**COURSE NAME**	**CO NO**	**COURSE OUTCOME**
6	C308	**EMBEDDED SYSTEMS AND IOT**	C308.1	Explain the architecture of embedded processors
			C308.2	Understand and Write embedded C programs.
			C308.3	Design simple embedded applications.
			C308.4	Compare the communication models in IOT
			C308.5	Design IoT applications using Arduino/Raspberry Pi /open platform.

Course Name: HUMAN VALUES AND ETHICS				Course Year : 2024 – 2025
SEMESTER	**COURSE CODE**	**COURSE NAME**	**CO NO**	**COURSE OUTCOME**
7	C401	**HUMAN VALUES AND ETHICS**	C401.1	Identify the importance of democratic, secular and scientific values in harmonious functioning
			C401.2	Practice democratic and scientific values in both their personal and professional life.
			C401.3	Find rational solutions to social problems.
			C401.4	Behave in an ethical manner in society
			C401.5	Practice critical thinking and the pursuit of truth.

Course Name: PROJECT WORK			Course Year : 2024 – 2025	
SEMESTER	**COURSE CODE**	**COURSE NAME**	**CO NO**	**COURSE OUTCOME**
8	C405	**PROJECT WORK**	C405.1	Gain Domain knowledge and technical skill set required for solving industry / research problems
			C405.2	Provide solution architecture, module level designs, algorithms
			C405.3	Implement, test and deploy the solution for the target platform
			C405.4	Prepare detailed technical report, demonstrate and present the work
			C405.5	On Completion of the project work students will be in a position to find solution by formulating proper methodology.

3.1.2 CO-POmatrices of courses selected in 3.1.1(Six matrices to be mentioned; one per semester from 3rd to 8th semester) (5)

Course Name: DATA STRUCTURES **Course Year :2022 – 2023**

SEMESTER	COURSE CODE	COURSE NAME	CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
3	**C204**	**DATA STRUCTURES**	C204.1	2	3	1	2	2	1	1	0	1	2	1	3
			C204.2	1	2	1	2	2	0	0	0	1	1	1	2
			C204.3	2	3	1	2	3	0	0	0	1	1	1	2
			C204.4	2	1	0	1	1	0	0	0	2	1	1	2
			C204.5	1	2	1	2	2	1	1	0	1	2	1	3

Course Name: DATABASE MANAGEMENT SYSTEMS **Course Year :2022-2023**

SEMESTER	COURSE CODE	COURSE NAME	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
4	C211	DATABASE MANAGEMENT SYSTEMS	C211.1	2	2	3	2	1	0	0	0	2	1	1	1
			C211.2	3	1	1	1	1	0	0	0	2	3	3	3
			C211.3	3	2	3	2	1	0	0	0	2	1	1	2
			C211.4	1	2	3	2	0	0	0	0	3	2	3	3
			C211.5	1	1	3	3	2	0	0	0	1	3	3	1

Course Name: CRYPTOGRAPHY AND CYBERSECURITY **Course Year : 2023 – 2024**

SEMESTER	COURSE CODE	COURSE NAME	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
5	C303	CRYPTOGRAPHY AND CYBERSECURITY	C303.1	**3**	2	**1**	**2**	2	**0**	**0**	**0**	**1**	**0**	**0**	**1**
			C303.2	**3**	3	**3**	**3**	3	**0**	**0**	**0**	**2**	**0**	**0**	1
			C303.3	**3**	3	**3**	**3**	3	**0**	**0**	**0**	**2**	**0**	**0**	**1**
			C303.4	**3**	3	**3**	3	3	**0**	**0**	**0**	**2**	**0**	**0**	**1**
			C303.5	**3**	2	3	**2**	**3**	**0**	**0**	**0**	**3**	**0**	**0**	**2**

Course Name: EMBEDDED SYSTEMS AND IOT **Course Year : 2023 – 2024**

SEMESTER	COURSE CODE	COURSE NAME	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
6	C308	EMBEDDED SYSTEMS AND IOT	C308.1	3	3	3	3	0	0	0	0	1	2	3	3
			C308.2	2	1	3	2	2	0	0	0	1	2	2	3
			C308.3	3	1	3	3	1	0	0	0	1	2	1	1
			C308.4	3	2	3	2	1	0	0	0	1	2	2	3
			C308.5	2	3	3	2	2	0	0	0	1	3	3	2

Course Name: HUMAN VALUES AND ETHICS **Course Year :2024-2025**

SEMESTER	COURSE CODE	COURSE NAME	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
7	C401	HUMAN VALUES AND ETHICS	C401.1	0	0	0	0	0	0	0	3	0	0	0	3
			C401.2	0	0	0	0	0	0	0	3	0	0	0	3
			C401.3	0	0	0	0	0	0	0	3	0	0	0	3
			C401.4	0	0	0	0	0	0	0	3	0	0	0	3
			C401.5	0	0	0	0	0	0	0	3	0	0	0	3

Course Name: PROJECT WORK **Course Year :2024-2025**

SEMESTER	COURSE CODE	COURSE NAME	CO	PO1	PO2	PO3	PO 4	PO5	PO 6	PO7	PO8	PO9	PO10	PO11	PO12
8	C405	PROJECT WORK	C405.1	0	0	0	0	0	0	0	0	3	3	0	0
			C405.2	3	0	0	0	0	0	0	0	0	0	0	0
			C405.3	0	3	0	0	3	0	0	2	0	0	0	0
			C405.4	0	0	3	0	0	0	0	0	0	0	0	0
			C405.5	0	0	0	3	0	2	0	0	0	0	2	1

Course Name: DATA STRUCTURES **Course Year : 2022 – 2023**

SEMESTER	COURSE CODE	COURSE NAME	CO	PSO1	PSO2	PSO3
3	C204	DATA STRUCTURES	C204.1	2	1	3
			C204.2	2	2	2
			C204.3	2	1	2
			C204.4	2	3	1
			C204.5	2	2	3

Course Name: DATABASE MANAGEMENT SYSTEMS **Course Year :2022-2023**

SEMESTER	COURSE CODE	COURSE NAME	CO	PSO1	PSO2	PSO3
4	C211	DATABASE MANAGEMENT SYSTEMS	C211.1	2	1	3
			C211.2	3	1	2
			C211.3	2	3	3
			C211.4	1	2	3
			C211.5	2	2	2

Course Name: CRYPTOGRAPHY AND CYBERSECURITY **Course Year : 2023 – 2024**

SEMESTER	COURSE CODE	COURSE NAME	CO	PSO1	PSO2	PSO3
5	C303	CRYPTOGRAPHY AND CYBERSECURITY	C303.1	2	3	3
			C303.2	3	3	3
			C303.3	3	3	3
			C303.4	3	3	3
			C303.5	3	2	3

Course Name: EMBEDDED SYSTEMS AND IOT **Course Year : 2023 – 2024**

SEMESTER	COURSE CODE	COURSE NAME	CO	PSO1	PSO2	PSO 3
6	C308	EMBEDDED SYSTEMS AND IOT	C308.1	2	1	3
			C308.2	3	1	3
			C308.3	1	3	3
			C308.4	2	2	1
			C308.5	3	1	3

Course Name: HUMAN VALUES AND ETHICS **Course Year :2024-2025**

SEMESTER	COURSE CODE	COURSE NAME	CO	PSO1	PSO2	PSO 3
7	C401	HUMAN VALUES AND ETHICS	C401.1	0	0	0
			C401.2	0	0	0
			C401.3	0	0	0
			C401.4	0	0	0
			C401.5	0	0	0

Course Name: PROJECT WORK **Course Year : 2024-2025**

SEMESTER	COURSE CODE	COURSE NAME	CO	PSO1	PSO2	PSO3
8	C405	PROJECT WORK	C405.1	2	0	0
			C405.2	3	2	2
			C405.3	0	3	1
			C405.4	0	0	0
			C405.5	0	0	2

3.1.3 - A Program level Course-PO matrix of all courses INCLUDING first year courses (10)

PO MATRIX

S.No	Course	course code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	C101	HS3152	1.6	2.2	1.8	2.2	1.5	3	3	3	1.6	3	3	3
2	C102	MA3151	3	3	1	1	0	0	0	0	2	0	2	3
3	C103	PH3151	3	3	1.6	1.2	1.8	1	0	0	0	0	0	1
4	C104	CY3151	2.8	1.3	1.6	1	0	1.5	1.8	0	0	0	0	1.5
5	C105	GE3151	2	3	3	3	2	0	0	0	0	0	2	2
6	C106	GE3171	2	3	3	3	2	0	0	0	0	0	2	2
7	C107	BS3171	3	2.4	2.6	1	1	0	0	0	0	0	0	0
			2.6	1.3	1.6	1	1	1.4	1.8	0	0	0	0	1.3
8	C108	HS3252	3	3	3	3	2.75	3	3	3	2.2	3	3	3
9	C109	MA3251	3	3	1	1	1	0	0	0	2	0	2	3
10	C110	PH3256	3	1.3	2	1.3	2.3	1	1.3	0	0	0	0	2
11	C111	BE3251	2	1.8	1	0	0	0	0	1	0	0	0	2
12	C112	GE3251	3	1	2	0	2	0	0	0	0	3	0	2
13	C113	CS3251	2	2	2	1	2	1	1	1	2	0	3	2
14	C114	GE3271	3	2	0	0	1	1	1	0	0	0	0	2
15	C115	CS3271	2	2	3	2	1	2	0	0	2	1	2	2
16	C201	MA3354	1	3	2	1	0	0	0	0	0	1	0	0
17	C202	CS3351	3	3	3	3	1.8	1.6	1	1	1	1	1.6	2.6
18	C203	CS3352	2	2	1	2	2	1	1	0	1	1	1	2
19	C204	CS3301	2	2	1	2	2	1	1	0	1	1	1	2
20	C205	CS3391	2	1	2	2	2	0	0	0	2	2	1	2
21	C206	CS3311	2	2	2	1	2	0	0	0	2	2	2	2
22	C207	CS3381	2	2	2	2	2	0	0	0	2	2	2	2
23	C208	CS3361	2	2	2	2	1	0	0	0	2	2	2	2
24	C209	CS3452	2	2	2	2	1	0	0	0	1	2	2	2
25	C210	CS3491	2	1	2	2	1	0	0	0	2	2	2	3
26	C211	CS3492	2	2	3	2	1	0	0	0	2	2	2	2
27	C212	CS3401	2.67	1.8	3	1	0	0	1.33	0	0	0	0	1
28	C213	CS3451	2	2	2	2	1	0	0	0	2	2	2	2

29	**C214**	GE3451	**2.8**	**1.8**	**1**	**1**	**0**	**2.2**	**2.4**	**0**	**0**	**0**	**0**	**1.8**
30	**C215**	CS3461	**2**	**2**	**2**	**2**	**2**	**0**	**0**	**0**	**2**	**2**	**2**	**2**
31	**C216**	CS3481	**2**	**3**	**2**	**2**	**1**	**0**	**0**	**0**	**2**	**1**	**3**	**2**
32	**C301**	CS3591	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**
33	**C302**	CS3501	**3**	**2.8**	**2.6**	**2.2**	**2**	**0**	**0**	**0**	**2.6**	**2**	**1.6**	**2.4**
34	**C303**	CB3491	**3**	**2.6**	**2.6**	**2.6**	**2.8**	**0**	**0**	**0**	**2**	**0**	**0**	**1.2**
35	**C304**	CS3551	**1.8**	**2.4**	**1.8**	**2.4**	**2**	**0**	**0**	**0**	**2.6**	**2.2**	**2.2**	**1.6**
36	**C305**	CCS375	**1.8**	**2**	**2.8**	**1.8**	**2.4**	**0**	**0**	**0**	**1.8**	**1.8**	**2**	**1.6**
37	**C306**	CCS334	**2.8**	**3**	**2.8**	**2.8**	**2.8**	**0**	**0**	**0**	**2.2**	**1.8**	**2.6**	**2**
38	**C307**	CCS356	**2**	**2**	**1**	**2**	**2**	**0**	**0**	**0**	**0**	**1**	**1**	**2**
39	**C308**	CS3691	**2.6**	**2**	**3**	**2.4**	**1.5**	**0**	**0**	**0**	**1**	**2.2**	**2.2**	**2.4**
40	**C309**	CCS332	**1.6**	**1.8**	**2**	**1.4**	**2.6**	**0**	**0**	**0**	**1.4**	**1.2**	**2**	**1.6**
41	**C310**	CCS370	**1.6**	**2.2**	**2.2**	**2.6**	**1.4**	**0**	**0**	**0**	**2.2**	**2.2**	**1.4**	**1.8**
42	**C311**	CCS366	**2.2**	**2.2**	**1.6**	**2**	**1.2**	**0**	**0**	**0**	**1.2**	**2**	**1.6**	**1.8**
43	**C312**	OEE351	**3**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
44	**C401**	GE3791	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**3**
45	**C402**	GE3751	**1.66**	**1**	**1**	**1.5**	**1.5**	**1**	1	**1**	**2**	**3**	**1**	**1**
46	**C403**	OHS351	**2**	**2.6**	**2.6**	**2**	**2.6**	**2.6**	**2.6**	**2.6**	**2**	**3**	**2.4**	**3**
47	**C404**	OHS352	**2.4**	**2.2**	**2.4**	**2.2**	**2**	**2.6**	**2.4**	**2.2**	**2.6**	**3**	**2.6**	**3**
48	**C405**	CS3811	**3.0**	**3.0**	**3.0**	**3**	**3.0**	**2**	**0**	**2.0**	**3.0**	**3.0**	**2**	**1**
	AVERAGE		**2.2**	**2.1**	**1.9**	**1.7**	**1.5**	**0.6**	**0.5**	**0.4**	**1.2**	**1.3**	**1.4**	**1.9**

PSO MATRIX					
S.No	**Course**	**course code**	**PSO1**	**PSO2**	**PSO3**
1	**C101**	HS3152	**0**	**0**	**0**
2	**C102**	MA3151	**0**	**0**	**0**
3	**C103**	PH3151	**0**	**0**	**0**
4	**C104**	CY3151	**0**	**0**	**0**
5	**C105**	GE3151	**3**	**3**	**0**
6	**C106**	GE3171	**3**	**3**	**0**
7	**C107**	BS3171	**0**	**0**	**0**
			0	**0**	**0**
8	**C108**	HS3252	**0**	**0**	**0**
9	**C109**	MA3251	**0**	**0**	**0**
10	**C110**	PH3256	**0**	**0**	**0**
11	**C111**	BE3251	**0**	**0**	**0**
12	**C112**	GE3251	**0**	**0**	**1**
13	**C113**	CS3251	**2**	**2**	**0**
14	**C114**	GE3271	**2**	**2**	**0**
15	**C115**	CS3271	**2**	**1**	**1**
16	**C201**	MA3354	**0**	**0**	**0**
17	**C202**	CS3351	**1.4**	**2.6**	**1.6**
18	**C203**	CS3352	**2**	**2**	**2**
19	**C204**	CS3301	**2**	**2**	**2**
20	**C205**	CS3391	**3**	**2**	**2**
21	**C206**	CS3311	**2**	**2**	**3**
22	**C207**	CS3381	**2**	**2**	**2**
23	**C208**	CS3361	**2**	**3**	**2**
24	**C209**	CS3452	**2**	**2**	**2**
25	**C210**	CS3491	**2**	**2**	**2**
26	**C211**	CS3492	**2**	**2**	**3**
27	**C212**	CS3401	**0**	**1**	**1**
28	**C213**	CS3451	**1**	**2**	**2**

29	**C214**	GE3451	**0**	**0**	**0**
30	**C215**	CS3461	**2**	**2**	**2**
31	**C216**	CS3481	**2**	**2**	**2**
32	**C301**	CS3591	**0**	**1**	**1**
33	**C302**	CS3501	**1.8**	**1.8**	**2**
34	**C303**	CB3491	**2.8**	**2.8**	**3**
35	**C304**	CS3551	**2**	**1.8**	**1.6**
36	**C305**	CCS375	**1.8**	**1.8**	**2**
37	**C306**	CCS334	**2.2**	**2.8**	**2.6**
38	**C307**	CCS356	**2**	**2**	**1**
39	**C308**	CS3691	**2.2**	**1.6**	**2.6**
40	**C309**	CCS332	**2**	**2.2**	**1.6**
41	**C310**	CCS370	**2.2**	**2.6**	**2.2**
42	**C311**	CCS366	**2.2**	**1.8**	**2.6**
43	**C312**	OEE351	**3**	**3**	**3**
44	**C401**	GE3791	**0**	**0**	**0**
45	**C402**	GE3751	**1.5**	**1**	**1.25**
46	**C403**	OHS351	**0**	**0**	**0**
47	**C404**	OHS352	**0**	**0**	**0**
48	**C405**	CS3811	**2.5**	**2.5**	**2.5**
		Average	**1.4**	**1.4**	**1.2**

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

In Outcome-Based Education (OBE), assessment is a structured process aimed at measuring how well students have achieved the specific learning objectives of a course, commonly referred to as Course Outcomes (COs). This process involves the systematic identification, collection, and analysis of relevant data to provide insight into student performance relative to the desired outcomes.

Identification: The first step involves clearly defining the Course Outcomes (COs), which are measurable statements detailing the knowledge, skills, and abilities students are expected to demonstrate by the end of the course. These COs are aligned with the overall Program Outcomes (POs) and reflect the learning goals for that specific subject.

Collection: After identifying the COs, appropriate assessment tools and methods are selected to gather data. These tools can include exams, quizzes, assignments, projects, lab work, presentations, or any other activity that allows students to demonstrate their mastery of the COs. Data collection ensures a broad and comprehensive understanding of student performance across different metrics.

Preparation and Analysis: Once the data is collected, it is prepared and analyzed to evaluate how well students have achieved the COs. This step involves compiling the results, calculating achievement levels, and comparing the data against predefined benchmarks or thresholds. The analysis helps to identify trends, strengths, weaknesses, and areas where students may require additional support or where instructional methods may need to be refined.

Through this process, the assessment in OBE provides meaningful feedback to both students and instructors. It ensures that educational outcomes are being met and supports continuous improvement in teaching, learning, and curriculum development.

CO Assessment Process

The attainment of Course Outcomes (COs) is measured using data gathered from a continuous evaluation process. Student performance in various assessments, such as internal tests, assignments, tutorials, case studies, seminars, and university examinations, is analyzed to determine the level of learning achieved. This continuous evaluation process provides a representative sample of students' knowledge and skills, serving as evidence of the learning imparted. The methodology for calculating CO attainment is outlined in Figure 3.2.1a, which details (i) the continuous evaluation process, (ii) the assessment tools used for data collection, and (iii) the measurement of CO attainment.

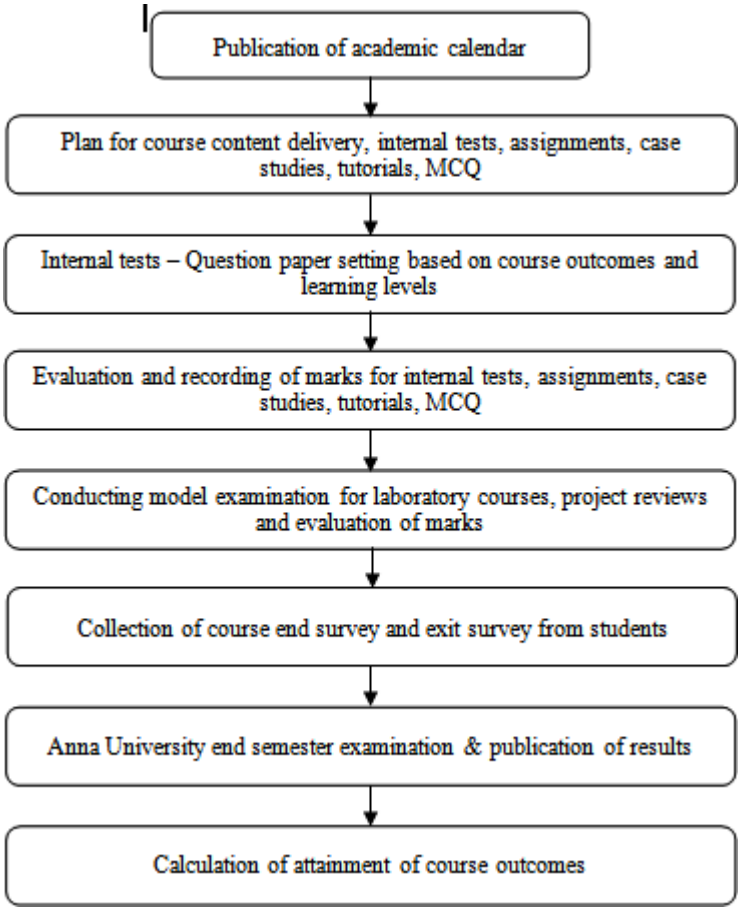

Fig. 3.2.1a Process employed for calculating CO attainment

i) Continuous Evaluation Process:

Three internal tests (Internal Test-1, Internal Test-2) are conducted for theory courses in alignment with the academic calendar, which is synchronized with the schedule of Anna University, Chennai. Faculty members organize assignments, tutorials, homework, multiple- choice questions, and/or mini projects for all courses to enhance learning. These activities promote consistent engagement with the material and provide valuable feedback to students on their performance. Additionally, case studies and seminars are employed to assess students' higher-order thinking skills, focusing on Bloom's taxonomy levels of evaluation and creation. These initiatives also help students gain insights into engineering applications while fostering time management and punctuality.

i) Assessment tools employed for data collection:

Assessment Tools	Description
Internal Tests (Theory Courses)	➢ Two internal tests are scheduled in the academic calendar, based on the academic schedule given by Anna University, Chennai. Each internal test is conducted for **60 marks** and the duration is **105 minutes.** The syllabus for the internal tests in each course ranges from **2 to 2.5 units**. ➢ The question papers for the internal tests are prepared by the respective subject handling faculty members based on Bloom's learning level. The assessment process considers the marks scored by the students in the internal tests. ➢ These are used to continuously assess the attainment of COs associated with the learning levels of remember, understand, apply and analyze with respect to course objectives.
Evaluation of Laboratory Courses	➢ To enhance the hands on training and practical knowledge of students in various domains, laboratory courses are conducted as per the requirements related to equipment and software specified by Anna University. ➢ The experiments conducted in the laboratory courses address the respective COs. CO attainment for each experiment is evaluated based on parameters such as basic knowledge about the experiment/procedure, output produced, and results calculated and recording the same in the prescribed format. ➢ The students are instructed to maintain a record notebook for each laboratory course which documents the completion of experiments in the laboratory session. This is verified by the respective subject handling faculty member. ➢ After the completion of experiments specified in the syllabus, model examinations are conducted for 100 marks for 3 hours. ➢ The evaluation is done by the faculty members based on predefined COs. Internal marks for the laboratory courses are based on the performance of students during the laboratory sessions conducted throughout the semester and in the model examination.
University End Semester Examination (theory and practical)	➢ End semester examinations (theory or practical) are scheduled and conducted for 100 marks with the duration of 3 hours as prescribed by Anna University, Chennai. ➢ The descriptive type university examinations (theory) conducted by Anna University, Chennai are aimed at assessing COs that cover all the 5 units. ➢ The performance in the university practical examinations is also used as a metric for assessing whether the relevant COs are attained or not.

Final Year Projects	➢ Students are divided into groups/batches, which have a maximum limit of four students as prescribed by Anna University, Chennai. Each group is guided by a faculty member, who serves as an internal project guide. ➢ The internal guide for each project batch is allotted based on his/her area of interest and research work completed/in progress. ➢ Three project reviews are conducted and the performance of the students is reviewed by the panel, which consists of internal project guide, head of the department, senior faculty members and ➢ project coordinator.
	➢ The project evaluation/ assessment process considers the marks scored in project review1, 2 and 3 (out of 100) ➢ Project viva-voce examination is conducted by the panel of internal and external examiners appointed by the Anna University, Chennai. ➢ The external examiners examine the students and the marks are awarded based on the performance of students in the viva-voce examination. Then the marks are submitted to Anna University, Chennai. ➢ Students whose projects are found to be ingenious are encouraged to publish the same in national/international conferences or/and reputed journals.
OTHERS	
Assignments	➢ For theory courses, five assignments (20 marks each) per Unit are assigned to all the students. ➢ Assignments are considered as the qualitative assessment tool designed to assess the performance of students in problem solving skills. ➢ Further, to induce self-learning of the students, case studies are also included as assignments. ➢ Marks scored by the students in the assignments, are used to assess the course outcomes.
Tutorials/ Mini-projects/ MCQ/Quiz/ Puzzles	➢ Tutorials, mini-projects, seminars, multiple choice questions, quiz and puzzles are given to students, for assessing the course outcome associated with create level.

- The Anna University, Chennai appoints external examiners for conducting university examinations in a transparent manner.
- For university examinations, assessments will be done on the basis of marks scored by students. Marks scored in each course will be mapped with the marks range as per Anna University, Chennai. However, for the purpose of reporting, the performance of a candidate is represented

as grades based on the marks range, each carrying certain number of grade points as detailed in Table 3.2.1a.

Table 3.2.1a Grade classification R – 2021

Marks Range	Grade Points	Letter Grade
91-100	10	O (Outstanding)
81-90	9	A+ (Excellent)
71-80	8	A (Very Good)
61-70	7	B+ (Good)
56-60	6	B (Average)
50-55	5	C(Satisfactory)
<50	0	U

- The statement of marks and provisional certificates will be issued to the students by Anna University, Chennai, at par with international standards incorporating Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA).
- Revaluation of answer scripts for the current semester is permissible and students can apply for revaluation in the prescribed format within 10 days from the date of publication of results. The photocopy of the answer script will be given by Anna University, Chennai.

ii) Measurement of CO attainment:

The measurement of CO attainment for all kinds of courses (theory, laboratory and project work) is explained using **Figure..3.2.1b**.

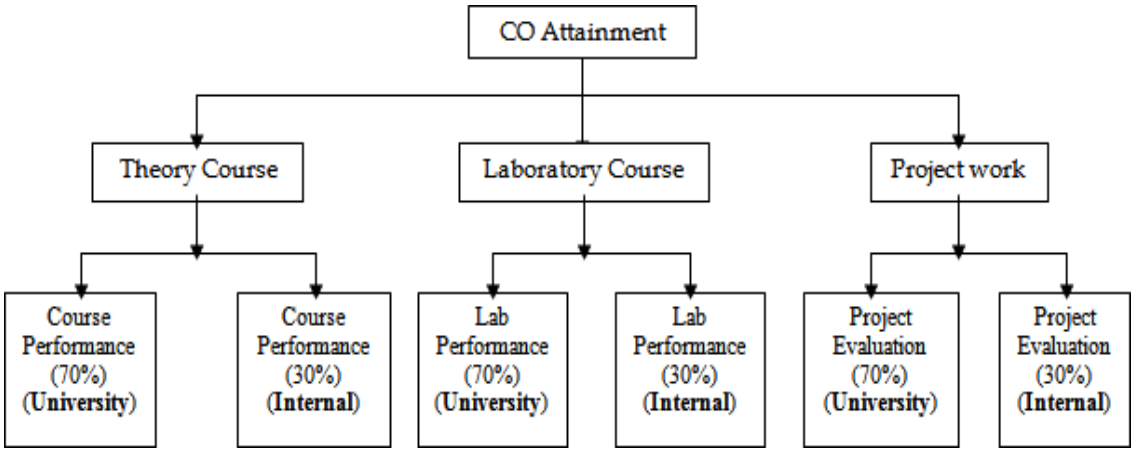

Fig... 3.2.1b Measurement of CO attainment for courses

Theory Course Performance – University Assessment

The performance of the students in university examinations is focused on the assessment of COs of respective courses. The calculation of overall CO attainment considers a weightage of 70% (for the percentage of students, who crosses the target of 50% marks) in university theory examination.

Theory Course Performance – Internal Assessment

The calculation of overall CO attainment considers a weightage of 30% in the continuous evaluation (internal tests and assignments/activities). The attainment of COs is distributed as shown in Table .3.2.1b.

Table 3.2.1b Distribution of COs (Theory)

Assessment Type	CO1	CO2	CO3	CO4	CO5
Internal test -1	✓	✓	✓		
Internal test -2	✓	✓	✓		
Internal test -3	✓	✓	✓		
Assignments/ Activities	✓	✓	✓	✓	✓

The marks scored by the students in the three internal tests and assignments/activities are included for the calculation of attainment of each course outcome as shown in Table .3.2.1c.

Table .3.2.1c Assessment Method of CO Attainment (Theory)

Course Outcome	Direct Assessment Method						
	Number of students who scored 50% (pass mark/ target) and above in Internal Tests and assignments to be counted to find the % of students who achieved the target	Continuous Evaluation (Assignment / Quiz/MCQ/ Home work/ Tutorial etc.) % of students who scored 70% and above	Find Average of B	COi attainment (70% of A + 30% of C)	If D is greater than 66%, COi attainment level is 3 If D is greater than 33% and less than 66%, COi attainment level is 2 If D is less than 33%, COiattainment level is 1	Find Average Of D	Overall CO attainment = (70% of Univ. exam. Pass % + 30% of F)
	A	**B**	**C**	**D**	**E**	**F**	
CO1							
CO2							
CO3							
CO4							
CO5							

The number of students who crossed the target of 50% marks in the internal tests and assignments/activities in the respective course outcome and their percentage (A) are identified. Similarly, number of students who crossed the 70% of marks in the assignments/activities (B) are identified. The average of attainment percentages of five assignments/activities (B) is calculated and labeled as 'C'.The attainment of each course outcome 'D' is calculated by the sum of 70% of A and 30% of C as shown in the equation 3.2.1a.

$$CO_i \text{ attainment } D = 0.7 * A + 0.3 * C \quad \text{--- (3.2.1a)}$$

The attainment level of course outcome is considered as 3 if the attainment percentage of the respective outcome is greater than 66%, 2, if the attainment percentage lies between 33% and 66%, and 1, if the attainment percentage is less than 33%.

Attainment Level for Internal Assessment of CO

Range of Marks	Attainment Level
Greater than 66%	3
Between 33% and 66%	2
Lesser than 33%	1

The average of attainment percentage of each course outcome (D) is calculated and labeled as 'F'.

Theory Course Performance – Overall CO Assessment

Then, the overall CO attainment of a course is calculated by adding 70% of university exam pass percentage and 30% of continuous evaluation (performance in the internal tests and activities) as shown in the equation 3.2.1b.

Overall CO attainment= 0.7 * university examination + 0.3 * continuous evaluation --- (3.2.1b)

Lab Performance – University Assessment

The performance of students in university practical examinations is focused on the assessment of COs for the respective courses. The calculation of overall CO attainment considers a weightage of 70% in the university practical examination pass percentage.

Lab Performance – Internal Assessment

The internal assessment of laboratory courses is carried out to address the respective COs and considers a weightage of 30% for the continuous evaluation. It is calculated based on the marks scored in each experiment in laboratory session (for 25 marks) and in the model examination (for 100 marks) conducted during each semester. The distribution of COs of the attainment is shown in Table .3.2.1d

Table .3.2.1d Distribution of COs (Laboratory)

Assessment Type	CO1	CO2	CO3	CO4
Record (Experiments)	✓	✓	✓	✓
Model	✓	✓	✓	✓

Calculation of attainment for each course outcome of a laboratory subject is shown in Table .3.2.1e

Table .3.2.1e Assessment Method of CO Attainment (Laboratory)

Course Outcome	Number of students who crossed 50% to be counted to find the % of students who achieved the target A	Find the attainment % - Internal B	If B is greater than 66%, C Oi attainment level is 3 If B is greater than 33% and less than 66%, COi attainment level is 2 If B is less than 33%, COiattainment level is 1 C	Find Average of B D	Overall CO attainment = (70% of Univ exam Pass %+ 30% of D)
CO1					
CO2					
CO3					
CO4					
CO5					

The number of students who crossed the target of 50% marks for each course outcome is to be counted and identified as 'A'. The corresponding attainment percentages (B) are calculated. The attainment level (C) of course outcome is considered as 3 if the attainment percentage of the respective outcome is greater than 66%, 2, if the attainment percentage lies between 33% and 66%, and 1, if the attainment percentage is less than 33%.

Attainment Level for Internal Assessment of CO

Range of Marks	Attainment Level
Greater than 66%	3
Between 33% and 66%	2
Lesser than 33%	1

Lab Performance – Overall CO Assessment

The average of attainment percentage of course outcomes (B) is calculated and labeled as 'D'.Then, the overall CO attainment of a laboratory course is calculated by adding 70% of university examination pass percentage and 30% of continuous evaluation (marks scored in each experiment in laboratory session and model examination). It is represented as D, which is shown in the equation 3.2.1b.

Overall CO attainment= 0.7 * university examination + 0.3 * continuous evaluation --- (3.2.1c)

Project Evaluation – University Assessment

Anna University, Chennai appoints external examiner for conducting the project viva-voce examination for the students. The projects are evaluated based on the presentation and viva-voce.

Table B.3.2.1d Distribution of COs for Project University Exam

Assessment Type	CO1	CO2	CO3	CO4	CO5
Project University Exam	✓	✓	✓	✓	✓

Project Evaluation – Internal Assessment

The progress of the project works is evaluated by the panel, which consists of internal project guide, Head of the department, senior faculty members and project coordinator. The zeroth review is conducted to finalize the area and topic of the project work. Then, three project reviews (Review 1, Review 2, and Review 3) are conducted periodically to review the progress of the project. The distribution of attainment of COs is shown in Table .3.2.1f.

Table: .3.2.1f Distribution of COs (Project Work)

Assessment Type	CO1	CO2	CO3	CO4	CO5
Review -1	✓	✓			
Review -2		✓	✓		
Review -3			✓	✓	✓

The calculation of attainment of each course outcome for a project work is as shown in Table .3.2.1g.

Table .3.2.1g Assessment Method of CO Attainment (Project)

Course Outcome	Number of students who crossed 50% to be counted to find the % of students who achieved the target A	Find the attainment % - Internal B	If B is greater than 66%, CO_i attainment level is 3 If B is greater than 33% and less than 66%, CO_i attainment level is 2 If B is less than 33%, CO_iattainment level is 1 C	Find Average of B D	Overall CO attainment = (70% of Univ exam Pass % + 30% of D)
CO1					
CO2					
CO3					
CO4					
CO5					

The number of students who crossed the target (50% marks) for each course outcome is to be counted and identified as 'A'. The corresponding attainment percentage (B) is calculated. The attainment level (C) of course outcome is considered as 3 if the attainment percentage of respective outcome is greater than 66%, 2, if the attainment percentage lies between 33% and 66%, and 1, if the attainment percentage is less than 33%.

Attainment Level for Internal Assessment of CO

Range of Marks	Attainment Level
Greater than 66%	3
Between 33% and 66%	2
Lesser than 33%	1

Project Evaluation – Overall CO Assessment

The average attainment percentage of course outcome (B) is calculated and labeled as 'D'. Then, the overall CO attainment of a project work is calculated by adding 70% of university exam pass percentage and 30% of continuous evaluation (marks scored in three reviews.) It is represented as D, which is shown in the equation 3.2.1b.

Over all CO attainment= 0.7 * university examination + 0.3 * continuous evaluation --- (3.2.1d)

3.2.2 Record the attainment of Course Outcome of all courses with respect to set attainment levels (40)

S.No	Course code	Course	Internal Assessment		University		Total (30% IA + 70% UE)
			Attainment %	Attainment level	Attainment %	Attainment level	
1	C101	HS3151	85.68%	3	93.55%	3	3
2	C102	MA3151	98.13%	3	81.97%	3	3
3	C103	PH3151	91.17%	3	79.37%	3	3
4	C104	CY3151	98.65%	3	70.97%	3	3
5	C105	GE3151	85.32%	3	79.03%	3	3
6	C106	GE3171	100.00%	3	100.00%	3	3
7	C107	BS3171	100.00%	3	100.00%	3	3
8	C108	HS3251	78.55%	3	93.55%	3	3
9	C109	MA3251	51.94%	2	67.21%	3	2
10	C110	PH3256	62.74%	2	70.97%	3	3
11	C111	BE3251	80.43%	3	77.42%	3	3
12	C112	GE3251	86.45%	3	75.41%	3	3
13	C113	CS3251	86.91%	3	96.72%	3	3
14	C114	GE3271	100.00%	3	98.39%	3	3
15	C115	CS3271	100.00%	3	98.39%	3	3
16	C201	MA3354	84.18%	3	43.94%	2	2
17	C202	CS3351	76.36%	3	100.00%	3	3
18	C203	CS3352	69.72%	3	95.38%	3	3
19	C204	CS3301	62.03%	2	87.69%	3	3
20	C205	CS3391	76.06%	3	89.23%	3	3
21	C206	CS3311	100.00%	3	100.00%	3	3
22	C207	CS3381	100.00%	3	100.00%	3	3
23	C208	CS3361	100.00%	3	100.00%	3	3
24	C209	CS3452	83.02%	3	81.54%	3	3
25	C210	CS3491	100%	3	95.38%	3	3
26	C211	CS3492	76.37%	3	91.00%	3	3
27	C212	CS3401	97%	3	96.97%	3	3
28	C213	CS3451	83.08%	3	89.23%	3	3
29	C214	GE3451	83.75%	3	80.00%	3	3
30	C215	CS3461	100.00%	3	100.00%	3	3
31	C216	CS3481	100.00%	3	100.00%	3	3
32	C301	CS3591	100.00%	3	100.00%	3	3
33	C302	CS3501	98.71%	3	96.88%	3	3
34	C303	CB3491	59.75%	2	78.46%	3	3
35	C304	CS3551	76.43%	3	84.62%	3	3
36	C305	CCS375	81.54%	3	98.46%	3	3

37	**C306**	CCS334	100.00%	3	100.00%	3	3
38	**C307**	CCS356	100.00%	3	100.00%	3	3
39	**C308**	CS3691	100.00%	3	98.46%	3	3
40	**C309**	CCS332	96.31%	3	100.00%	3	3
41	**C310**	CCS370	92.31%	3	100.00%	3	3
42	**C311**	CCS366	100.00%	3	100.00%	3	3
43	**C312**	OEE351	100.00%	3	100.00%	3	3
44	**C401**	GE3791	92.06%	3	100.00%	3	3
45	**C402**	GE3751	92.00%	3	98.46%	3	3
46	**C403**	OHS351	76.37%	3	98.46%	3	3
47	**C404**	OHS352	85.60%	3	98.46%	3	3
48	**C405**	CS3811	100.00%	3	100.00%	3	3

3.3 Attainment of Program Outcomes and Program Specific Outcomes (50)

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

PO Assessment Tools

PO assessment methods used to assess the program outcomes and program specific outcomes are categorized as direct and indirect method.

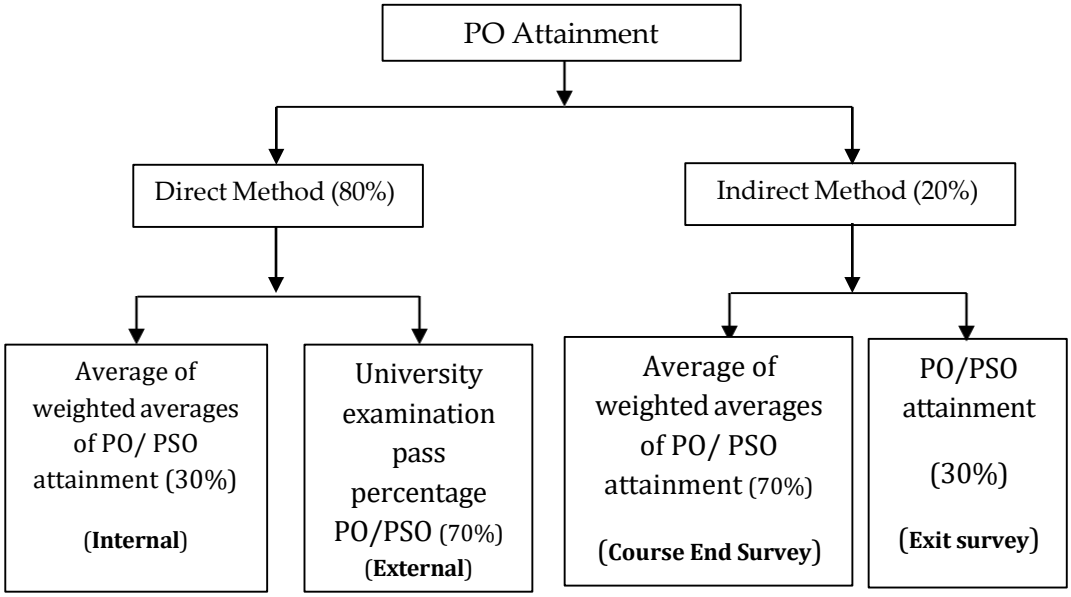

Fig 3.3.1 a PO Assessment Tools

Direct method of measuring PO attainment

In direct method, CO attainment (internal) and university examination pass percentage are used to measure the attainment of program outcomes and program specific outcomes. CO attainment (internal) is calculated using the performance of students in internal tests, assignments, tutorials, mini projects and case studies. For all the courses, the weighted average of each PO or PSO attainment is determined using the respective CO– PO/PSO mapping levels and attainment of course outcomes(internal) calculated from the continuous evaluation process (refer equation 3.3.1a).

$$\text{weighted average of } PO_i/PSO_j \text{ attainment} = \left[\frac{CO_k \text{ attainment (internal)}}{3}\right] * CO_k - PO_i/PSO_j \text{ mapping level} \quad \text{---3.3.1a}$$

Where, i=1,2,3...12 (number of POs), j=1,2,3 (number of PSOs defined) and k=1,2,3,...5 (number of COs defined).

Then, the average of weighted averages of POi/ PSOj attainment and university examination pass percentage is used to calculate the direct attainment of POi/PSOj, using equation 3.3.1b.

$$PO_i/PSO_j attainment\ (direct) = [Average\ of\ weighted\ PO_i/PSO_j attainment * 0.30] + [University\ examination\ pass\ percentage * 0.70]$$

---3.3.1b

Where, i=1,2,3...12 (number of POs), j=1,2,3 (number of PSOs defined)

The range of attainment percentages of PO (direct) and the corresponding attainment level are given in table 3.3.1 a below.

Table 3.3.1a Attainment level for internal assessment of PO

Attainment percentage ofPO	Attainment Level
Greater than 66%	3
Between 33% and 66%	2
Lesser than 33%	1

The following table 3.3.1b reveals the sample calculation of PO/PSO attainment (direct).

Table 3.3.1b Sample calculation for PO/PSO attainment (direct)

COs	CO attainment % (internal)	CO- PO_1 mapping levels	Weighted average PO_1 attainment	Sample calculation
CO_1	95%	-	0%	
CO_2	93%	1	31%	=(PO_1 attainment in % =[(93 % / 3) * 1])
CO_3	75%	-	0%	
CO_4	93%	-	0%	
CO_5	93%	-	0%	
Average of weighted averages PO_1 attainment			31%	= (31/1)
University examination pass percentage			84%	
PO_1 attainment in % (Direct)			68.10%	= (31%*0.30 + 84% * 0.70)
PO_1 attainment level (Direct)			3	If PO attainment % is greater than 66%, then attainment level is 3; if it is greater than or equal to 33% and lesser than or equal to 66%,

		then it is 2 and if it is less than 33%, it is 1

Indirect method of measuring PO attainment

Indirect method uses Course End Survey (CES) and the Exit Survey (ES) to calculate the PO/PSO attainment (indirect) of each course. CES is the opinion or feedback of the students which is used to calculate the perceived level of CO attainment of each course. ES is also collected from the students for each course, to predict the perceived attainment of POs/PSOs through successful completion of that course. CES is a questionnaire based on COs on a 10 point scale and is shown in table 3.3.1c. The students will be answering these questions based on their perceived level of the attainment of CO at the end of the course.

Table 3.3.1c Course End Survey

Course End Survey				
Name of the Subject with Subject Code:				
The course end survey is a questionnaire that is aimed at collecting students experienceat the end of each course. The purpose of this survey is to help us understand how well this course enabled students to learn which in turn helps in improving course delivery in future.				
Name: Univ. Reg. No : Department: Year/Semester :				
I. Comments on materials presented and quality of teaching				
Parameters on Course delivery	**Excellent**	**Good**	**Average**	**Poor**
Lectures presented were				
Hand out materials for each unit were				
II. Assessment of Course Outcomes:				
The course outcomes are statements that describe the expected accomplishments by the student at the end of the Course. Please rate each of them in terms of your preparedness for your end semester examinations.				

Course Outcomes		Level of Preparedness / achievement			
		Excellent (>8)	Good (7 – 8)	Fair (5- 6)	Poor (<5)
CO –I					
CO – II					
CO – III					
CO – IV					
CO – V					

Signature of the Student

Fig. 3.3.1 c Course End Survey

Course End Survey

Name of the Subject with Subject Code: CS3492 DATABASE MANAGEMENT SYSTEMS

The Course end survey is a questionnaire on student experiences distributed at the conclusion of each Course.The purpose of this survey is to help us to understand how well this Course enabled the students to learn, and to improve this Course delivery in the future.

Name: G.Kiruthika **Univ. Reg. No :** 922121104024

Department: CSE **Year/Semester :** II/IV

II. Comments on materials presented and quality of teaching

Parameters on Course delivery	Excellent	Good	Average	Poor
Overall the lectures presented were	✓			
The hand out material for Each unit was	✓			

II. Assessment of Course Outcomes:

The Course outcomes are statements that describe the expected accomplishments by the student at the end of the Course. Please rate each of them in terms of your preparedness for your end semester examinations.

Course Outcomes		Level of Preparedness / achievement			
		Excellent (>8)	Good (6 – 8)	Fair (5- 6)	Poor (<5)
CO –I	Construct SQL Queries using relational algebra	9			
CO – II	Design database using ER model and normalize the database	9			
CO – III	Construct queries to handle transaction processing and maintain consistency of the database		8		
CO – IV	Compare and contrast various indexing strategies and apply the knowledge to tune the performance of the database	9			
CO – V	Appraise how advanced databases differ from Relational Databases and find a suitable database for the given requirement.		8		

G.Kiruthika
Signature of the Student

Fig. 3.3.1 c Sample Course End Survey Format

SUBJECT NAME WITH CODE: CS3492 - DATABASE MANAGEMENT SYSTEMS
NAME OF THE FACULTY: Mrs.J.Dhanalakshmi AP/CSE

SL.NO.	REGISTER NO.	NAME	COURSE END SURVEY				
			CO - I	CO - II	CO - III	CO - IV	CO - V
1	922121104001	AARTHI N	9.00	9.00	9.00	9.00	9.00
2	922121104002	AMIRTHA SHREE N.	8.00	8.00	8.00	8.00	8.00
3	922121104003	ANAND CHARUKESAN K	10.00	10.00	10.00	10.00	10.00
4	922121104004	ANDRUES K	10.00	10.00	10.00	10.00	10.00
5	922121104005	ANISHA J	8.00	8.00	8.00	8.00	8.00
6	922121104006	ARUN PRAKASH P	7.00	8.00	7.00	8.00	8.00
7	922121104007	BAVANI K	8.00	8.00	8.00	8.00	8.00
8	922121104008	DEVAKI R	9.00	9.00	9.00	9.00	9.00
9	922121104009	DHANUSH PRAVEEN T	9.00	8.00	9.00	9.00	9.00
10	922121104010	DHARSHINI S	7.00	7.00	7.00	7.00	7.00
11	922121104011	DHIYANESH S	9.00	9.00	9.00	9.00	9.00
12	922121104012	HABIB RAHUMAN K	9.00	9.00	9.00	9.00	9.00
13	922121104013	HARINI S	9.00	9.00	9.00	9.00	9.00
14	922121104014	INDHIRARAJ S	9.00	8.00	9.00	9.00	9.00
15	922121104015	JEEVA G	9.00	7.00	7.00	7.00	8.00
16	922121104016	JEYARAMAN S	9.00	9.00	9.00	9.00	9.00
17	922121104017	JEYA SHREE S	9.00	9.00	9.00	8.00	9.00
18	922121104018	KAJALAKSHMI M	9.00	9.00	9.00	8.00	9.00
19	922121104019	KARPAGAM S	9.00	9.00	9.00	8.00	8.00
20	922121104020	KARTHEKEYAN M	9.00	9.00	8.00	7.00	9.00
21	922121104022	KAVIN P	9.00	9.00	9.00	9.00	7.00
22	922121104023	KAVIYA J	9.00	9.00	9.00	9.00	9.00
23	922121104024	KIRUTHIKA G	9.00	9.00	8.00	9.00	8.00
24	922121104025	KISHOR KUMAR S	7.00	8.00	7.00	8.00	6.00
25	922121104026	KOHILA K	8.00	8.00	8.00	8.00	8.00
26	922121104027	MADHAVARAJ C	9.00	9.00	9.00	9.00	7.00
27	922121104028	MAHIMA R	9.00	9.00	9.00	9.00	7.00
28	922121104030	MANIKANDAN B	9.00	9.00	8.00	9.00	9.00
29	922121104031	MANOJ KUMAR V	10.00	10.00	10.00	10.00	10.00
30	922121104032	MANTHRA SRI D	9.00	9.00	9.00	9.00	9.00
31	922121104033	MATHAVAN S	8.00	8.00	8.00	8.00	8.00
32	922121104034	MEENA S	9.00	9.00	8.00	9.00	8.00
33	922121104035	MOHAMMED RILA M	8.00	8.00	8.00	8.00	8.00
34	922121104036	NAVEEN KUMAR S	9.00	9.00	9.00	9.00	9.00
35	922121104037	NITHYA BALA M	9.00	9.00	9.00	9.00	8.00
36	922121104038	NIVETHITHA M	9.00	9.00	9.00	9.00	9.00
37	922121104039	PANOJKUMAR C	8.00	8.00	8.00	8.00	8.00
38	922121104040	PAVITHRAHARINI S	10.00	10.00	10.00	10.00	10.00
39	922121104041	PRADEEP M	10.00	10.00	10.00	10.00	10.00
40	922121104042	PRASANNA N	8.00	8.00	8.00	8.00	8.00
41	922121104043	RAKSHITHA V P	7.00	8.00	7.00	8.00	8.00
42	922121104044	SAKTHI PRIYA S	8.00	8.00	8.00	8.00	8.00

43	922121104045	SANTHANAKALEESWARI	9.00	9.00	9.00	9.00	9.00
44	922121104046	SANTHOSH K	9.00	8.00	9.00	9.00	9.00
45	922121104047	SATHIYA PRIYA N	7.00	7.00	7.00	7.00	7.00
46	922121104048	SHERIN SITHARA M	9.00	9.00	9.00	9.00	9.00
47	922121104049	SHIVANI K	9.00	9.00	9.00	9.00	9.00
48	922121104050	SHRUTHI LAYA S	9.00	9.00	9.00	9.00	9.00
49	922121104051	SRINIVASAN T	9.00	8.00	9.00	9.00	9.00
50	922121104052	SWARNAMBIKA V	9.00	7.00	7.00	7.00	8.00
51	922121104053	THAMEEM RAJA K	8.00	8.00	8.00	8.00	8.00
52	922121104054	TURIN PETCI J	10.00	10.00	10.00	10.00	10.00
53	922121104055	UMAR FAROOK J	10.00	10.00	10.00	10.00	10.00
54	922121104056	VAISHNAVI C	8.00	8.00	8.00	8.00	8.00
55	922121104057	VIDHYA SAGAR P	7.00	8.00	7.00	8.00	8.00
56	922121104058	VIJAYALAKSHMI T	8.00	8.00	8.00	8.00	8.00
57	922121104059	VIJAYKARTHIK S	9.00	9.00	9.00	9.00	9.00
58	922121104060	VIJAY SUBRAMANIYAM S	9.00	8.00	9.00	9.00	9.00
59	922121104061	VISHWADHARSHINI V	9.00	9.00	9.00	9.00	9.00
60	922121104062	YOGESHWARAN B	9.00	9.00	9.00	9.00	9.00
61	922121104063	YUVARAJ V	9.00	8.00	9.00	9.00	9.00
61	922121104301	ALAGU SURIYA.S	9.00	8.00	9.00	9.00	9.00
62	922121104302	DANIEL RAJ.L	9.00	9.00	9.00	9.00	9.00
63	922121104303	KANNAN.D.B	9.00	9.00	9.00	9.00	9.00
64	922121104304	MAHENDRAN. P	9.00	8.00	9.00	9.00	9.00
65	922121104305	SYED MUSHARAF.M	9.00	8.00	9.00	9.00	9.00
			0.87	0.86	0.86	0.87	0.86
		Excellent (>8)	47.00	37.00	41.00	41.00	38.00
		Good (7 - 8)	18.00	28.00	24.00	24.00	26.00
		Fair (5 - 6)	0.00	0.00	0.00	0.00	1.00
		Poor (<5)	0.00	0.00	0.00	0.00	0.00
		CO Attainment %	87.38%	86.15%	86.15%	86.62%	85.85%

CO attainment is calculated based on the weighted average of attainment perception of all the students, which is shown in table 3.3.1d

Table 3.3.1d – CO attainment % is calculated from CES

(filled up from the table 3.3.1c)

Name of the student	Course End Survey				
	CO - I	CO – II	CO – III	CO - IV	CO - V
Average (sum of CO/No. of students)					
Average/10					
Count - Excellent (>8)					
Count - Good (7 -8)					
Count –Fair (5 - 6)					
Count –Poor (<5)					
CO Attainment %					

The weighted average of POi/PSOj attainment is calculated from the CO attainment obtained from CES and COk– POi/ PSOjmapping level, is given in the equation 3.3.1c

$$\text{weighted average of } PO_i/PSO_j \text{attainment} = \left[\frac{CO_k \text{attainment (asperCES)}}{3}\right] * CO_k - PO_i/PSO_j \text{mappinglevel}$$

---3.3.1c

Where, i=1,2,3...12 (number of POs), j=1,2,3 (number of PSOs defined) and k=1,2,3,...5(number of COs defined)

The exit survey is a questionnaire prepared based on each PO/PSO on a 5 point scale and answered by every individual student after the completion of the course. The PO attainment from ES is calculated based on the weighted average of all the students of each PO and it is shown in table 3.3.1e.

Table 3.3.1e -Exit survey evaluation

PO No	PO Description						Total	weighted avg	% of Attain ment
		1	2	3	4	5			
PO1	Ability to apply the knowledge of mathematics, science, engineering fundamentals to solve engineering problems.								
PO2	Ability to Identify, review research literature and analyze Engineering problems.								
PO3	Ability to design solutions for complex engineering problems with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.								
PO4	Ability to conduct experiments, analyse data, interpret data and synthesis the information to provide valid conclusions.								
PO5	Ability to Create, select and use modern tools in developing solutions.								
PO6	Ability to apply reasoning to evaluate societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice..								
PO7	Ability to understand the impact of the engineering solutions in societal and environmental contexts and the need for sustainable development.								
PO8	Ability to apply ethical principles in your responsibilities								

PO9	Ability to Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings								
PO10	Ability to articulate ideas, communicate effectively, in writing and verbally.								
PO11	Ability to work, as a member and leader in a team, to manage projects and in multidisciplinary environments.								
PO12	Ability to engage in independent and life-long learning								
PSO1	To analyze, design and develop computing solutions by applying foundational concepts of Computer Science and Engineering								
PSO2	To apply software engineering principles and practices for developing quality software for scientific and business applications.								
PSO3	To adapt to emerging Information and Communication Technologies (ICT) to innovate ideas and solutions to existing/novel problems.								
Signature of the Coordinator							Signature of the HOD		

Then, the average of weighted averages of PO_i/ PSO_j(calculated using CES) and PO attainment obtained from ES are used to calculate the indirect attainment of PO_i/PSO_j, using the equation 3.3.1 d.

$$PO_i/PSO_j attainment\ (Indirect) = [Average of weighted averages of PO_i/PSO_j attainment\ calculated\ using\ CES * 0.70] + [PO_i/PSO_j\ attainment\ obtained\ from\ ES * 0.30] \quad \text{---- 3.3.1d}$$

Where, i=1,2,3…12 (number of POs) and j=1,2,3 (number of PSOs defined)

The attainment percentages of PO/PSO (indirect) and the corresponding attainment levels are mentioned in the table 3.3.1fgiven below.

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Exit survey Evaluation

PO No	PO Description	1	2	3	4	5	Total	weighted Avg	% of Attainment
PO1	Ability to apply the knowledge of mathematics, science, engineering fundamentals to solve engineering problems.	3	8	7	18	29	65	3.95	79.08
PO2	Ability to Identify , review research literature and analyze Engineering problems.	1	5	8	29	22	65	4.02	80.31
PO3	Ability to design solutions for complex engineering problemswith appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	0	4	10	23	28	65	4.15	83.08
PO4	Ablity to conduct experiments,analyse data, interpret data and synthesise the information to provide valid conclusions.	1	4	16	16	28	65	4.02	80.31
PO5	Ability to Create, select and use modern tools in developing solutions.	2	5	12	18	28	65	4.00	80.00
PO6	Ability to apply reasoning to evaluate societal, health, safety, legal and cultural issuesand the consequent responsibilities relevant to the professional engineering practice..	0	5	8	20	32	65	4.22	84.31
PO7	Ability to understand the impact of the engineering solutions in societal and environmental contexts and the need for sustainable development.	1	6	5	29	24	65	4.06	81.23
PO8	Abilityto apply ethical principles in your responsibilities	0	4	7	30	24	65	4.14	82.77
PO9	Ability to Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings	0	3	10	26	26	65	4.15	83.08
PO10	Ability to articulate ideas, communicate effectively, in writing and verbally.	1	3	10	22	29	65	4.15	83.08
PO11	Ability to work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	0	3	12	17	33	65	4.23	84.62
PO12	Ability to engage in independent and life-long learning	1	3	14	26	21	65	3.97	79.38
PSO1	To Exhibit design and programming skills to build and automate business solutions using cutting edge technologies	3	4	10	30	18	65	3.86	77.23
PSO2	To acquire Strong theoretical foundation leading to excellence and excitement towards research, to provide elegant solutions to complex problems.	0	5	13	20	27	65	4.06	81.23
PSO3	Ability to work effectively with various engineering fields as a team to design, build and develop system applications.	2	2	5	22	34	65	4.29	85.85
		Average							82%

Signature of the CoOrdinator

[J.DHANALAKSHMI]

Signature of the HOD

[C. Sujatha]

Dr C.SUJATHA
Professor & Head
Department of Computer Science and Engineering
SSM Institute of Engineering & Technology
Sindalagundu Post. Dindigul-624 002

Table 3.3.1f Attainment level for internal assessment of PO

Attainment percentage of the PO	Attainment Level
Greater than 66%	3
Between 33% and 66%	2
Lesser than 33%	1

The following table 3.3.1g reveals the sample calculation of PO attainment (indirect)

Table 3.3.1g: Sample calculation for PO attainment (indirect)

COs	CO Attainment % (As per Course End Survey)	PO_1 mapping	PO_1	Sample Calculation
CO1	84%	-	0%	
CO2	88%	1	29.33%	=(PO_1attainment in % = [(88 % / 3) * 1])
CO3	85%	-	0%	
CO4	87%	-	0%	
CO5	86%	-	0%	
Average PO_1 attainment as per CES			29.33%	= ((0+29.33+0+0+0)/1)
PO_1 attainment % as per Exit Survey			90%	
PO_1 attainment in % (Indirect)			47.53%	= (29.33%*0.70 + 90% * 0.30)
PO_1 attainment level (Indirect)			2	If PO attainment % is greater than 66%, then attainment level is 3; if it is greater than or equal to 33% and lesser than or equal to 66%, then it is 2 and if it is less than 33%, it is 1

Overall PO Attainment:

Then, the overall PO attainment of a course is calculated by sum of 80% of PO attainment (direct) and 20% of PO attainment (Indirect), as shown in the equation 3.3.1c.

Overall PO attainment= 0.8 * PO attainment (direct)+ 0.2 * PO attainment (Indirect)--- (3.3.1c)

3.3.2.Provide results of evaluation of PO&PSO (40)

Results of evaluation of PO (Direct):

INDEX	SUBJECT CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C101	HS3152	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00
C102	MA3151	3.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	3.00	0.00	3.00	3.00	0.00	0.00	0.00
C103	PH3151	3.00	3.00	3.00	3.00	3.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
C104	CY3151	3.00	2.00	2.00	2.00	0.00	2.00	3.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00
C105	GE3151	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	0.00
C106	GE3171	3.00	3.00	3.00	3.00	1.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00
C107	BS3171	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C108	HS3252	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00
C109	MA3251	2.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00
C110	PH3256	3.00	2.00	3.00	2.00	3.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C111	BE3251	3.00	3.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	3.00	0.00	0.00	2.00
C112	GE3251	3.00	2.00	3.00	0.00	3.00	0.00	0.00	0.00	0.00	3.00	0.00	3.00	3.00	3.00	0.00
C113	CS3251	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	0.00
C114	GE3271	3.00	3.00	0.00	0.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00
C115	CS3271	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00
C201	MA3354	2.00	2.00	2.00	2.00	1.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
C202	CS3351	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
C203	CS3352	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C204	CS3301	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C205	CS3391	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C206	CS3311	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C207	CS3381	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C208	CS3361	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C209	CS3452	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C210	CS3491	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C211	CS3492	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C212	CS3401	3.00	3.00	3.00	3.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	3.00	0.00	3.00	3.00
C213	CS3451	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00
C214	GE3451	3.00	3.00	2.00	2.00	0.00	3.00	3.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
C215	CS3461	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

C216	CS3481	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C301	CS3591	0.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	3.00	0.00	3.00	3.00	3.00	3.00
C302	CS3501	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C303	CB3491	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	0.00	0.00	2.00	3.00	3.00	3.00
C304	CS3551	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C305	CCS375	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C306	CCS334	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00
C307	CCS356	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C308	CS3691	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C309	CCS332	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C310	CCS370	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C311	CCS366	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
C312	OEE351	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00
C401	GE3791	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
C402	GE3751	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
C403	OHS351	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00
C404	OHS352	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00
C405	CS3811	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
PO Attainment		2.83	2.83	2.71	2.58	2.46	0.94	0.85	0.60	2.10	2.08	2.10	2.73	2.06	2.13	1.83

Results of evaluation of PO (Indirect):

INDEX	SUBJECT CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C101	HS3152	0.46	0.63	0.52	0.63	0.43	0.87	0.87	0.87	0.46	0.87	0.86	0.87	0.00	0.00	0.00
C102	MA3151	0.86	0.86	0.29	0.29	0.00	0.00	0.00	0.00	0.57	0.00	0.57	0.86	0.00	0.00	0.00
C103	PH3151	0.87	0.87	0.47	0.35	0.52	0.29	0.00	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00
C104	CY3151	0.86	0.38	0.51	0.30	0.00	0.46	0.54	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00
C105	GE3151	0.68	0.74	0.87	0.80	0.54	0.00	0.00	0.00	0.00	0.00	0.44	0.59	0.79	0.89	0.00
C106	GE3171	0.68	0.74	0.87	0.80	0.54	0.00	0.00	0.00	0.00	0.00	0.44	0.59	0.79	0.89	0.00
C107	BS3171	0.88	0.70	0.77	0.29	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C108	HS3252	0.82	0.82	0.82	0.82	0.75	0.82	0.82	0.82	0.60	0.82	0.82	0.82	0.00	0.00	0.00
C109	MA3251	0.86	0.86	0.29	0.29	0.29	0.00	0.00	0.00	0.58	0.00	0.58	0.86	0.00	0.00	0.00
C110	PH3256	0.88	0.39	0.59	0.39	0.68	0.29	0.39	0.00	0.00	0.00	0.00	0.59	0.00	0.00	0.00
C111	BE3251	0.57	0.52	0.29	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.57	0.00	0.00	0.29
C112	GE3251	0.89	0.30	0.60	0.00	0.60	0.00	0.00	0.00	0.00	0.89	0.00	0.60	0.60	0.60	0.00

C113	CS3251	0.57	0.67	0.67	0.34	0.57	0.34	0.34	0.29	0.57	0.29	0.81	0.67	0.53	0.62	0.00
C114	GE3271	0.87	0.58	0.00	0.00	0.29	0.29	0.29	0.00	0.00	0.00	0.00	0.58	0.58	0.29	0.29
C115	CS3271	0.54	0.69	0.79	0.50	0.40	0.50	0.00	0.00	0.69	0.29	0.69	0.69	0.69	0.69	0.00
C201	MA3354	0.87	0.75	0.57	0.57	0.00	0.00	0.00	0.00	0.00	0.72	0.00	0.00	0.00	0.00	0.00
C202	CS3351	0.88	0.88	0.88	0.88	0.53	0.47	0.29	0.29	0.29	0.29	0.47	0.76	0.41	0.76	0.47
C203	CS3352	0.62	0.51	0.35	0.45	0.51	0.28	0.28	0.00	0.34	0.34	0.34	0.62	0.62	0.68	0.57
C204	CS3301	0.45	0.62	0.28	0.51	0.56	0.28	0.28	0.00	0.34	0.40	0.28	0.68	0.56	0.51	0.62
C205	CS3391	0.57	0.39	0.52	0.48	0.57	0.00	0.00	0.00	0.74	0.51	0.34	0.52	0.71	0.48	0.47
C206	CS3311	0.69	0.52	0.57	0.40	0.58	0.00	0.00	0.00	0.46	0.46	0.63	0.69	0.63	0.52	0.75
C207	CS3381	0.52	0.52	0.57	0.46	0.58	0.00	0.00	0.00	0.46	0.52	0.46	0.51	0.46	0.57	0.57
C208	CS3361	0.69	0.63	0.46	0.63	0.29	0.00	0.00	0.00	0.58	0.52	0.69	0.58	0.52	0.81	0.69
C209	CS3452	0.63	0.76	0.83	0.62	0.41	0.00	0.00	0.00	0.49	0.77	0.77	0.83	0.63	0.69	0.76
C210	CS3491	0.70	0.35	0.64	0.58	0.39	0.00	0.00	0.00	0.52	0.46	0.52	0.75	0.39	0.39	0.52
C211	CS3492	0.58	0.46	0.75	0.58	0.36	0.00	0.00	0.00	0.58	0.58	0.63	0.58	0.58	0.35	0.75
C212	CS3401	0.46	0.52	0.88	0.29	0.00	0.00	0.39	0.00	0.00	0.00	0.00	0.29	0.00	0.19	0.29
C213	CS3451	0.56	0.56	0.56	0.43	0.28	0.00	0.00	0.00	0.62	0.51	0.51	0.38	0.33	0.47	0.42
C214	GE3451	0.80	0.50	0.28	0.28	0.00	0.63	0.69	0.00	0.00	0.00	0.00	0.52	0.00	0.00	0.00
C215	CS3461	0.69	0.52	0.52	0.46	0.58	0.00	0.00	0.00	0.63	0.63	0.57	0.57	0.52	0.52	0.63
C216	CS3481	0.69	0.75	0.69	0.58	0.36	0.00	0.00	0.00	0.46	0.40	0.75	0.63	0.69	0.52	0.69
C301	CS3591	0.00	0.46	0.29	0.14	0.50	0.00	0.00	0.00	0.00	0.43	0.00	0.29	0.44	0.48	0.43
C302	CS3501	0.85	0.79	0.74	0.62	0.56	0.00	0.00	0.00	0.74	0.57	0.45	0.69	0.51	0.51	0.57
C303	CB3491	0.86	0.75	0.74	0.75	0.80	0.00	0.00	0.00	0.57	0.00	0.00	0.34	0.80	0.80	0.86
C304	CS3551	0.50	0.67	0.42	0.56	0.56	0.00	0.00	0.00	0.73	0.62	0.62	0.37	0.47	0.42	0.45
C305	CCS375	0.53	0.58	0.82	0.53	0.70	0.00	0.00	0.00	0.52	0.53	0.58	0.47	0.49	0.33	0.58
C306	CCS334	0.81	0.87	0.81	0.81	0.81	0.00	0.00	0.00	0.64	0.52	0.75	0.58	0.64	0.75	0.75
C307	CCS356	0.58	0.81	0.46	0.58	0.58	0.00	0.00	0.00	0.58	0.51	0.72	0.52	0.64	0.46	0.35
C308	CS3691	0.75	0.58	0.87	0.70	0.35	0.00	0.00	0.00	0.29	0.64	0.64	0.69	0.58	0.43	0.75
C309	CCS332	0.45	0.51	0.57	0.40	0.74	0.00	0.00	0.00	0.39	0.34	0.57	0.45	0.57	0.63	0.45
C310	CCS370	0.47	0.64	0.64	0.76	0.41	0.00	0.00	0.00	0.64	0.64	0.41	0.52	0.62	0.41	0.64
C311	CCS366	0.60	0.60	0.44	0.55	0.33	0.00	0.00	0.00	0.33	0.55	0.44	0.49	0.60	0.49	0.71
C312	OEE351	0.86	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.86	0.86	0.86
C401	GE3791	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.00	0.00	0.00	0.86	0.00	0.00	0.00
C402	GE3751	0.47	0.28	0.28	0.43	0.44	0.29	0.28	0.29	0.57	0.87	0.28	0.29	0.42	0.28	0.36

C403	OHS351	0.56	0.71	0.71	0.56	0.71	0.71	0.71	0.71	0.57	0.83	0.67	0.83	0.00	0.00	0.00
C404	OHS352	0.83	0.83	0.28	0.28	0.00	0.00	0.00	0.00	0.55	0.00	0.55	0.83	0.00	0.00	0.00
C405	CS3811	0.87	0.88	0.88	0.88	0.88	0.58	0.00	0.59	0.83	0.83	0.58	0.29	0.71	0.73	0.49
PO Attainment		0.66	0.62	0.56	0.47	0.42	0.15	0.13	0.10	0.37	0.38	0.41	0.56	0.40	0.40	0.36

Target from(3.1.3)	**2.2**	**2.1**	**1.9**	**1.7**	**1.5**	**0.6**	**0.5**	**0.4**	**1.2**	**1.3**	**1.4**	**1.9**	**1.4**	**1.4**	**1.2**
Direct Attainment	**2.83**	**2.83**	**2.71**	**2.58**	**2.46**	**0.94**	**0.85**	**0.60**	**2.10**	**2.08**	**2.10**	**2.73**	**2.06**	**2.13**	1.83
Indirect Attainment (CSE 70%+PES 30%)	**3**	**2.3**	**2.3**	**2.3**	**2.3**	**1.6**	**1.6**	**1.6**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**
PO Attainment (80% PO Direct + 20% POIndirect)	**2.9**	**2.7**	**2.6**	**2.5**	**2.4**	**1.1**	**1.0**	**0.8**	**2.1**	**2.1**	**2.1**	**2.6**	**2.1**	**2.2**	**1.9**
	A	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**