<u>**Key Indicator- 2.6 Student Performance and Learning Outcome -**</u>

2.6.2 Attainment of Programme outcomes and course outcomes are evaluated by the institution.

Each course is defined with a set of course outcomes describing what the students are expected to know after learning each course. Course outcomes are oriented towards achieving the respective program outcomes.

Regulations 2017

i) Two CIA tests and one model exam is conducted per semester for 100 marks. As per University norms, each question paper consists of 10 questions under Part A with 2 marks each, Part B consists of 5 questions under either or pattern with 13 marks each and Part C consists of 1 question with 15 marks. Each question is mapped to some prescribed COs. A table is made in the answer sheet indicating the marks scored by each student of the class against each question and also against each CO addressed by the test.

ii) Two or three assignments are given combining 2 units in each semester for 10 marks each addressing different COs. The assignments may include short or long answer questions and a evaluation method with some criteria's such as clarity, neatness, understanding and content is followed for evaluating them.

iii) Two class tests are conducted for 20 marks containing 2 questions with 2 marks and one question with 16 marks.

iv) The end semester examination for 80 marks is conducted by the university. Attainment is considered as uniform for all COs of the course.

v) Based on the marks obtained in the Internal tests, class tests, assignments and University examinations(UE), the CO attainment computation is performed. For each CO, the number of students who scored more than the target level is computed in 3 degree scale. The set attainment levels are then verified.

vi) The CO level in Internal assessments and the CO level in UE are combined as 0.20*CIE Level + 0.80* UE Level.

vii) The set target levels of COs are compared, and targets are set for next academic year.

viii) The average value of the CO levels of each course are then used for mapping the PO attainments, using the array of target PO values for the course.

ix) The assessment system followed by the University in four different levels are shown in Table.2.6.2.1. The internal assessment tests are uploaded in the University web portals before the due dates.

Table: 2.6.2.1 Assessment system adopted by the University (Reg. 2013)

Assessment	Marks	Web Portal Entry	IE Weightage	UE Weightage	Total
Attendance	-	University Portal Entry - 1	-	-	-
Assessment I	100	University Portal Entry - 2	20	-	20
Assessment II	100	University Portal Entry - 3			
Assessment III	100	University Portal Entry - 4			
UE	100	-	-	80	80
Total Marks					100

Regulations 2021

Internal Assessment (IA) Methods:

- Class Test (CT) and MCQ/Case study- For Theory (Two Cycles)
- Continuous Internal Assessment (CIA) - For Theory (Two Cycles)
- End Semester University Examinations (UE)

Table: 2.6.2.2 Theory:

S.No	Assessment Component	Portion	Pattern	Marks	Weightage
1.	Unit Test	1 Unit	Part A- 2 x 5 =10 Marks Part B-10 x 1 =10 Marks	20	40
2.	Assignment	-	Creative Assignment	20	
3	CIA test	2.5 Units	Part A- 10 x 2 = 20 Marks Part B- 5 x 13 = 60 Marks Part C- 1 x15 = 15 Marks	100	60

For Theory with Lab Component: Internal (50) + External (50)
Table: 2.6.2.3 Internal – 50 Marks

Assessment I (40% Weightage) Theory Component		Assessment II (60% Weightage) Laboratory Component		Total Internal Assessment
Individual Assignment / Case Study / Seminar / Mini Project	Written Test	Evaluation of Laboratory, Observation, Record	Test	
40	60	75	25	*50

*50 - Total 200 - Weighted average will be converted to 50

Table: 2.6.2.4 External: End Semester University Examinations – 50 Marks

| S. No	Mode of Assessment	Duration	% Weightage
1.	Theory	3 Hours	35
2.	LAB	3 Hours	15

Table: 2.6.2.5 Regulations 2021 - Assessment for practical adopted by the University

S.No	Assessment Methods	Marks	Weightage
1	Lab Work with record	75	60
2	Model Exam	25	
3	End Semester University Examinations	100	40
Total			100

A.V.C. COLLEGE OF ENGINEERING, Mannampandal - 609 305
Department of Computer Science and Engineering
Course Attainment Calculation for Continous Internal Assessment(CIA) Test - 1
Internal Assessment -Attainment of Course Outcomes (Through Direct Assessment)
ACADEMIC YEAR - 2021 -2022 (EVEN)

COURSE CODE /	CS8451/ Design and Analysis of Algorithms	NBA Code	C213	Batch	2020-2024
SEMESTER /	III / II Year	Credits	3	Strength	65
FACULTY	Dr. K. Krishnakumari	Academic year	2021-22	Date of Exam	21-04-2022
REGULATIONS	2017			Target	55

S.No.	Reg. No.	Student Name	1 CO1	2 CO1	3 CO1	4 CO1	5 CO1	6 CO2	7 CO2	8 CO2	9 CO2	10 CO2	11(a) CO1	11(b) CO1	12(a) CO1	12 (b) CO1	13(a) CO1	13(b) CO1	14(a) CO1	14(b) CO2	15(a) CO2	15(b) CO2	16(a) CO2	16(b) CO2	T1 CO1	T2 CO2	CO3	CO4	CO5	CO6	TOTAL	Scale
		Max. marks	2	2	2	2	2	2	2	2	2	2	13	13	13	13	13	13	13	13	13	13	15	15	49	51	0	0	0	0	100	1/2/3
1	820320104001	Anitha R	2	0	1	0	0	0	0	0	0	0	9		10	8			7		10	4			30	21					51	1
2	820320104002	Anjana R	2	2	2	0	0	0	0	0	0	0	11		11		7		0		10	12			35	22					57	1
3	820320104003	Arularasi S	2	2	2	1	0	0	1	0	1	1	12	13		4		11			13	13			36	40					76	3
4	820320104004	Arun S	2	2	2	1	2	1	2	1	2	2	13	13			13		9		13	14			48	44					92	3
5	820320104005	Aysha Sumaya J	2	1	0	1	2	2	0	*	2	1	11	12			4	6			11			15	33	37					70	2
6	820320104006	Balaji M	*	1	*	0	0	*	*	*	*	*	12	7		*		*			9		4		20	13					33	0
7	820320104007	Bose V	1	1	1	1	2			*	1	*	6	9			2	3			12		13		23	29					52	1
8	820320104008	Devika R	2	2	2	1	0	1	0	1	1	0	11	10	12	8		9			13		11		37	36					73	3
9	820320104009	Dharshini S	2	1	1	2	0	0	1	0		11	10		6			5		10	9			33	25					58	1
10	820320104010	Dharshini V	2	*	2	0	0	0	*	0	*	11	12		13		5			12	14			40	31					71	3
11	820320104011	Ganesh Balaji B	*	*	0	*	0	*	*	*	1	*	5	3			*		*	*		2			8	3					11	0
12	820320104012	Hemachandran S.B	*	0	1	0	0	*	*	*	1	*	10		13	*		8			13	8			24	30					54	1
13	820320104013	Hari Rajan R	*	*	*	*	0	*	0	*	*	*	8	3		*		*	13		7		5		11	25					36	0
14	820320104014	Ishwarya P	2	2	2	2	2	2	1	1	2	1	13	13		12		13			13	15			48	48					96	3
15	820320104015	Jeevashree S	2	2	1	*	2	1	0	*	1	1	12	11		1		12			13	15			31	43					74	3
16	820320104016	Jepsnal J	1	0	0	*	0	0	*	0	*	1	9	8		*		*			*	6	7		18	14					32	0
17	820320104018	Kaviya R	2	1	1	*	0	0	0	*	1	1	9	8		*		3			13		8		21	26					47	3
18	820320104019	Kavya S	2	1	2	0	2	1	2	0	1	1	10	11		10			11		13		9		38	38					76	3
19	820320104020	Krithika S	2	2	2	1	2	2	2	1	2	1	13		13	13		13			13	15			48	49					97	3
20	820320104021	Manikandan P	2	1	2	2	0	2	0	1	1	2	13	13		12		13			13	15			45	47					92	3
21	820320104022	Manushri S	2	1	2	0	2	1	0	0	1	0	13	12		12		13			13	15			44	43					87	3
22	820320104023	Mohamedwashif V	1	0	1	1	*	1	*	*	2	2	8	11		*		*			10	10			22	25					47	0
23	820320104024	Prashanthini S V	2	1	1	0	0	0	0	1	0	11	12			6	11			14		14		35	40					75	3
24	820320104025	Rahul R	0	*	1	1	0	*	0	*	1	*	10	8			6	7			13	11			26	32					58	1
25	820320104026	Rajan A	*	1	0	0	0	*	*	*	1	*	9	12			8	*			13	12			30	26					56	1
26	820320104027	Rufas Stalin B	*	*	*	*	*	*	*	*	*	*	8	11		5		5			*	12	5		24	22					46	0
27	820320104028	Sakthianandham V	2	1	2	2	2	0	2	0	1	2	13	13		13		10			13	15			48	43					91	3
28	820320104029	Sakthi Rasmitha S	2	0	1	*	0	0	0	*	*	1	10	11		*		4			13	15			24	33					57	1
29	820320104030	Sakthivel S	2	1	2	0	0	0	0	1	1	1	12	12		12		13			13	14			41	43					84	3
30	820320104031	Santhiya S	2	2	2	2	2	0	0	0	0	0	11	5		5		9			11	8			31	28					59	1
31	820320104032	Santhoshini B	2	0	0	0	2	1	0	0	1	1	13		13	11		9			13	12			41	37					78	3
32	820320104033	Saranraj S	2	1	2	1	0	0	0	0	2	1	11	11			2	3			12	10			30	28					58	1
33	820320104034	Sasirekha S	2	2	*	0	1	0	0	0	0	0	10		8		6		4			11			29	15					44	0
34	820320104035	Semmozhiyan T	1	0	1	0	0	0	0	0	1	0	9	11		*		*			9		11		22	21					43	0
35	820320104036	Shangeetha L	2	2	*	0	0	1	0	0	1	1	9	12		*		6			13	11			25	33					58	1
36	820320104038	Siva Balan S	2	*	2	0	*	0	*	0	0	0	7	6		*			11		10		9		17	30					47	0
37	820320104039	Sowndharya R	2	1	0	0	0	0	0	0	0	0	4	8		7		6			10		6		22	22					44	0
38	820320104040	Srimathi R	2	0	0	0	0	0	0	0	1	1	11	12		4			0		13		9		29	24					53	1
39	820320104041	Srivallidevi R	2	0	0	0	0	0	1	0	0	0	9		12		3	7		11		14			26	33					59	1
40	820320104042	Sudharsan V	2	2	2	2	0	1	2	2	2	2	13	13			10		11		13	15			44	48					92	3
41	820320104043	Suguna A	2	1	0	0	0	0	0	0	0	0	11	7			6		6		11		12		27	29					56	1
42	820320104044	Swedha S	2	2	2	1	1	1	1	1	2	0	13	13		12		13			13	13		14	46	45					91	3
43	820320104045	Swetha S	2	2	2	2	2	1	0	0	0	0	13		12	7		10			11	11			42	33					75	3
44	820320104046	Thiricksha G	2	1	2	1	0	1	0	0	2	2	8	12		10		11			11	12			36	39					75	3
45	820320104047	Umesh S	0	0	0	0	0	1	0	0	1	0	5		11		*		6		10	8			16	26					42	0
46	820320104048	Vandhanaa N.C	2	2	2	0	0	1	0	1	0	*	12		12	12			4		13	14			42	33					75	3
47	820320104049	Vasanthakumar M	2	1	1	1	0	0	2	0	2	2	6	11		*		4			13	*			22	23					45	0
48	820320104050	Venkateshwaran K	2	1	*	*	0	*	*	*	0	1	10	12		*		*			11		13		25	25					50	0
49	820320104051	Vijayaragavi M	2	1	1	2	1	1	0	2	1	*	11	8			0		6		13		10		26	33					59	1
50	820320104052	Vikash E	2	1	2	*	2	0	0	0	0	0	11	8		*			*		10		*		26	10					36	
51	820320104301	Abhiraami V	0	0	0	0	0	0	0	0	0	0	10	1		7			5		5				25	22					47	0
52	820320104302	Abirami R	0	0	0	1	1		1	1	7		4		4			4		*		17	13					30	0
53	820320104303	Arulmozhi A	1	*	*	*	0		*		1	*		6		7				9	9			26	20					46	0
54	820320104304	Aruna N	0	*	0	*	*		*	*	0	10	6			4			8		11		20	25					45	0
55	820320104305	Ezhilmathy P	0	*	*	*	*		*	*	0	12	10		7	6			6	6			29	18					47	0
56	820320104306	Hari Prasath D	1	0	*	*	0		*	*	7	11			2	0		12		12		21	24					45	0
57	820320104308	Kavya M	1	0	*	*	0	0		*	*	10	8		4			11	12			23	28					51	1
58	820320104309	Maheswaran G	0	*	*	*	0	0	*	*	0	7	13		*			4	11	10			20	25					45	0
59	820320104310	Musharaf ali E M J	1	*	*	0	0	*	*	*	*	10	*		7		0			5		18	5					23	0
60	820320104311	Muthusivaraj N	0	*	*	*	*	0	*	*	*	7	9		*			11	11			16	22					38	0
61	820320104312	Sheela V G	2	0	*	*	*	0	0	0	9	6		7		6		11	10			24	27					51	1
62	820320104313	Sriram B	0	*	0	*	0	*	*	0	8	7		*		4		11		*		15	15					30	0
63	820320104314	Subiksha B	1	0	0	0	*	0	*	*	10	*		*		5		11		10		11	26					37	0
64	820320104315	Vijayasarathi R	*	*	*	*	*	*	*	*	*	*	8	11		5		5		*	12	5			24	22					46	0
65	820320104316	Vivaneswarajeevan K																							0	0					AB	

			CO1	CO1	CO1	CO1	CO1	CO2	CO2	CO2	CO2	CO2	CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO2	CO2	CO2	CO2	CO2	Target	27.0	28.1	0.0	0.0	0.0	0.0		
No. of Students omits the question (*)			6	6	5	7	3	10	9	15	5	9	0	0	11	0	7	0	1	1	0	0	No.	30	29	0	0	0	0		
No. of Students attended the Question			36	36	37	35	39	32	33	27	37	33	0	42	34	8	18	13	15	20	0	37	25	19	%	46.0	45.0	0.0	0.0	0.0	0.0		
Total No. of Students			65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65		0	0	0	0	0	0		
Marks Scored			87	48	55	29	32	25	17	13	44	30	22	614	501	122	211	113	126	250	30	652	374	274									
Average Mark Scored in this question			1.30	0.70	0.80	0.40	0.50	0.40	0.30	0.20	0.70	0.50	9.80		9.60		5.00		5.80		10.50		10.00										
Average % Mark Scored in this question			65%	35%	40%	20%	25%	20%	15%	10%	35%	25%	75%		74%		38%		45%		81%		67%										

Course Outcomes

At the end of the course the students can be able to:

				CO	Target	Attainment
CO1	C213.1	Design algorithm for various recursive and non-recursive problems.		CO1	55	46.0
CO2	C213.2	Apply the design techniques of Brute force and Divide and conquer		CO2	55	45.0
CO3	C213.3	Design algorithms using Dynamic programming and Greedy technique				
CO4	C213.4	Apply the design techniques of iterative improvement.				
CO5	C213.5	Interpret Class P, Class NP and NP Complete Problems.				
CO6	C213.6	Design algorithms using Backtracking and Branch and Bound techniques.				

	Scale (3) - >70	21
	Scale (2) - 61 to 70	1
	Scale (1) - 50 to 60	14
	Failed Students	10
	No. of Students Absent for the CIA	1

Summary of CO Assessment

Course Outcome	Questions used for assessment		No. of Qus	% Avg marks	% Avg marks
CO1	Part A	1,2,3,4,5	5	37%	
	Part B	11, 12,13	3	50%	28.9
	Part C				
CO2	Part A	6,7,8,9,10	5	21%	
	Part B	14, 15	2	82%	51.5
	Part C	16	1	67%	

CO Attainment in I CIA TEST

(Bar chart: CO1 Target 55, Attainment 46.0; CO2 Target 55, Attainment 45.0)

Figure 2.6.2a Analysis of Continuous Internal Tests, Class Tests and Assignments for Theory Courses (Regulations 2017)

The attainment of each course is evaluated using the excel template and the marks attained under each CO is posted and the overall attainment of each CO is evaluated as shown in Figure 2.6.2a and Figure 2.6.2b.

The chart showing the attainment of CO in internal tests under 3 degree scale for the expected level 2 is shown in Figure 2.6.2b.

INTERNAL TESTS - CO ANALYSIS
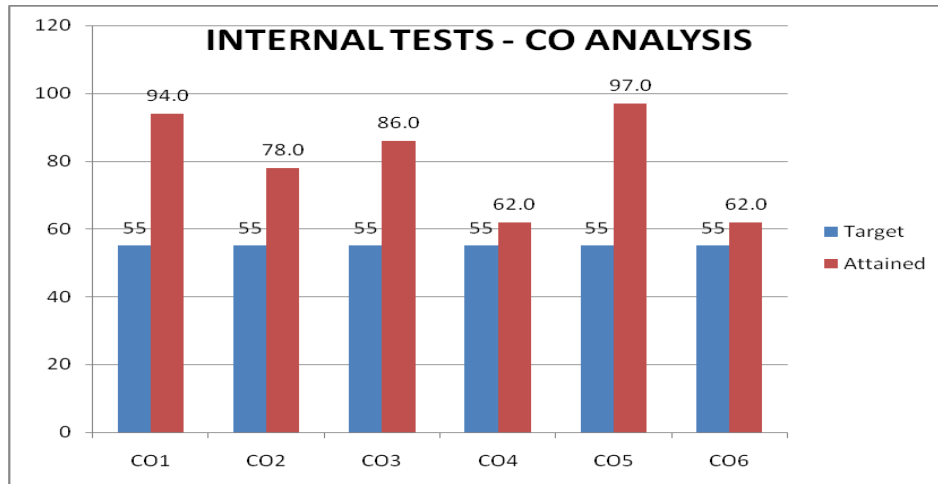
Figure 2.6.2b **Sample Chart for CO Target Vs Attained Level in CIA tests**

The marks atained by students in UE is compared with the target fixed for every academic year and is evaluated and posted the same value for all the COs. The attainment in UE is shown in Figure 2.6.2c.

A.V.C. COLLEGE OF ENGINEERING, Mannampandal - 609 305
Department of Computer Science and Engineering
University Assessment - COs Attainment

S.NO	REG. NO 82031910	NAME	Univ. Grade			
1	820320104001	Anitha R	A			
2	820320104002	Anjana R	A+			
3	820320104003	Arularasi S	A			
4	820320104004	Arun S	A+			
5	820320104005	Aysha Sumaya J	UA			
6	820320104006	Balaji M	B+			
7	820320104007	Bose V	A			
8	820320104008	Devika R	A+			
9	820320104009	Dharshini S	A			
10	820320104010	Dharshini V	A			
11	820320104011	Ganesh Balaji B	B			
12	820320104012	Hemachandran S.B	B			
13	820320104013	Hari Rajan R	B			
14	820320104014	Ishwarya P	A+			
15	820320104015	Jeevashree S	B+			
16	820320104016	Jepsnal J	B+			
17	820320104018	Kaviya R	B			
18	820320104019	Kavya S	A			
19	820320104020	Krithika S	A+			
20	820320104021	Manikandan P	A+			
21	820320104022	Manushri S	A+			
22	820320104023	Mohamedwashif V	B			
23	820320104024	Prashanthini S V	A			
24	820320104025	Rahul R	A			
25	820320104026	Rajan A	B			
26	820320104027	Rufas Stalin B	B			
27	820320104028	Sakthianandham V	A+			
28	820320104029	Sakthi Rasmitha S	A			
29	820320104030	Sakthivel S	A			
30	820320104031	Santhiya S	A			
31	820320104032	Santhoshini B	A			
32	820320104033	Saranraj S	B+			
33	820320104034	Sasirekha S	A+			
34	820320104035	Semmozhiyan T	B			
35	820320104036	Shangeetha L	A			
36	820320104038	Siva Balan S	B			
37	820320104039	Sowndharya R	B			
38	820320104040	Srimathi R	A			
39	820320104041	Srivallidevi R	B+			
40	820320104042	Sudharsan V	A+			
41	820320104043	Suguna A	B			
42	820320104044	Swedha S	A			
43	820320104045	Swetha S	B+			
44	820320104046	Thiricksha G	A			
45	820320104047	Umesh S	A			
46	820320104048	Vandhanaa N.C	A			
47	820320104049	Vasanthakumar M	B			
48	820320104050	Venkateshwaran K	A			
49	820320104051	Vijayaragavi M	A			
50	820320104052	Vikash E	B			
51	820320104301	Abhiraami V	B			
52	820320104302	Abirami R	U			
53	820320104303	Arulmozhi A	B			
54	820320104304	Aruna N	B+			
55	820320104305	Ezhilmathy P	B			
56	820320104306	Hari Prasath D	B			
57	820320104308	Kavya M	B+			
58	820320104309	Maheswaran G	B			
59	820320104310	Musharaf ali E M J	B			
60	820320104311	Muthusivaraj N	B			
61	820320104312	Sheela V G	B+			
62	820320104313	Sriram B	U			
63	820320104314	Subiksha B	B			
64	820320104315	Vijayasarathi R	B			
65	820320104701	Venkatesh B	U			
		No. of O Grade (91-100)	0			
		No. of A+ Grade (81-90)	10			
		No. of A Grade (71 - 80)	20			
		No.of B+ Grade (61 - 70)	9			
		No. of B Grade (50-60)	22			
		No. of U Grade	3			
		No. of UA	1			
Target for course outcome Attainment			55			
No of students above the target			61			
CO-Attainment University (%)			94			

Figure 2.6.2c Attainment in University Examinations

Overall Attainment Calculation based on Direct and Indirect methods

Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) are calculated in two ways as,

(i) Direct attainment: The direct attainment is measured based on the performance of the students in the internal assessments conducted by the Institute and external assessments conducted by the University (IA and UE).

(ii) Indirect attainment: The indirect attainment is measured based on various surveys such as Alumni survey, Graduate Exit survey and Employer survey.

The process flow involved in measuring the attainment of POs and PSOs is shown in Figure 2.6.2d.
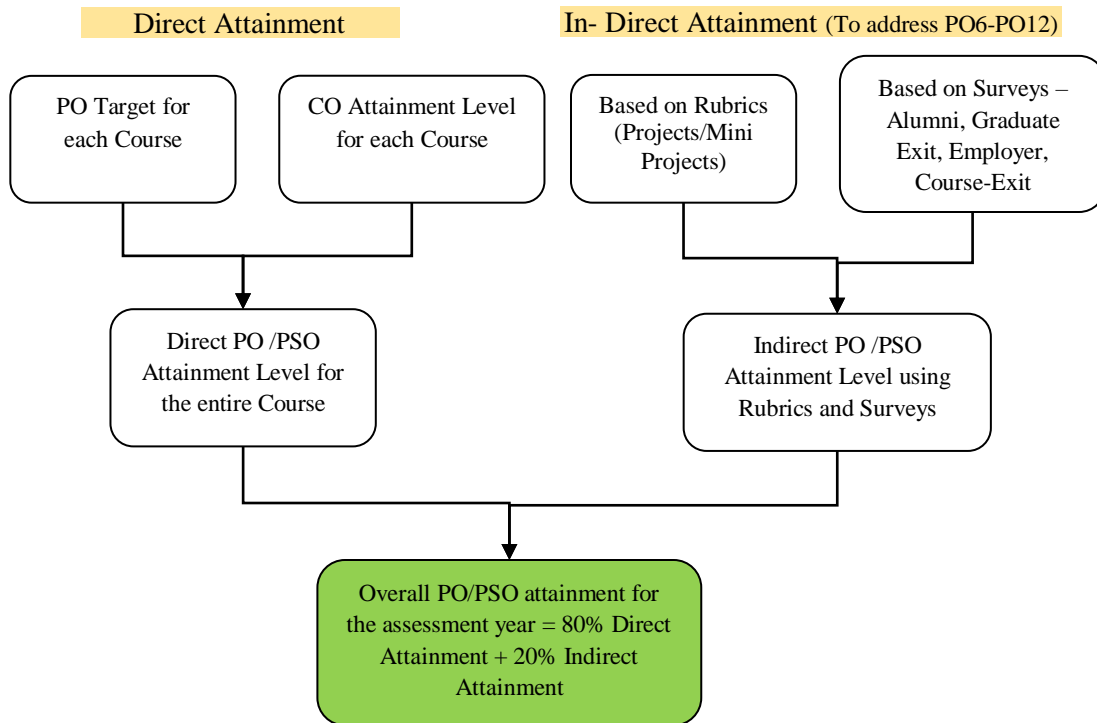
Figure 2.6.2d Attainment of PO/PSO

The course exit survey is shown in Figure 2.6.2e.

A.V.C COLLEGE OF ENGINEERING, MANNAMPANDAL,MAYILADUTHURAI						
Department of Computer Science and Engineering						
COURSE EXIT SURVEY						
ACADEMIC YEAR - 2021-22 (ODD SEMESTER)						

Name of the Faculty   Dr. K. Krishnakumari
Name of the Subject : Analysis of Algorithms   Batch : 2020-2024
Semester : II Year CSE / IV Semester   From Google Form : https://docs.google.com/forms/d/15pX4Mw8ikAWh9XhatNussotwVJKAjNUXcxnWGzOnFNqI/edit#responses

		No. of Students given				Overall
		SA	PA	A	D	Satisfied
C213.1	Design algorithm for various recursive and non-recursive problems.	40	19	6	0	84.1
C213.2	Apply the design techniques of Brute force and Divide and conquer	40	18	7	0	83.59
C213.3	Design algorithms using Dynamic programming and Greedy technique	37	17	10	1	79.49
C213.4	Apply the design techniques of iterative improvement.	28	25	12	0	74.87
C213.5	Interpret Class P, Class NP and NP Complete Problems.	27	27	11	0	74.87
C213.6	Design algorithms using Backtracking and Branch and Bound techniques.	36	25	3	1	82.56

Signature of the Staff

Figure 2.6.2e Course Exit Survey

The overall attainment based on direct and indirect assessment methods are tabulated in Figure 2.6.2f.

COURSE CODE / TITLE	CS8451/ Design and Analysis of Algorithms				NBA Code	C213
SEMESTER / YEAR	III / II Year				Academic year	2021-22
COORDINATOR	Dr. K. Krishnakumari				Credits	3
	Level 1 (55-64%), Level 2 (65-74%) and Level 3 (above 75%)					

<table>
<tr><td colspan="7" align="center">CO ATTAINMENT</td></tr>
<tr><td rowspan="2">COs</td><td>Internal (CO - INT)</td><td>University (CO - UNIV)</td><td rowspan="2">Direct Attainment</td><td>Indirect attainment</td><td>Overall Attainment</td><td rowspan="2">Attainment Level</td></tr>
<tr><td>(INT)</td><td>(UNIV)</td><td>(DA = 0.2INT + 0.8UNIV)</td><td>(IDA) (Course End survey)</td><td>(OA = 0.8DA + 0.2 IDA)</td></tr>
<tr><td>C504.1</td><td>88.00</td><td>94.00</td><td>92.80</td><td>84.10</td><td>91.06</td><td>3</td></tr>
<tr><td>C504.2</td><td>69.00</td><td>94.00</td><td>89.00</td><td>83.59</td><td>87.92</td><td>3</td></tr>
<tr><td>C504.3</td><td>80.00</td><td>94.00</td><td>91.20</td><td>79.49</td><td>88.86</td><td>3</td></tr>
<tr><td>C504.4</td><td>55.00</td><td>94.00</td><td>86.20</td><td>74.87</td><td>83.93</td><td>3</td></tr>
<tr><td>C504.5</td><td>94.00</td><td>94.00</td><td>94.00</td><td>74.87</td><td>90.17</td><td>3</td></tr>
<tr><td>C504.6</td><td>54.00</td><td>94.00</td><td>86.00</td><td>82.56</td><td>85.31</td><td>3</td></tr>
</table>

Figure 2.6.2f **Overall attainment based on direct and indirect assessment methods**

The expected and attained levels of PO's and PSO's are tabulated in Figure 2.6.2g.

A.V.C. COLLEGE OF ENGINEERING, Mannampandal - 609 305				
Department of Computer Science and Engineering				

COURSE CODE / TITLE	CS8451/ Design and Analysis of Algorithms	NBA Code	C213		
SEMESTER / YEAR	III / II Year	Credits	3	Batch	2020-2024
FACULTY	Dr. K. Krishnakumari	Target	55		
REGULATIONS	2017	Academic Year	2021-22		

Expected CO - PO/PSO Attainment Level

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C213.1	3	2	2										2		3
C213.2	3	2	2										3		2
C213.3	3	2	2										3		2
C213.4	3	2	2										2		3
C213.5	2	1	1										2		3
C213.6	2	2	2										2		2
C213	2.67	1.83	1.83										2.33		2.50

CO - PO/PSO Attained Level

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C213.1	3	2	2										2		3
C213.2	3	2	2										3		2
C213.3	3	2	2										3		2
C213.4	3	2	2										2		3
C213.5	2	1	1										2		3
C213.6	2	2	2										2		2
C213	2.67	1.83	1.83										2.33		2.50

Code	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C213	2.67	1.83	1.83	-	-	-	-	-	-	-	-	-	2.33		2.50
Attainment	2.67	1.83	1.83	-	-	-	-	-	-	-	-	-	2.33		2.50
Gap	0.00	0.00	0.00										0.00		0.00

Figure 2.6.2g **Expected vs attained PO's and PSO's**

The overall PO/PSO attained for the batch 2018-2022 for all the subjects and mapping is shown in Table 2.6.2.

Table 2.6.2 PO/PSO MAPPING FOR BATCH 2018-2022 (R2017)

S.No	Semester	SUB CODE	NBA CODE	SUB-NAME	PO 1	2	3	4	5	6	7	8	9	10	11	12	PSO 1	2	3
				A.V.C COLLEGE OF ENGINEERING,MANNAMPANDAL,MAYILADUTHURAI															
				DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING															
				PROGRAMME OUTCOME MAPPING FOR BATCH 2018-2022 (R2017)															
1	Semester I	C101	HS8151	Communicative English	-	-	-	-	-	-	-	1.89	1.76	1.89	-	1.39	-	-	0.94
2		C102	MA8151	Engineering Mathematics - I	0.67	0.33	0.33	-	-	-	-	-	0.33	-	-	-	-	-	0.5
3		C103	PH8151	Engineering Physics	2.00	1.00	1.00	-	-	-	-	-	-	-	-	-	-	-	0.94
4		C104	CY8151	Engineering Chemistry	1.47	0.74	1.36	-	-	-	-	-	-	-	-	-	-	-	0.74
5		C105	GE8151	Problem Solving and Python Programming	1.56	1.31	1.85	-	-	-	-	-	-	-	-	-	-	-	1.69
6		C106	GE8152	Engineering Graphics	1.30	0.87	1.30	-	1.45	-	-	1.02	0.58	1.02	-	1.60	0.58	-	0.58
7		C107	GE8161	Problem Solving and Python Programming Lab	3.00	2.17	2.67	-	2.50	-	-	2.00	1.33	1.17	-	1.33	2.00	1.00	2.00
8		C108	BS8161	Physics and Chemistry Laboratory I	2.00	1.40	1.60	-	-	-	-	2.00	1.00	2.00	-	-	-	-	1.00
9	Semester II	C109	HS8251	Technical English	-	-	-	-	-	-	-	1.83	1.65	1.65	-	0.92	-	-	0.92
10		C110	MA8251	Engineering Mathematics - II	1.05	0.80	1.10	-	-	-	-	-	1.07	-	-	-	0.67	-	-
11		C111	PH8252	Physics for Information Science	1.89	1.78	1.44	-	-	-	-	-	-	-	-	-	0.94	-	-
12		C112	BE8255	Basic Electrical, Electronics and Measurement Engineering	0.73	0.73	0.73	-	-	-	-	-	-	-	-	-	-	-	0.67
13		C113	GE8291	Environmental Science and Engineering	1.33	1.07	1.33	-	-	-	1.33	1.33	1.33	0.67	-	1.07	-	-	0.67
14		C114	CS8251	Programming in C	1.27	1.09	1.09	-	-	-	-	1.09	1.09	0.66	-	1.09	1.27	0.63	1.27
15		C115	GE8261	Engineering Practices Laboratory	2.00	2.00	1.00	1.00	2.00	2.00	-	1.80	1.00	1.00	-	1.00	-	-	1.00
16		C116	CS8261	C Programming Laboratory	2.00	1.17	2.00	-	-	-	-	2.00	1.00	1.00	-	1.00	2.00	2.00	-
17	Semester III	C201	MA8351	Discrete Mathematics	1.83	2.00	1.67	-	-	-	-	-	1.83	-	-	-	1.50	1.50	1.33
18		C202	CS8351	Digital Principles and System Design	2.83	2.17	2.17	2.17	3.00	-	-	-	-	-	-	3.00	3.00	3.00	3.00
19		C203	CS8391	Data Structures	2.67	2.00	2.00	-	-	-	-	-	-	-	-	-	2.33	2.33	2.50
20		C204	CS8392	Object Oriented Programming	2.67	2.00	2.00	-	-	-	-	-	-	-	-	-	2.33	-	2.50
21		C205	EC8395	Communication Engineering	2.67	2.00	2.00	-	-	-	-	-	-	-	-	-	1.83	1.00	1.83
22		C206	CS8381	Data Structures Laboratory	2.50	2.17	2.17	-	-	-	-	-	-	-	-	-	2.17	2.17	2.67
23		C207	CS8383	Object Oriented Programming Laboratory	2.83	1.83	1.83	-	-	-	-	-	-	-	-	-	1.83	1.83	2.83

No	Semester	Course	Code	Subject	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
24		C208	CS8382	Digital Systems Laboratory	2.50	2.17	2.17	-	-	-	-	-	-	-	-	-	2.17	2.00	2.67
25		C209	HS8381	Interpersonal Skills/Listening &Speaking	-	-	1.83	-	-	-	-	-	-	-	-	-	1.00	-	-
26	Semester IV	C210	MA8402	Probability and Queueing Theory	2.50	1.50	1.50	-	-	-	-	-	1.50	-	1.67	1.50	1.50	1.50	2.67
27		C211	CS8491	Computer Architecture	2.17	1.17	1.17	-	-	-	-	-	-	-	-	-	2.17		2.17
28		C212	CS8492	Database Management Systems	2.33	1.67	1.67	-	-	-	-	-	-	-	-	-	1.67		1.67
29		C213	CS8451	Design and Analysis of Algorithms	2.67	2.00	2.00	-	-	-	-	-	-	-	-	-	1.83	1.00	1.83
30		C214	CS8493	Operating Systems	2.67	2.00	2.00	-	-	-	-	-	-	-	-	-	2.33		2.50
31		C215	CS8494	Software Engineering	2.33	1.60	2.33	-	2.33	2.33	-	2.33	2.33	2.33	-	2.33	1.60	2.33	2.33
32		C216	CS8481	Database Management Systems Laboratory	3.00	2.83	2.83	-	-	-	-	1.00	3.00	3.00	-	2.00	2.17	2.00	2.67
33		C217	CS8461	Operating Systems Laboratory	2.33	1.60	2.33	-	2.33	2.33	-	2.33	2.33	2.33	-	2.33	1.60	2.33	2.33
34		C218	HS8461	Advanced Reading and Writing	-	-	-	2.83	-	-	-	3.00	2.80	3.00	-	3.00	-	2.00	2.00
35	Semester V	C301	MA8551	Algebra and Number Theory	2.50	2.67	2.17	-	-	-	-	2.17	1.83	-	-	-	1.33	1.50	1.33
36		C302	CS8591	Computer Networks	2.83	1.83	1.83	-	-	-	-	-	-	-	-	-	1.83	1.83	2.67
37		C303	EC8691	Microprocessors and Microcontrollers	2.67	2.00	2.00	-	-	-	-	-	-	-	-	-	2.33	-	2.50
38		C304	CS8501	Theory of Computation	2.50	1.67	1.67	-	-	-	-	-	-	-	-	-	2.33	-	2.50
39		C305	CS8592	Object Oriented Analysis and Design	2.83	1.83	1.83	-	-	-	-	-	-	-	-	-	1.83	1.83	2.67
40		C306	OCE551	Air Pollution and Control Engineering (OE1)	2.25	2.25	1.60	2.25	2.25	1.60	2.25	3.00	2.25	2.25	2.25	2.25	2.25	2.25	2.25
41		C331	EC8681	Microprocessors and Microcontrollers Lab	3.00	2.83	2.83	2.67	2.83	-	-	2.50	2.33	2.17	-	1.67	2.33	-	2.33
42		C332	CS8582	Object Oriented Analysis and Design Lab	2.83	1.83	1.83	-	-	-	-	-	-	-	-	-	1.83	1.83	2.83
43		C333	CS8581	Networks Laboratory	3.00	2.83	2.83	-	-	-	-	1.83	1.83	1.83		1.00	1.83		1.83
44	Semester VI	C334	CS8651	Internet Programming	2.00	3.00	3.00	-	-	-	-	-	-	-	-	-	2.67	2.83	2.67
45		C335	CS8691	Artificial Intelligence	2.67	1.67	2.67	-	-	-	-	-	-	-	-	-	1.67	2.67	2.67
46		C336	CS8601	Mobile Computing	2.83	1.83	1.83	1.83	-	-	-	-	-	-	-	-	2.83	1.83	2.17
47		C337	CS8602	Compiler Design	2.67	2.17	2.00	-	3.00	-	-	-	-	-	-	-	2.67	2.00	2.80
48		C338	CS8603	Distributed Systems	3.00	2.67	2.67	2.60	-	-	-	-	-	-	-	-	2.67	2.33	2.67
49		C340	IT8076	Software Testing (PE1)	2.83	2.17	2.17	2.17	2.17	-	-	-	2.17	2.17	-	-	2.17	2.17	2.83
50		C346	CS8661	Internet Programming Laboratory	3.00	2.83	2.83	-	3.00	-	-	1.00	3.00	3.00	-	1.00	3.00	2.00	2.00
51		C347	CS8662	Mobile Application Development Laboratory	3.00	2.80	2.25	2.67	3.00	-	-	-	2.50	2.67	3.00	2.25	2.17	2.50	2.50
52		C348	CS8611	Mini Project	3.00	2.50	2.50	1.00	1.00	1.00	1.00	1.83	1.83	1.83	1.00	1.00	1.83	2.00	1.83

#	Code	Course code	Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
53	C349	HS8581	Professional Communication	-	-	-	2.83	-	-	-	3.00	2.80	3.00	-	3.00	-	2.00	2.00
54	C401	MG8591	Principles of Management	2.67	2.00	2.00	-	-	-	-	-	-	-	-	-	2.33	-	2.50
55	C402	CS8792	Cryptography and Network Security	2.83	2.83	2.83	-	-	-	-	-	-	-	-	-	2.83	2.67	2.67
56	C403	CS8791	Cloud Computing	2.67	2.50	2.17	-	3.00	-	-	-	-	-	-	-	2.50	2.00	2.80
57	C413	OBM752	Hospital Management (OE2)	2.67	2.00	2.00	-	-	-	-	-	-	-	-	-	2.33	-	2.50
58	C436	CS8079	Human Computer Interaction (PE3)	2.67	2.33	2.67	-	-	-	-	-	-	-	-	-	2.67	1.80	1.60
59	C433	IT8074	Service Oriented Architecture	2.67	2.00	2.00	-	-	-	-	-	-	-	-	-	2.33	-	2.50
60	C443	CS8711	Cloud Computing Laboratory	3.00	2.50	2.50	2.50	2.50	2.50	-	-	-	-	-	-	3.00	2.00	2.50
61	C444	IT8761	Security Laboratory	3.00	2.83	2.83	-	-	-	-	1.83	1.83	1.83	-	1.00	1.83	-	1.83
62	C451	GE8076	Professional Ethics in Engineering (PE4)	2.00	3.00	3.00	-	-	-	-	-	-	-	-	-	2.67	2.83	2.67
63	C453	CS8078	Green Computing (PE5)	2.20	2.40	2.33	2.50	-	2.20	2.20	2.00	2.00	-	-	-	2.33	-	-
64	C459	CS8811	Project Work	2.50	2.33	2.60	2.67	3.00	2.33	2.33	1.33	2.83	2.83	2.83	1.80	2.17	2.83	2.17
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Through Direct Attainment: Attained				2.39	1.95	2.00	2.26	2.46	2.04	1.82	1.92	1.83	1.97	2.15	1.68	2.06	2.01	2.05
Indirect Attainment																		
Graduate Exit Survey (in %) : G				90.00	87.78	85.56	86.67	88.33	89.44	86.67	86.67	90.00	87.78	87.78	88.89	89.44	89.44	87.78
Alumni Survey(in %): A				79.6	77.6	78.6	79.1	79.6	79.6	79.1	80.6	81.6	77.6	78.6	79.1	80.6	78.1	76.0
Employer Survey(in %): E				75.0	68.8	75.0	75.0	46.9	43.8	56.3	75.0	66.7	71.9	66.7	75.0	70.8	73.4	67.2
Indirect (G*10%+A*5%+E*5%) in 20%				16.73	16.09	16.23	16.37	15.16	15.11	15.43	16.45	16.41	16.25	16.04	16.59	16.52	16.52	15.94
Indirect in 100%				83.65	80.46	81.17	81.85	75.78	75.56	77.17	82.24	82.07	81.25	80.20	82.96	82.58	82.60	79.69
Indirect Attainment (Graduate Exit Survey+Alumni Survey+Employer Survey)in 3 degree scale				3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Overall Attainment (80% Direct + 20% Indirect)				2.51	2.16	2.20	2.41	2.57	2.23	2.06	2.13	2.07	2.18	2.32	1.94	2.25	2.21	2.24
PO/PSO - Target for 2021-22				2.50	2.06	2.12	2.15	2.20	2.00	2.10	1.89	1.94	2.03	2.10	2.01	3	2.22	2.23

Rows 53–61 are grouped under **Semester VII**; rows 62–64 are grouped under **Semester VIII**.

The graphical representation of overall attainment of PO/PSO for the batch 2018-2022 is shown in Figure 2.6.2h.
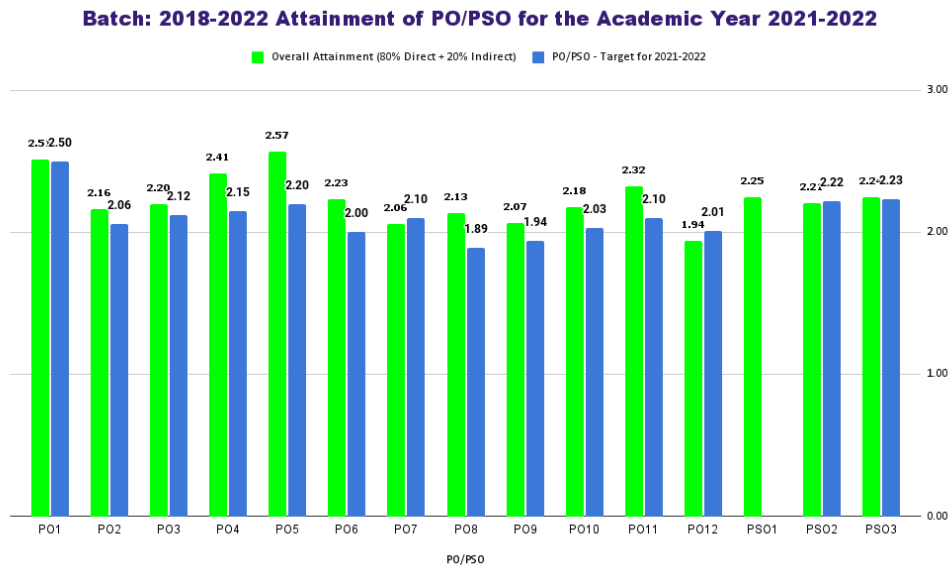
Figure 2.6.2h **Batch: 2018-2022 PO/PSO attained Target vs Attained**