

6.5.2. The institution reviews its teaching learning process, structures & methodologies of operations and learning outcomes at periodic intervals through IQAC set up as per norms and recorded the incremental improvement in various activities

I. Describe the Process followed to improve quality of Teaching Learning

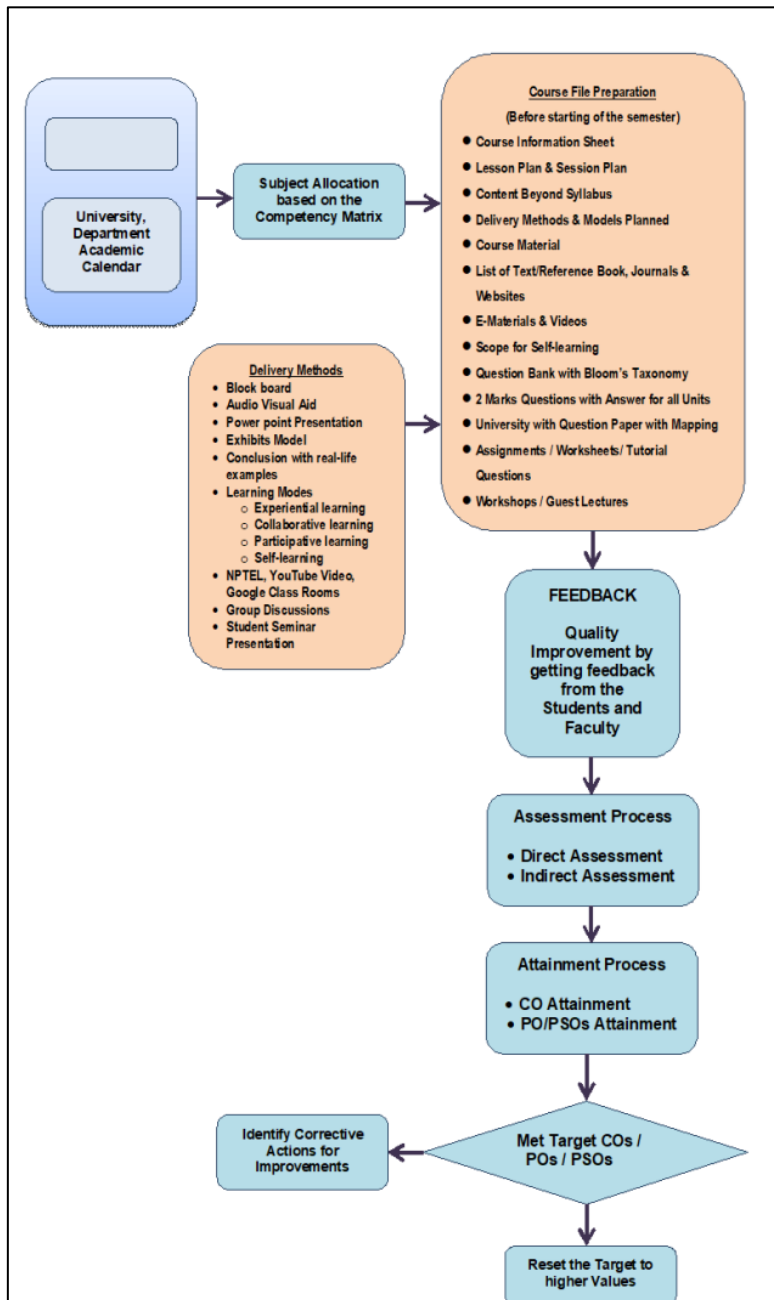
Teaching learning process is ensured and implemented through the following steps

On Each semester

1. List of courses are identified from the curriculum.
2. Based on faculty domain expertise and faculty willingness, competency matrix is prepared and the Courses are allotted to faculty members as per the competency matrix.
3. For each Course, Course Information Sheet is prepared. (Course Information Sheet includes the syllabus, text / Reference books, Course Prerequisite, Course Objectives, Course Outcomes(CO), CO mapping with Programme Outcomes(PO), Gaps in syllabus, Content beyond syllabus to meet Industry requirements, Additional Web resources references...)
4. Each course is divided into 45/60 sessions based on the syllabus, lesson and session plan is prepared by the faculty.
5. Every session is planned with a Recap of Previous Topics/Classes handled, Brief Explanation of Topics to be handled today , Explain the concept with analogy, Pre-requisites of the topic, Explanation about the topics/concepts step by step, Explain with examples, Plan for Q&A session / Activities, Summarization, Give the topics to be read by students for next class.
6. Question bank, 2 marks Questions with answers, Assignment questions, Internal Test question papers which are all the part of the course file is prepared during the semester.
7. These course files are audited by IQAC team. The audited report is sent to faculty and respective HoD for necessary corrective actions to ensure the quality.
8. Effective teaching learning process is implemented through various delivery mechanisms and pedagogies.
9. Effectiveness of delivery is ascertained with CCMs and feedback from students.
10. Students' performances were assessed through internal test and university examinations.
11. The assessment of CO, PO, and PSO attainment is made at the end of each semester, considering internal marks, assignment marks, course end surveys, and university examination results

12. Based on the outcome of the attainment level, modifications are made to set higher goals or identify corrective actions for improvement.

Process diagram for teaching learning process



Teaching Learning Process

SAMPLE COURSE INFORMATION SHEET



COLLEGE OF ENGINEERING

(Approved by AICTE and Affiliated to Anna University, Chennai)
Accredited by NAAC with 'A' grade
27, Thayanur, Trichy – 620009

COURSE INFORMATION SHEET

PROGRAMME: COMPUTER SCIENCE AND ENGINEERING	DEGREE : B.E.
COURSE : DISTRIBUTED COMPUTING	SEMESTER : V CREDITS : 03
COURSE CODE : CS3551 REGULATION : R 2021	COURSE TYPE : CORE
COURSE AREA/DOMAIN : CSE	CONTACT HOURS : 3 hours/Week.
CORRESPONDING LAB COURSE CODE (IF ANY): Nil	LAB COURSE NAME : NA

SYLLABUS

UNIT	DETAILS	HOURS
I	Introduction: Definition-Relation to Computer System Components – Motivation – Message -Passing Systems versus Shared Memory Systems – Primitives for Distributed Communication – Synchronous versus Asynchronous Executions – Design Issues and Challenges; A Model of Distributed Computations: A Distributed Program – A Model of Distributed Executions – Models of Communication Networks – Global State of a Distributed System.	8
II	Logical Time: Physical Clock Synchronization: NTP – A Framework for a System of Logical Clocks – Scalar Time – Vector Time; Message Ordering and Group Communication: Message Ordering Paradigms – Asynchronous Execution with Synchronous Communication – Synchronous Program Order on Asynchronous System – Group Communication – Causal Order – Total Order; Global State and Snapshot Recording Algorithms: Introduction – System Model and Definitions – Snapshot Algorithms for FIFO Channels.	10
III	Distributed Mutual exclusion Algorithms: Introduction – Preliminaries – Lamport's algorithm – RicartAgrawala's Algorithm – Token-Based Algorithms – Suzuki-Kasami's Broadcast Algorithm; Deadlock Detection in Distributed Systems: Introduction – System Model – Preliminaries – Models of Deadlocks – Chandy-Misra-Haas Algorithm for the AND model and OR Model.	10
IV	Consensus and Agreement Algorithms: Problem Definition – Overview of Results – Agreement in a Failure-Free System(Synchronous and Asynchronous) – Agreement in Synchronous Systems with Failures; Checkpointing and Rollback Recovery: Introduction – Background and Definitions – Issues in Failure Recovery – Checkpoint-based Recovery – Coordinated Checkpointing Algorithm - - Algorithm for Asynchronous Check pointing and Recovery	10
V	Definition of Cloud Computing – Characteristics of Cloud – Cloud Deployment Models – Cloud Service Models – Driving Factors and Challenges of Cloud – Virtualization – Load Balancing – Scalability and Elasticity – Replication – Monitoring – Cloud Services and Platforms: Compute Services – Storage Services – Application Services	7
TOTAL HOURS		45

TEXT/REFERENCE BOOKS:

T/R	BOOK TITLE/AUTHORS/PUBLICATION
T	Kshemkalyani Ajay D, Mukesh Singhal, "Distributed Computing: Principles, Algorithms and Systems", Cambridge Press, 2011.
T	Mukesh Singhal, Niranjan G Shivaratri, "Advanced Concepts in Operating systems", McGraw Hill Publishers, 1994.
R	George Coulouris, Jean Dollimore, Time Kindberg, "Distributed Systems Concepts and Design", Fifth Edition, Pearson Education, 2012.
R	Pradeep L Sinha, "Distributed Operating Systems: Concepts and Design", Prentice Hall of India, 2007.
R	Tanenbaum A S, Van Steen M, "Distributed Systems: Principles and Paradigms", Pearson Education, 2007.
R	Liu M L, "Distributed Computing: Principles and Applications", Pearson Education, 2004.
R	Nancy A Lynch, "Distributed Algorithms", Morgan Kaufman Publishers, 2003.
R	Arshdeep Bagga, Vijay Madiseti, " Cloud Computing: A Hands-On Approach", Universities Press, 2014

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
CS3451	Operating System	To know about Process and Mutual Exclusion and Deadlock	4
CS3492	DBMS	To know the basics of transaction, Deadlock and Memory	4

COURSE OBJECTIVES:

1	To introduce the computation and communication models of distributed systems
2	To illustrate the issues of synchronization and collection of information in distributed systems
3	To describe distributed mutual exclusion and distributed deadlock detection techniques
4	To elucidate agreement protocols and fault tolerance mechanisms in distributed systems
5	To explain the cloud computing models and the underlying concepts

COURSE OUTCOMES:

S.No.	DESCRIPTION	PO MAPPING
1	Interpret the foundations of distributed systems (K3)	1,2,3,4,5,9,10,11,12
2	Solve synchronization, asynchronization and state consistency problems(K3)	1,2,3,4,5,9,10,11,12
3	Apply resource sharing techniques in distributed systems (K3)	1,2,3,4,5,9,10,11,12
4	Apply working model of consensus and reliability of distributed systems (K3)	1,2,3,4,5,9,10,11,12
5	Explain the fundamentals of cloud computing (K2)	1,2,3,4,5,9,10,11,12

GAPS IN THE SYLLABUS - TO MEET INDUSTRY/PROFESSION REQUIREMENTS:

S.No.	DESCRIPTION	PROPOSED ACTIONS
1	Middleware Technologies	Covered in Class Lecture

PROPOSED ACTIONS: TOPICS BEYOND SYLLABUS / ASSIGNMENT/INDUSTRY VISIT / GUEST LECTURE / NPTEL, ETC.

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS/DESIGN:

1	Flyn's Classification
2	Distributed File system

WEB SOURCE REFERENCES:

1	https://onlinecourses.nptel.ac.in/noc21_cs87/preview
2	https://www.tutorialspoint.com/Distributed-Systems
3	https://www.geeksforgeeks.org/
4	https://www.confluent.io/learn/distributed-systems/

DELIVERY/INSTRUCTIONAL METHODOLOGIES:

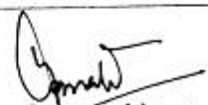
<input checked="" type="checkbox"/> CHALK & TALK	<input checked="" type="checkbox"/> STUD. ASSIGNMENT	<input checked="" type="checkbox"/> WEB RESOURCES	<input checked="" type="checkbox"/> Activity
<input checked="" type="checkbox"/> LCD	<input checked="" type="checkbox"/> STUD. SEMINARS	<input type="checkbox"/> ADD-ON COURSES	

ASSESSMENT METHODOLOGIES-DIRECT

<input checked="" type="checkbox"/> ASSIGNMENTS	<input checked="" type="checkbox"/> STUD. SEMINARS	<input checked="" type="checkbox"/> TESTS/MODEL EXAMS	<input checked="" type="checkbox"/> UNIV. EXAMINATION
<input type="checkbox"/> STUD. LAB PRACTICES	<input checked="" type="checkbox"/> STUD. VIVA	<input type="checkbox"/> MINI/MAJOR PROJECTS	<input type="checkbox"/> CERTIFICATIONS
<input type="checkbox"/> ADD-ON COURSES	<input type="checkbox"/> OTHERS		

ASSESSMENT METHODOLOGIES-INDIRECT

<input checked="" type="checkbox"/> ASSESSMENT OF COURSE OUTCOMES (BY FEEDBACK ONCE)	<input checked="" type="checkbox"/> STUDENT FEEDBACK ON FACULTY (TWICE)
<input type="checkbox"/> ASSESSMENT OF MINI/MAJOR PROJECTS BY EXT. EXPERTS	


 Prepared by :
 Faculty Incharge
 V. GOMATHI


 Approved by:
 (HOD)

SAMPLE LESSON PLAN



COLLEGE OF ENGINEERING

(Approved by AICTE and Affiliated to Anna University, Chennai)

Accredited by NAAC with 'A' Grade

27, Thayanur, Trichy - 620009

Department of Computer Science And Engineering

Lesson plan (Macro level)

Faculty Name: V. Gomathi

Designation: Asst. Prof.

Course Code & Name: CS3551 - Distributed Computing

Sem/Year: XI / V

Academic Year: 2023-2024

UNIT I: INTRODUCTION							
S.No.	Topics	Planned Date	Mode of Teaching	Reference	Course outcome	Actual date	Remarks
1	Introduction: Definition-Relation to Computer System Components – Motivation	31/07/23	B&C, Video	T1	CO1	31/7/23	*V1
2	<i>Flyn's Classification</i> , Message-passing systems versus shared memory systems – Primitives for distributed communication	01/08/23	PPT	T1	CO1	1/8/23	CBS
3	Synchronous versus asynchronous executions	02/08/23	B&C	T1	CO1	2/8/23	
4	Design issues and challenges.	03/08/23	PPT	T1	CO1	3/8/23	
5	A Model of Distributed Computations: A Distributed Program	04/08/23	PPT	T1	CO1	4/8/23	
6	<i>A model of distributed executions</i>	05/08/23	Activity, PPT	T1	CO1	5/8/23	Role Play
7	Models of communication networks	07/08/23	PPT	T1	CO1	7/8/23	
8	Global State of a Distributed System	08/08/23	PPT	T1	CO1	8/8/23	
Total No. of Hours prescribed per Unit by Anna University					8		
Total No. of Hours Required as per Lesson Plan					8		
Signature of Faculty				Signature of HOD			
UNIT II - LOGICAL TIME AND GLOBAL STATE							
9	Logical Time: Physical Clock Synchronization: NTP	09/08/23	Video, PPT	T1	CO2	9/8/23	*V2
10	A Framework for a System of Logical Clocks – Scalar Time	10/08/23	B&C	T1	CO2	10/8/23	
11	<i>Vector Time</i>	11/08/23	PPT & AS	T1	CO2	11/8/23	Assignment
12	Message Ordering Paradigms	12/08/23	PPT	T1	CO2	12/8/23	
13	Asynchronous Execution with Synchronous Communication	14/08/23	PPT	T1	CO2	14/8/23	
14	Synchronous Program Order on Asynchronous System	16/08/23	PPT	T1	CO2	16/8/23	
15	Group Communication – Causal Order – Total Order	17/08/23	PPT	T1	CO2	17/8/23	
16	Global State and Snapshot Recording Algorithms: Introduction	18/08/23	PPT	T1	CO2	19/8/23	
17	System Model and Definitions	19/08/23	PPT	T1	CO2	25/8/23	

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Department of Computer Science And Engineering

18	Snapshot Algorithms for FIFO Channels	22/08/23	PPT	T1	CO2	25/8/23	
Total No. of Hours prescribed per Unit by Anna University			10				
Total No. of Hours Required as per Lesson Plan			10				
Signature of Faculty			Signature of HOD				
UNIT III - DISTRIBUTED MUTEX & DEADLOCK							
19	Distributed mutual exclusion algorithms: Introduction	04/09/23	B&C	T1	CO3	7/9/23	
20	Preliminaries - Lamport's algorithm	05/09/23	PPT	T1	CO3	9/9/23	
21	Ricart-Agrawala algorithm	07/09/23	PPT	T1	CO3	11/9/23	
22	Maekawa's algorithm -	09/09/23	PPT	T1	CO3	12/9/23	
23	Suzuki-Kasami's broadcast algorithm.	11/09/23	PPT	T1	CO3	13/9/23	
24	Deadlock Detection in Distributed Systems: Introduction	12/09/23	Video	T1	CO3	14/9/23	*V3
25	System model - Preliminaries	13/09/23	PPT	T1	CO3	16/9/23	
26	Models of deadlocks	14/09/23	PPT	T1	CO3	19/9/23	
27	Chandy-Misra-Haas Algorithm for the AND model	16/09/23	B&C	T1	CO3	20/9/23	
28	Comparison of various ME algorithms		Assn	T1	CO3	20/9/23	Assignment
Total No. of Hours prescribed per Unit by Anna University			10				
Total No. of Hours Required as per Lesson Plan			10				
Signature of Faculty			Signature of HOD				
UNIT IV - CONSENSUS AND RECOVERY							
29	Consensus and Agreement Algorithms: Problem Definition	19/09/23	B&C	T1	CO4	21/9/23	
30	Overview of Results	20/09/23	PPT	T1	CO4	25/9/23	
31	Agreement in a Failure-Free System (Synchronous and Asynchronous)	21/09/23	B&C	T1	CO4	26/9/23	
32	Agreement in Synchronous Systems with Failures:	23/09/23	B&C	T1	CO4	27/9/23	
33	Checkpointing and Rollback Recovery: Introduction, Background and Definitions	25/09/23	B&C	T1	CO4	29/9/23	
34	Issues in Failure Recovery	26/09/23	B&C	T1	CO4	30/9/23	
35	Checkpoint-based Recovery	27/09/23	B&C	T1	CO4	3/10/23	
36	Coordinated Checkpointing Algorithm	30/09/23	B&C	T1	CO4	4/10/23	
37	Algorithm for Asynchronous Checkpointing and Recovery	03/10/23	PPT	T1	CO4	7/10/23	
38	Distributed File Systems	04/10/23	PPT	T1	CO4	7/10/23	CBS
Total No. of Hours prescribed per Unit by Anna University			10				
Total No. of Hours Required as per Lesson Plan			10				
Signature of Faculty			Signature of HOD				



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Department of Computer Science And Engineering

UNIT V - CLOUD COMPUTING						
39	Definition of Cloud Computing – Characteristics of Cloud – Cloud Deployment Models	13/10/23	B&C	T2	CO5	14/10/23
40	Cloud Service Models –	14/10/23	PPT	T2	CO5	16/10/23
41	<i>Driving Factors and Challenges of Cloud</i>	16/10/23	PPT	T2	CO5	17/10/23 Seminar
42	Virtualization – Load Balancing	17/10/23	PPT	T2	CO5	18/10/23
43	Scalability and Elasticity	18/10/23	B&C	T2	CO5	19/10/23
44	– Replication – Monitoring	19/10/23	B&C	T2	CO5	21/10/23
45	Cloud Services and Platforms: Compute Services, Storage Services and Application Services	25/10/23	B&C	T2	CO5	25/10/23
46	<i>Middleware</i>	26/10/23	PPT	T2	CO5	25/10/23 CBS
Total No. of Hours prescribed per Unit by Anna University					8	
Total No. of Hours Required as per Lesson Plan					8	
Signature of Faculty			Signature of HOD			

V1. <https://www.youtube.com/watch?v=ajjOEtizM4> <https://www.youtube.com/watch?v=af9hZMiEe5U>

V2. <https://www.youtube.com/watch?v=6C4pPC3dVk>

V3. <https://www.youtube.com/watch?v=ZJ1LLAB0mJ0>

Total No. of Hours prescribed by Anna University for Completion of the Course		45
Total No. of Hours Required as per Lesson Plan to complete the Course		45
No. of Hours Required for covering Content Beyond Syllabus		01
Total No. of Lecture Hours for Completion of the Course		46
Prepared by	Name: V. Gomathi Designation: Assistant Professor	Sign
Approved by	Name: J. SURESH Designation: Head of the Department	Sign

SAMPLE SESSION PLAN



Faculty Name : V.Gomathi Designation & Department : AP/CSE
 Academic Year : 2023-24 Class/Sem : III/V
 Course Code & Name : CS3551 –Distributed Computing
 Topics Discussed : Introduction & Distributed Computing (Unit 1)
 Planned Date of Lecture : 31/7/2023

	Description	Mode of Teaching	Time in Mins	Remarks
1	Intro about the syllabus/Course Objectives/ Overview about unit-I and Distributed System	Oral	5	
2	Brief Explanation of Topics to be handled today Short intro about the topic Distributed System.	Oral	5	
3	Pre requisites topics Hardware Components of computer	Board & Chalk	10	
4	Explanation about the topics/concepts step by step Definition and Motivation of DC , Relation to computer system components, Models of Distributed Systems	PPT & Video	20	Video. https://www.youtube.com/watch?v=ajjOEltiZm4
5	Real time examples of the topics WWW, Ubiquitous Computing	Board & Chalk	5	
6	Plan for Q&A session/ Activities/ Basic concept Oral Questions	ORAL	3	
7	Give the topics to be read by students for next class Flyn's classification and message communication	ORAL	2	

Topics Discussed : Flyn's Classification, Message-passing systems versus shared memory systems –Primitives for distributed communication (Unit 1)
 Date of Lecture : 1/8/2023

	Description	Mode of Teaching	Time in Mins	Remarks
1	Recap of Previous Topics/Classes handled Definition and Need of Distributed computing , Models of distributed systems	Oral	2	
2	Brief Explanation of Topics to be handled today Classification of computers, Processor communication	Board & Chalk	3	
3	Pre-requisites of the topic Instruction execution, Basics of Communication	B&C	3	
4	Explanation about the topics/concepts step by step Flyn's Classification , Message-passing systems, shared memory systems, Comparison, Primitives for distributed communication	PPT	20	Content Beyond the Syllabus: Flyn's Classification
5	Explain with examples Example: Teachers and students communications	B&C	10	
6	Plan for Q&A session/ Activities Oral Questions	Oral	7	
7	Summarization Classification of computers, Processor communication	Oral	3	
8	Give the topics to be read by students for next class Synchronous versus asynchronous executions	Oral	2	

A) Academic Calendar

As this is an affiliated institution, Anna university guidelines are followed by this institution. As the AnnaUniversity releases the semester schedule, the academic calendar is prepared for the semester. The process is as follows.

1. The government holidays and National Holidays in that duration are identified.
2. 12 teaching days is allocated for each unit. After the completion of every unit, the internal assessment tests are planned as follows.
 - Internal Assessment – I: (Cycle Test 1) – Unit1 (50%), Unit 2 (50%)
 - Internal Assessment – II: (Cycle Test 2) – Unit 3 (50%), Unit 4 (50%)
 - Internal Assessment – III: (Model Exam) – All 5 Units
 - Model Practical exam is conducted for Laboratory Courses
3. The Dates for all the activities are specified in the academic calendar
 - Syllabus Completion Date for each unit
 - IQAC Audit Dates
 - Internal Assessment Dates
 - Internal Assessment Web Portal Entry Dates
 - Class Committee Meetings
 - Association Inaugural Function for every department
 - Symposiums
 - National Celebrations – Independence Day, Republic Day
 - College Level - Sports Day, Annual Day, Graduation Day...

Once the rough draft of the academic calendar is prepared, it is circulated to HoDs, Exam cell, Dean and Management for any corrections or suggestions. After incorporating the suggestions, the academic calendar is sent to all faculty, Admin office and students for necessary follow ups.

ACADEMIC SCHEDULE –2022-23 EVEN SEMESTER (ANNA UNIVERSITY)

Date: 30.03.2023

CENTRE FOR ACADEMIC COURSES
ANNA UNIVERSITY: : CHENNAI – 600 025

REVISED



ACADEMIC SCHEDULE FOR NON-AUTONOMOUS AFFILIATED COLLEGES
February 2023 – June 2023 (Even Semester – Except Semester II)
UG / PG (FT/PT) Degree Programmes

Sl. No.	Programme	Semester	Commencement of Classes	Last working day		Commencement of Practical Examinations		Commencement of End Semester Examinations	
				Existing	Revised	Existing	Revised*	Existing	Revised*
1.	B.E. / B.Tech.(Full-Time)	IV,VI	06.02.2023	12.05.2023	24.05.2023***	15.05.2023	26.05.2023	26.05.2023	05.06.2023
2.	B.E. / B.Tech.(Full-Time)	VIII							
3.	B.Arch. (Full-Time)	IV,VI,VIII,X							
4.	B.E. / B.Tech. (Part-Time)	IV,VI	06.02.2023	12.05.2023**	-	15.05.2023	-	26.05.2023	-
5.	M.B.A.(Full-Time & Part-Time)	IV							
6.	M.B.A. (5 Yrs-Integrated)	IV,VI,VIII,X							

RE - OPENING DAY FOR THE NEXT SEMESTER: 07.08.2023 (Monday)

* To provide additional classes for Skill Based Courses.

NOTE:

1. The Theory and Practical Examination schedules will be published in due course (Practical Examinations will be conducted before the theory examinations).
2. If necessary, loss of classes due to various curricular / co-curricular activities of the department / college may be compensated by conducting classes on Saturdays.

** In order to ensure minimum no. of working days, the following Saturdays are declared as working days.

Sl. No.	Working Days (Saturdays)	Time Table of the Week Day to be Followed
1.	11.02.2023	Monday
2.	18.02.2023	Tuesday
3.	25.02.2023	Wednesday
4.	04.03.2023	Thursday
5.	11.03.2023	Friday
6.	18.03.2023	Monday

Sl. No.	Working Days (Saturdays)	Time Table of the Week Day to be Followed
7.	25.03.2023	Tuesday
8.	01.04.2023	Wednesday
9.	29.04.2023	Thursday
10.	06.05.2023	Friday
11.	13.05.2023	Monday***
12.	20.05.2023	Tuesday***

U/A 30/3/2023
DIRECTOR
ACADEMIC COURSES

DAC - SB

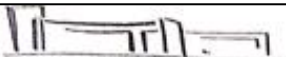
CARE - ACADEMIC CALENDAR FOR –2022-23 (EVEN SEMESTER)

CARE COLLEGE OF ENGINEERING																
AY 2022-23 : IV,VI & VIII Semester Academic Calendar																
		Feb-23			Mar-23			Apr-23			May-23					
Date	Day	Events	WD	Date	Day	Events	WD	Date	Day	Events	WD	Date	Day	Events	WD	
1	Wed	IV,VI&VIII SEM OPEN / Course File Audit	1	1	Wed		24	1	Sat	CT 2 QP Audit / Symposium - CSE,AD	50	1	Mon	May Day	#	
2	Thu		2	2	Thu	CT 1 QP Audit	25	2	Sun	Holiday	#	2	Tue	Model Theory	71	
3	Fri		3	3	Fri	Unit 2 Completion	26	3	Mon		51	3	Wed	Model Theory	72	
4	Sat	Holiday	#	4	Sat	Sports Day	27	4	Tue	Unit 4 Completion	52	4	Thu	Model Theory	73	
5	Sun	Holiday	#	5	Sun	Holiday	#	5	Wed	CT - 2	53	5	Fri	Model Theory	74	
6	Mon		4	6	Mon	CT - 1	28	6	Thu	CT - 2	54	6	Sat	Model Theory	75	
7	Tue		5	7	Tue	CT - 1	29	7	Fri	Good Friday	#	7	Sun	Holiday	#	
8	Wed		6	8	Wed	CT - 1	30	8	Sat	Holiday	#	8	Mon	Model Theory	76	
9	Thu		7	9	Thu	CT - 1	31	9	Sun	Holiday	#	9	Tue	Model Practical	77	
10	Fri		8	10	Fri	CT - 1	32	10	Mon	CT - 2	55	10	Wed	Model Practical	78	
11	Sat		9	11	Sat	CT - 1	33	11	Tue	CT - 2	56	11	Thu	Model Practical / MT Answer Sheet Audit	79	
12	Sun	Holiday	#	12	Sun	Holiday	#	12	Wed	CT - 2	57	12	Fri	Model Practical, LWD	80	
13	Mon		10	13	Mon		34	13	Thu	CT - 2	58	13	Sat	Holiday	#	
14	Tue		11	14	Tue		35	14	Fri	Tamil New Year	#	14	Sun	Holiday	#	
15	Wed		12	15	Wed	CT 1 Answer Sheet Audit	36	15	Sat	Holiday	#	15	Mon	University Practical Starts	#	
16	Thu		13	16	Thu		37	16	Sun	Holiday	#	16	Tue		#	
17	Fri		14	17	Fri		38	17	Mon		59	17	Wed		#	
18	Sat	Unit 1 Completion	15	18	Sat	Unit 3 Completion	39	18	Tue		60	18	Thu		#	
19	Sun	Holiday	#	19	Sun	Holiday	#	19	Wed	CT 2 Answer Sheet Audit / CCM 3 (CSE AD)	61	19	Fri		#	
20	Mon	CCM 1 (CSE,AD)	16	20	Mon	CCM 2 (CSE,AD)	40	20	Thu	CCM 3	62	20	Sat		#	
21	Tue	CCM 1 (CIVIL,ECE,MECH)	17	21	Tue	CCM 2 (CIVIL,ECE,MECH)	41	21	Fri		63	21	Sun	Holiday	#	
22	Wed		18	22	Wed	Telugu New Year	#	22	Sat	Annual Day	64	22	Mon		#	
23	Thu		19	23	Thu	Symposium - ECE	42	23	Sun	Holiday	#	23	Tue		#	
24	Fri		20	24	Fri		43	24	Mon		65	24	Wed		#	
25	Sat		21	25	Sat	Symposium - MECH	44	25	Tue	Unit 5 Completion	66	25	Thu		#	
26	Sun	Holiday	#	26	Sun	Holiday	#	26	Wed	Revision	67	26	Fri	University Theory Starts	#	
27	Mon		22	27	Mon	Symposium - CIVIL	45	27	Thu	Revision / MT QP Audit	68	27	Sat	Holiday	#	
28	Tue		23	28	Tue		46	28	Fri	Revision	69	28	Sun	Holiday	#	
				29	Wed		47	29	Sat	Revision	70	29	Mon		#	
				30	Thu		48	30	Sun	Holiday	#	30	Tue		#	
				31	Fri		49					31	Wed		#	
		Working Days	23			Working Days	26			Working Days	21			Working Days	10	

Total Working Days : 80 | Commencement of Univ. Theory Exam 26.05.2023

S. Phat

CSE - DEPARTMENT CALENDER – 2022-23 EVEN SEMESTER

CARE  COLLEGE OF ENGINEERING (Approved by AICTE and Affiliated to Anna University, Chennai) 27, Thayanur, Trichy – 620009		
Academic Calender (2022-2023 - EVEN Semester)		
Department of Computer Science - UG - II,III,IV YEARS		
S.No	Planned activity	Date
1	Commencement of Classes (II,III and IV Year)	01.02.2023
2	VAC on Python Coding	06.02.2023 to 11.02.2023
3	Unit 1 Completion	18.02.2023
4	VAC on AR/VR	Feb to May 2023
5	CCMI	20.02.2023
6	Workshop	24.02.2023
7	VAC on Website Development	25.02.2023
8	Training Program	01.03.2023
9	CT1 QP Audit	02.03.2023
10	Alumini Interaction	02.03.2023
11	Unit 2 Completion	03.03.2023
12	Sports Day	04.03.2023
13	CT1 Exam	06.03.2023 to 11.03.2023
14	CT1 Answer Script Audit	15.03.2023
15	Seminar	15.03.2023
16	MOU	15.03.2023
17	Awareness Program on Overseas Higher Education	16.03.2023
18	Unit 3 Completion	18.03.2023
19	Industrial Visit(III year)	17.03.2023
20	MOU	20.03.2023
21	CCM2	20.03.2023
22	Industrial Visit(II Year)	23.03.2023
23	CT2 QP Audit	01.04.2023
24	Symposium	01.04.2023
25	Unit 4 Completion	04.04.2023
26	CT2 Exam	05.04.2023 to 13.04.2023
27	CT1 Answer Script Audit	19.04.2023
28	CCM3	19.04.2023
29	Annual Day	22.04.2023
30	Guest Lecture	24.04.2023
31	Unit 5 Completion	25.04.2023
32	Model QP Audit	27.04.2023
33	Guest Lecture	27.04.2023

34	Model Exam	02.05.2023 to 08.05.2023
35	Model Practical Exam	09.05.2023 to 12.05.2023
36	Training Program	10.05.2023 to 11.05.2023
37	Model Exam Answer Script Audit	11.05.2023
38	University Practicals Starts	15.05.2023
39	University Theory Starts	26.05.2023

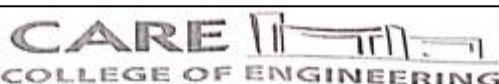


HOD

HEAD,

Department of Computer
Science and Engineering,
CARE College of Engineering
Trichy - 620 005.

CSE - ADHERECE CALENDER 2022-23 (EVEN SEMESTER)



(Approved by AICTE and Affiliated to Anna University, Chennai)
27, Thayamur, Trichy - 620009

Academic Calender (2022-2023 - EVEN Semester)				
Department of Computer Science - UG - II,III,IV YEARS				
S.No	Date	Planned activity	Adhered/ Not Adhered	Reason for Postponement/Adhered date
1	01.02.2023	Commencement of Classes (II,III and IV Year)	Adhered	
2	06.02.2023 to 11.02.2023	VAC on Python Coding	Adhered	
3	18.02.2023	Unit 1 Completion	Adhered	
4	Feb to May 2023	VAC on AR/VR	Adhered	
5	20.02.2023	CCM1	Adhered	
6	24.02.2023	Workshop on Entrepreneurship Skill Development	Adhered	
7	25.02.2023	VAC on Website Development	Adhered	
8	01.03.2023	Training Program on Techie Startup	Adhered	
9	02.03.2023	CT1 QP Audit	Adhered	
10	02.03.2023	Alumini Interaction by S.Venkateshwaran,TCS	Adhered	
11	03.03.2023	Unit 2 Completion	Adhered	
12	04.03.2023	Sports Day	Adhered	
13	06.03.2023 to 11.03.2023	CT1 Exam	Adhered	
14	15.03.2023	CT1 Answer Script Audit	Adhered	
15	15.03.2023	Seminar on Recent Trends in IT Industries	Adhered	
16	15.03.2023	MOU with eQuadriga	Adhered	
17	16.03.2023	Awareness Program on Overseas Higher Education	Adhered	
18	18.03.2023	Unit 3 Completion	Adhered	
19	18.03.2023	Industrial Visit to Infopark	Adhered	
20	20.03.2023	MOU with Nimatooz	Adhered	
21	20.03.2023	CCM2	Adhered	
22	23.03.2023	Industrial Visit to NIT,Trichy	Adhered	
23	01.04.2023	CT2 QP Audit	Adhered	
24	01.04.2023	Symposium	Not Adhered	Due to Hackathon / 29.03.2023
25	04.04.2023	Unit 4 Completion	Adhered	
26	05.04.2023 to 13.04.2023	CT2 Exam	Adhered	
27	19.04.2023	CT1 Answer Script Audit	Adhered	
28	19.04.2023	CCM3	Adhered	
29	22.04.2023	Annual Day	Not Adhered	Declared holiday by government/29.04.2023
30	24.04.2023	Guest Lecturer on Applications of AI	Adhered	
31	25.04.2023	Unit 5 Completion	Adhered	
32	27.04.2023	Model QP Audit	Adhered	
33	27.04.2023	Guest Lecturer on DBMS	Adhered	

34	02.05.2023 to 08.05.2023	Model Exam	Adhered	
35	09.05.2023 to 12.05.2023	Model Practical Exam	Not Adhered	University Exam Postponed/22.05.2023
36	10.05.2023 to 11.05.2023	Training Program on AR/VR	Adhered	
37	11.05.2023	Model Exam Answer Script Audit	Adhered	
38	15.05.2023	University Practicals Starts	Not Adhered	Postponed/26.05.2023
39	26.05.2023	University Theory Starts	Not Adhered	Postponed/05.06.2023


HOD
HEAD,
Department of Computer
Science and Engineering,
CARE College of Engineering
Trichy - 620 009.

B. Use of various instructional methods and pedagogical initiatives

Department follows Outcome Based Education (OBE) approach. Faculty members use various innovative teaching methods to map the needs of OBE. The teaching-learning process is one of the major objectives and strengths of our college. Other than Class room teaching, experiential learning, participative learning and problem solving methodologies are well adapted to ensure the development of students and facilitate life-long learning and knowledge management.

The Pedagogy followed by the Department is given below:

Table. Teaching Learning Methods & Relevance to PO & PSO

S.No	Teaching Learning Methods	Relevance in POs and PSOs
1	Class Room / Online teaching	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO12, PSO1, PSO2
2	Collaborative Learning	PO1, PO2, PO3, PO4, PO6, PO8, PO9, PO11 & PO12, PSO1, PSO2
3	Problem-solving methodologies	PO1, PO2, PO3, PO4, PO6, PO8, PO9, PO12, PSO1, PSO2
4	Participative learning	PO1, PO2, PO3, PO4, PO6, PO8, PO9, PO11 & PO12, PSO1, PSO2
5	Experiential learning	PO1, PO2, PO3, PO4, PO6, PO8, PO9, PO11 & PO12, PSO1, PSO2
6	Activity Based Learning	PO1, PO2, PO3, PO4, PO6, PO8, PO9, PO11 & PO12, PSO1, PSO2
7	E- Learning	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO11 & PO12, PSO1, PSO2

B1. Class Room Teaching

Faculty members have prepared their session plan for that topic which is to be taught in that period. Session plan comprises Recap of Previous Topics, Brief Explanation of Topics to be handled today, Explanation of the concept with analogy, Pre-requisites of the topic, explanation with example, summarization and Q&A session. That hour will be ended with introduction of next day's topic. Besides Board and chalk, LCD projectors are being used to make the lecture delivery effective.



Class Room Teaching

B2. Collaborative Learning Students are team-spirited and enthusiastic in sharing the obtained knowledge with others. They join as groups to learn and work on a task. Groups are formed with the combination of bright (A), average (B) and weak (C) students. So that they can learn and motivate themselves. One of the collaborative learning techniques “Peer Tutoring” is successfully implemented in our college. Through which Tutoring student and tutored student both will be benefited through scholarship amount and getting pass respectively.



Seminar by DEREK JOEL SAM. M -IV CSE



Peer Tutoring by H. Shamrin Nisha (III CSE)

B3. Problem Solving Methodologies Problem solving exposure is given to students through tutorials, assignments and aptitude training. Tutorial classes are conducted as per the curriculum prescribed by the University for the Problem based courses to increase the problem-solving skills of the students. In the tutorial class, two teachers are available and they act as facilitators for the students in working out the solutions. Each student is given different assignments by which their searching ability and learning thirst are evaluated. Aptitude and programming training by external experts are carried out at regular intervals.



Aptitude Training session



Aptitude Training session

B4. Experiential Learning: Students get experiential learning through laboratory session, internship, industrial visit.



Laboratory Session



Industrial Visit to Infopark, Kochin



Internship by Student

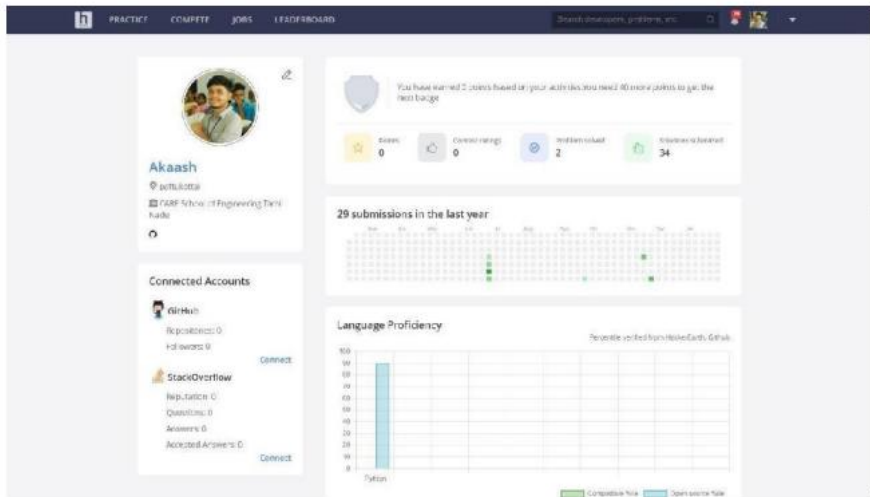
B5. Participative learning: Students gain more knowledge and skill by participating various events in internal and external institutions and competitions. Students are guided and motivated to participate in paper presentation, technical quiz and Hackathon events to apply their problem-solving skills. They are also motivated to do advanced courses through online platform such as NPTEL, Coursera, Udemy



Smart India Hackathon Finals Participation



Participation in Inter college competition – Symposium



Hacker Ranker Online Coding Platform

B6. Activity Based learning: Activity based learning creates more interest on courses and makes more involvement. This makes the session more interactive and interesting. This improves students understanding on complicated topics too.



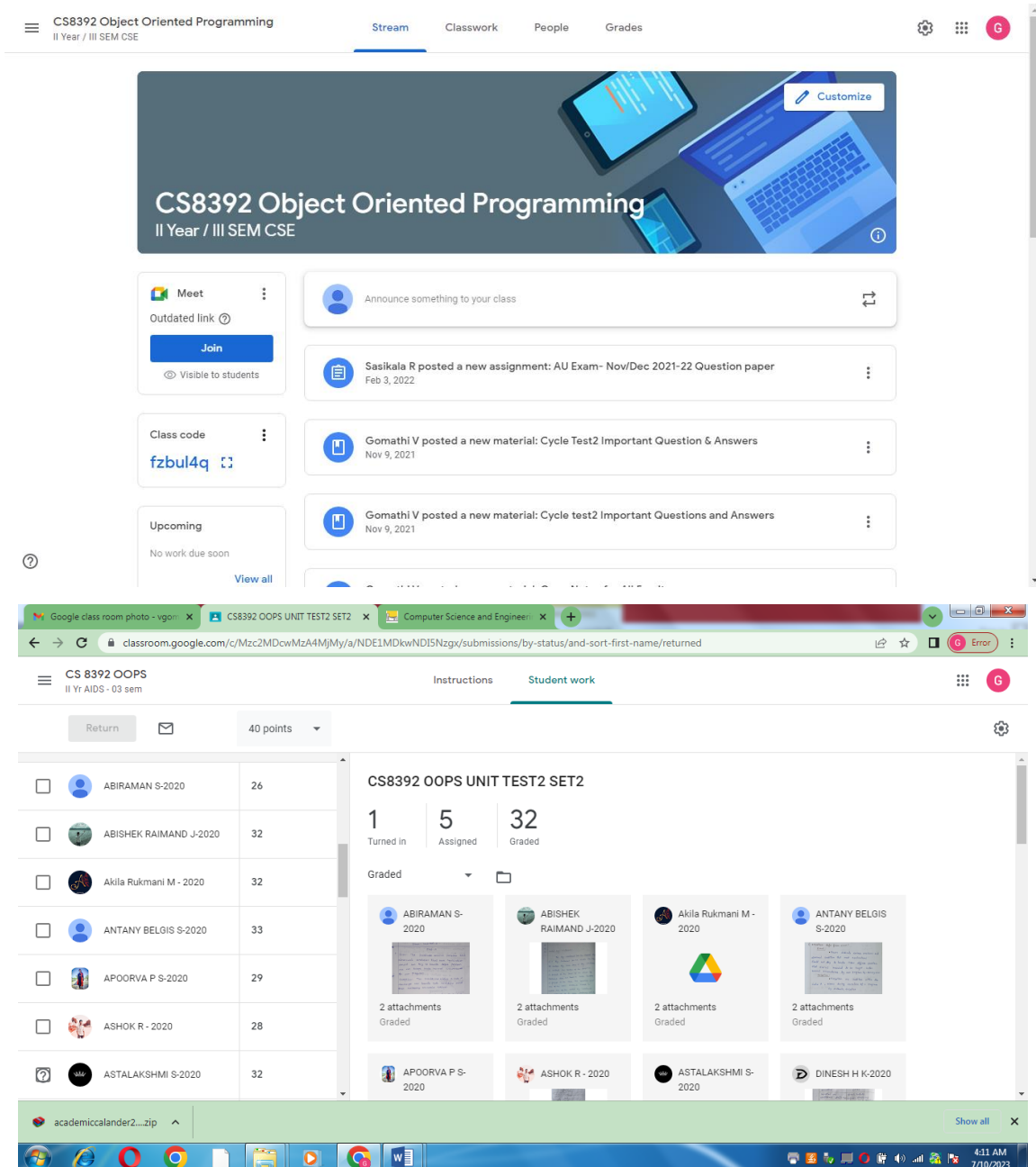
Demo Session on Compiler Phases



Brain storming Session on Operating System

B7. E-Learning: Our department teaching learning process is extended to students through E-Learning process. During pandemic period (Covid – 19), our faculty members continues the teaching process by switched over to online mode with the help of ICT tools such as Google class room, Google meet, etc. Students can also avail the e-resources through e-library. Students learning process is enriched through online Guest lectures and seminars from eminent persons of IIT and Anna university.

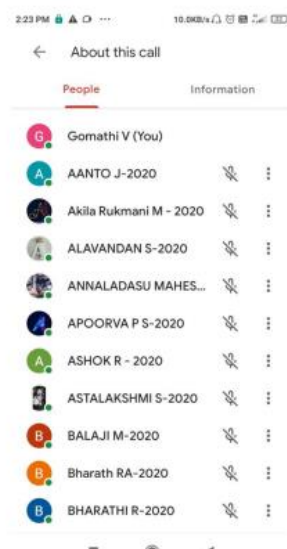
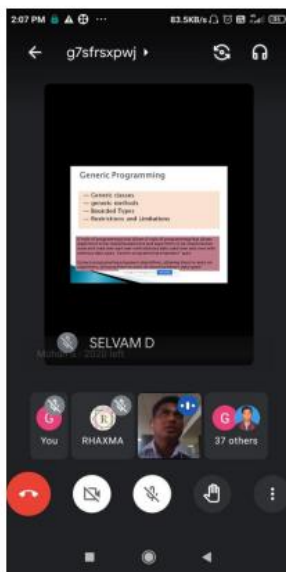
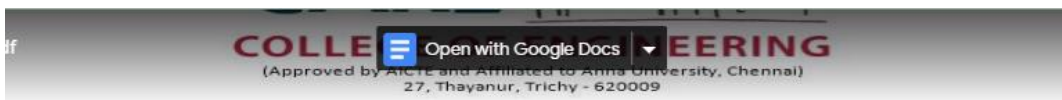
Google Class Room



Online Seminar on Cyber security



Online Guest Lecture on Object oriented Programming



Quality of classroom teaching (Observation in a Class)

- ▶ The department is well equipped with stress free environment with wide space air circulation and a pleasant environment for the students to learn. The ambience of the classroom enhances the classroom teaching to a greater extent
- ▶ Syllabus coverage of each course is done as per **Course plan** prepared.
- ▶ Active learning environment in class rooms: **Organizing technical quiz, Seminars, Case studies, Tutorials, Technical Aptitude Test.**
- ▶ **Interactive class room sessions** by discussions and doubt clearing. Faculty members make the student to engage and participate in possible group activities which keep the students get engaged during the lecture session. Faculty members provides a teaching environment by adopting various teaching aids from traditional chalk and board approach to LCD projections of the technical content
- ▶ **Content beyond syllabus** is provided by presentations, students' seminar etc.
- ▶ **Class committee meetings** are conducted in order to monitor and evaluate the quality of the class room teaching. Syllabus coverage and difficulties faced by the students in the academic issues are discussed and steps are taken to resolve the issues. Class committee meeting will be conducted as per the schedule in academic calendar.
- ▶ **Feedback from students** will be collected twice a semester to monitor how effective the teaching – learning process is.
- ▶ **Course File** will be prepared by each faculty member and is periodically reviewed by Head of the department.
- ▶ **Course Attendance and Assessment Record** will be verified by the HOD after completion of every unit and the same will be verified by the Principal after each internal test.
- ▶ **Attendance Monitoring** is done periodically. All the students are advised to maintain at least 75% of attendance in order to appear for Semester exams.
- ▶ Absenteeism will be updated to parents and if needed parents meeting will be conducted.
- ▶ **Smart Materials** are prepared and are uploaded in the E-Campus/Moodle/ Google Classroom and students can have access to it.
- ▶ **Special Coaching Classes** are conducted to help the students to clarify their doubts and improve their knowledge

Conduct of Experiments

- ▶ Laboratory manuals and Lesson plans are prepared for each laboratory course at the commencement of each semester.
- ▶ Each laboratory has state of art software to conduct the experiments of/beyond the syllabus.
- ▶ The laboratory batches are formed such that half the number of students belongs to one batch and the rest belong to other.

The faculty in charge for laboratory demonstrates the theoretical background and practical applications of the experiments and the instructions followed in the laboratory courses.

- ▶ The students are instructed to carry out the experiments in the laboratories, respectively with the allotted batches.
- ▶ They are also instructed and guided to do the experiment to attain the output and record it in the observation. After completion of the experiment, they are documented in the record note book and will be verified by the faculty.
- ▶ Additional content beyond the syllabus experiments are given to students for increasing their practical knowledge and design capability.
- ▶ Students are encouraged to do mini projects relevant to the curriculum to enhance their practical knowledge.
- ▶ Viva - voce questions are asked to the students to assess their knowledge in courses.

A. Process of internal semester question paper setting and evaluation and effective process implementation

Our College is affiliated to Anna University, Chennai and follows the regulations of the university. University guidelines are strictly adhered to evaluation process. Three internal tests (Cycle Test 1, Cycle Test 2 and Model) are conducted for each course. The schedules of internal assessments are communicated to students and faculty in the beginning of the semester through academic calendar as per university instructions.

CARE has reformed the continuous internal evaluation system from faculty centric to student centric. CARE has the centralized exam cell for conducting the Continuous Internal Exam (CIE) as per academic calendar.

Internal Assessment Test	CYCLE TEST 1	CYCLE TEST 2	Model
Portions Covered	Unit 1 & Unit 2	Unit 3 & Unit 4	All 5 Units
CO Mapped	CO1, CO2	CO3, CO4	CO1,CO2,CO3,CO4,CO5
Mark Allocated	100	100	100

Mechanism of internal assessment is transparent and robust in terms of frequency and mode

Plan of Internal Assessment

After the completion of every unit, the Internal Assessment tests are planned as follows.

- Internal Assessment – I (Cycle Test 1) – Unit 1 (50%), Unit 2 (50%)
- Internal Assessment – II (Cycle Test 2) – Unit 3 (50%), Unit 4 (50%)
- Internal Assessment – III (Model Exam) – All 5 Units

Mechanism of Internal Assessment (Theory Courses)

- The Internal Assessment (CT 1, CT 2 & Model) Tests are being scheduled as per the Academic Calendar.
- The Schedule of IA is circulated five days before to faculty members and students through HoD's.
- The Faculty members / Course Coordinators will prepare a Question Paper including Course Outcome (CO) and learning levels of Blooms' Taxonomy.
- These QPs will be audited by department IQAC Coordinator and submitted to HoD.
- After audit, HoD's will approve and submit the QPs to the Exam Cell on or before 3 days of commencement of IA.
- Exam Cell will prepare Hall Plan, Seating Arrangement and Invigilators list before the commencement of IA.
- Hall invigilators list will be circulated to department faculty members 3 days in advance through HoD.
- Hall Plan will be displayed on common Notice Board and Seating Arrangement will be displayed in the respective exam hall.

Instructions for hall invigilators are as follows,

1. Faculty members are requested to report to the exam cell 15 minutes before the commencement of exam

2. Answer Papers should be collected by invigilators as per Register Number order

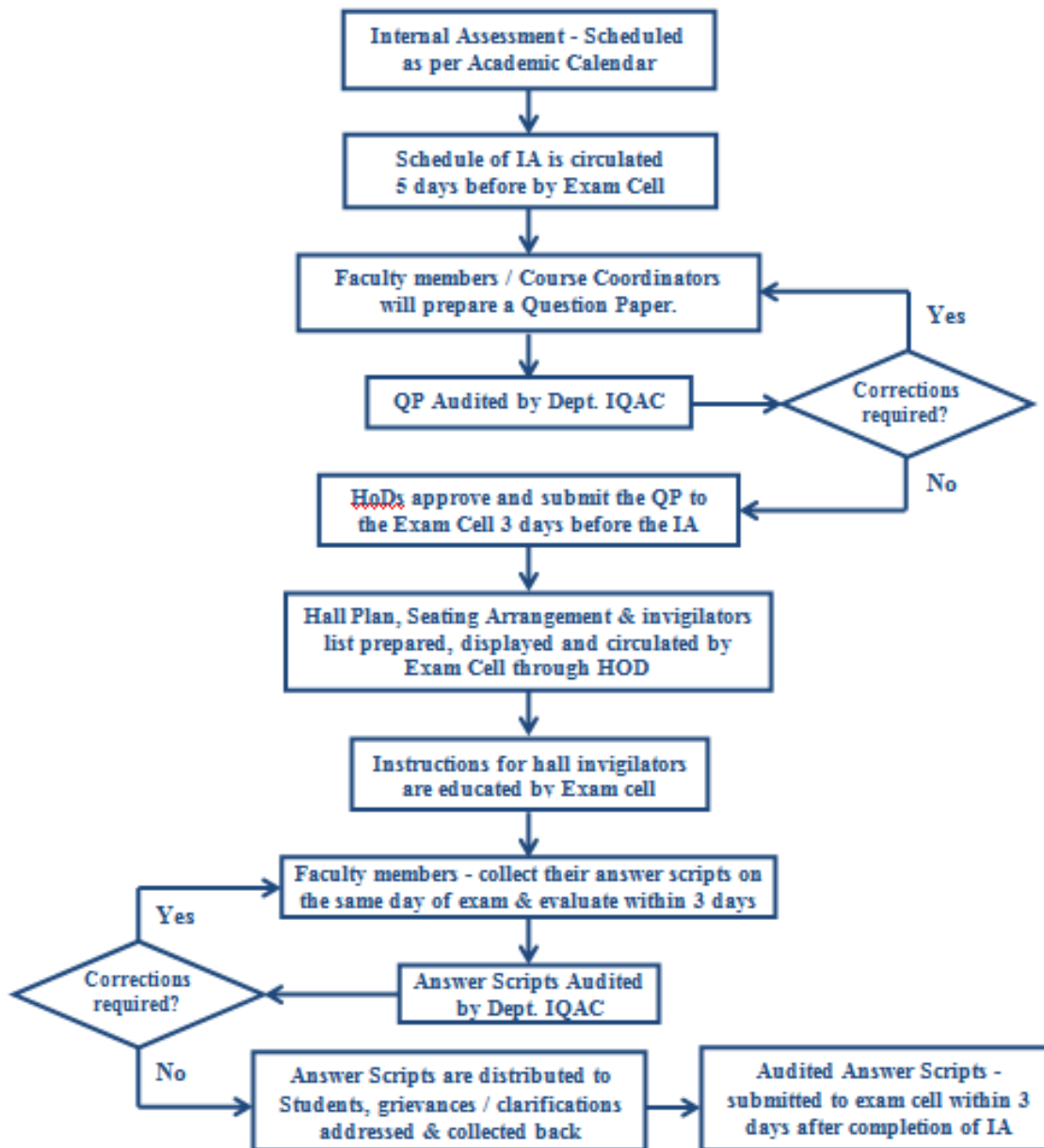
3. Faculty members have to make alternate arrangements in their absence and the same has to be informed to Exam Cell.

Answer sheet evaluation procedure

- The faculty members have to collect their answer scripts on the same day of exam.
- Faculty member should prepare answer key for the question paper.
- The faculty members should evaluate the answer scripts based on the answer key within 3 days after completion of respective exams and the same has to be audited by department IQAC coordinator.
- Answer Scripts are distributed to the students. Any grievances / clarifications are to be addressed by the faculty in-charge/HOD.
- Audited Answer Scripts have to be submitted to exam cell within 3 days after completion of IA.
- Marks scored are entered in the logbook and uploaded in the Google sheets. After the verification by the HoDs and the Principal, displayed on the notice board.
- Result review meetings are conducted with faculty, HoD and Principal for remedial actions for improvements.
- Upload of assessment marks in university web portal and subsequently communicated to parents.

B. process to ensure questions from outcomes/learning level perspective

Question Paper Preparation Process



		(b) (i)	Write down the rules for conjunctive normal forms.	7	K2	C311.3
		(ii)	Explain briefly about resolution inference rule with an example.	6	K2	C311.3
	14	(a)	Describe the different types of agent architecture in detail.	13	K2	C311.4
(OR)						
		(b)	Explain in detail about bargaining in multiagent system.	13	K2	C311.4
	15	(a)	Explain in detail about information extraction.	13	K1	C311.5
(OR)						
		(b)	Explain about the machine translation and speech recognition in detail.	13	K1	C311.5
PART -C (1X 15 = 15 Marks)						
III	16.	(a)	Give a representation in predicate logic of the following propositions, in the form of Horn clauses; also in this case, first clearly define the domain of discourse and the predicate, function and constant symbols you intend to use. (a) Cows, pigs and horses are mammals (b) The child of a horse is a horse (c) Bluebeard is a horse (d) Bluebeard is Charlie's father (e) Child and father are inverse relations (f) Every mammal has a father	15	K3	C311.3
(OR)						
		(b)	Give a representation in predicate logic of the following propositions (including the domain of discourse and the predicate, function and constant symbols you intend to use): (a) Tony, Mike and John are members of the Alpine Club (b) Every member of the Alpine Club is a skier or a climber (c) No climber likes rain (d) Every skier likes snow (e) Mike does not like everything that Tony likes (f) Mike likes everything Tony does not like (g) Tony likes both rain and snow	15	K3	C311.3

Blooms Levels: K1 - Remember, K2 - Understand, K3 - Apply, K4 - Analyze, K5 - Evaluate, K6 - Create

R. Ranitha
Faculty In-charge
R.Ranitha, AP/CSE

J. Suresh
HOD
Dr.J.Suresh

S. Shanthi
Principal
Dr.S.Shanthi

This is the question paper for the course Artificial Intelligence that has five course outcomes and those are covered in internal assessment tests.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CLASS:	: III B.E CSE	MAX MARKS	: 40
SEMESTER:	: VI	TOTAL STRENGTH	: 40
SUBJECT:	: Artificial Intelligence	CODE	: CS8691
COURSE NO	: C311	DATE	: 01.03.2023
ACADEMIC YEAR	: 2022 - 23 (EVEN)	ACTIVITY	: ASSIGNMENT I

ASSIGNMENT TOPICS:

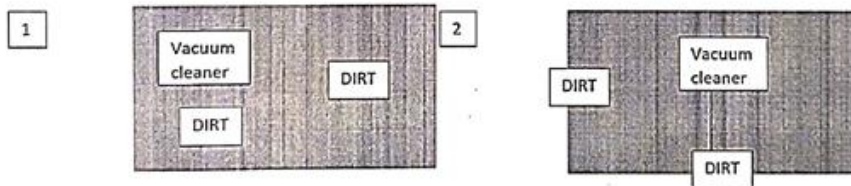
1. Water Jug Problem [CO2, BT-4]

"You are given two jugs, a 4-liter one and a 3-liter one. Neither has any measuring markers on it. There is a pump that can be used to fill the jugs with water. How can you get exactly 2 liters of water into a 4-liter jug."



2. Vacuum World Problem [CO1, BT-4]

What it is, what type of agent acts in this problem, what goals the agent in this problem has and how all the working takes place in solving this problem?



3. Travelling Salesman Problem [CO1, BT-4]

You are given a list of n cities with the distance between any two cities. Now, you have to start with your office and to visit all the cities only once each and return to your office. What is the shortest path can you take?

4. Eight Queen Problem [CO2, BT-4]

The eight queens puzzle is the problem of placing eight chess queens on an 8x8 chessboard so that no two queens threaten each other; thus, a solution requires that no two queens share the same row, column, or diagonal. There are 92 solutions.



R.R
Staff in-charge

[Signature]
HOD/CSE

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The sample assignment CO coverage is given below:

Assignment / course outcome	CO1	CO2	CO3	CO4	CO5
Assignment 1	✓	✓			
Assignment 2			✓	✓	

RUBRICS FOR ASSIGNMENT					
Criteria/ Recommended Scores	Excellent 8-10	Very Good 6-8	Good 4-6	Fair 2-4	Satisfactory 0-2
Introduction of the of given topic and significance	In-depth knowledge about the topic	Comprehension of the topic	Adequate knowledge of the topic	Fair knowledge of the topic	Inadequate Knowledge of the topic
Body of the content and flow of content	Main idea is focused and supported with detailed information	Main idea is clear and supported with general information	Main idea is fairly clear and supported with general information	Main idea is fairly clear and supported with limited information	Main idea is not clear and random collection of information
Relevance to the content	Relevant and comprehensive information to substantiate the topic given with current updates and case studies	Relevant information supported with strong evidences	Relevant information with sufficient supporting evidences	Relevant information with insufficient supporting evidence	Relevant information without supporting evidence
Conclusion, Reference and recent updated & Submission deadline	Strong conclusion exhibiting in-depth knowledge on the course. Submission on time	Recognizable conclusion with supportive suggestions. Submission on delay	Recognizable conclusion and late submission	Inadequate conclusion and not supported with suggestions and late submission	Absence of conclusion No originality, Not adhered to deadline

Content Sources for Assignments

The content for assignments is taken from the following tools which help the students for getting ideas and writing the assignments.

- Books, Lectures
- Online Sources, DataBase
- NPTEL Videos/ Moodle/ Google Classroom
- Articles in journals, Newspaper, News letter

- Conference or seminar papers in published proceedings –
Print /online