FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A++" Grade by NAAC (4th Cycle)
Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: COMPUTER SCIENCE

NAME OF THE PROGRAMME : M.SC

PROGRAMME CODE : PSCS

ACADEMIC YEAR : 2022 - 2023

Fatima College (Autonomous), Madurai
The Minutes of the Board of Studies meeting

Name of the Department : Computer Science
Programme : B.Sc.

To be implemented from the Academic year 2022 – 2023 onwards.
Convened on 16.3.2022 at 2 p.m in the Dept. of Computer Science, Fatima College.

Members present:

1. Dr. G. Germine Mary — Chairperson
Head, Dept. of Computer Science — Germine Mary
Fatima College.

2. Dr. C. Suresh Kumar — University Nominee
Associate Prof. & Head
Dept. of Computer Science
MKU College, Madurai

3. Dr. M. Thangaraj — Subject Expert
Professor & Head
Dept. of Computer Science
MKU, Madurai

4. Dr. Sr. Shantha Mary Joshitta — Subject Expert
Asst. Prof and Head
Dept. of Computer Science — ABSENT
JAC, Periyakulam
Theni Dt. – 625601

5. Dr. S. Vimala
Associate Professor
Dept. of Computer Science
MTHV, Kodaikanal-624102

Subject Expert.

ABSENT

6. Mr. Graceson Tony
Founder & CEO
SEVEN ATARA Marketers
11-3/2, III St, Periyar Nagar
Koodal Ngr, Madurai-18

Industrialist

P. Graceson

7. Mrs. K. Sudharani
Associate Prof. & Head
Dept. of Computer Science
MSN College, Poovandhi
Sivagangai-630611

Alumna

Sudha

8. Dr. N. Malathy
Asst. Prof in Zoology
Fatima College

Dean of Academic Affairs.

Malathy 16/3/2022

Members of the Department

9. Dr. S. Vidya, Associate Prof. Vidya

10. Dr. K. Rosemary Euphrasia
Associate Prof.

K. Rosemary

11. Dr. A. Vimala, Associate Prof. Vimala

12. Dr. P. Meenakshi Sundari
Asst. Professor

P. Meenakshi

13. Dr. S. Arul Jothi
Asst. Professor. S. Arul

14. Dr. T. Vasantha
Asst. Professor. ABSENT

15. Mrs. G. Rajathilagam
Asst. Professor. Rajathilagam

AGENDA:

* Presentation of the Action Taken Report of the previous BoS.
* To pass the changes in course titles.
* To pass the changes in the syllabus of the courses offered
* To pass the syllabus for the new courses to be introduced.

1. Action taken on the report of the previous BoS

Suggestion	Action Taken
University Nominee suggested to follow LOCF (Learning outcomes based curriculum framework)	Already OBE is followed. LOCF will be introduced during institutional restructuring.

2. Change in course Title.

The following changes in titles were carried out.

S.No	Old Course code	New Course code	old Title	New Title
1.	19B4SB2	22B3SB1	Web Designing using HTML and Wordpress	Web Designing using HTML and CSS

Need for change : "Introduction to internet" is removed to accomodate more advanced papers, so skill based paper - III is shifted in the place of Paper - I after replacing Wordpress with CSS.

S.No	Old Course code	New Course code	old Title	New Title
2	19B5SB3	22B4SB2	Client side programing using JAVA Script and CSS	Client side programing using Java Script

Need for change : Course Paper III is shifted to Paper II after removing the CSS component, the content removing CSS contains only Java Script.

S.No	old Course Code	New Course code	old Title	New Title
3.	19B6ME8	19B6ME8	Mobile computing using Android	Mobile computing and Application Development

Need for change : Unit on Android installation is removed.

3. Revision of Courses

All the 3 papers mentioned below have Global Relevance and has scope for Employability, Entrepreneurship and Skill development.

S.No	Course code	Course Title	No., & Title of unit revised	% revised	Need for revision
1.	19B4SB2	Web Designing using HTML & Wordpress	UNIT V Introduction to CSS	20	Content on Wordpress is replaced with CSS for better layout of web pages.
2.	19B5SB3	Client side programming using Java Script & CSS	UNIT V Advanced Scripting concepts.	20	Content on CSS is moved to Paper I and replaced with advanced scripting concepts.
3.	19B5MC3	Data Mining and data warehousing	Topics from UNIT II & IV are removed.	15	Few topics which were advanced and dealt in PGr are removed

4	19B5ME5	Software Testing	UNIT IV is replaced	20	UNIT-IV – Software Test automation is replaced with Software Test metrics.
5.	19B6ME6	Cloud computing	UNIT I & IV modified	10	Few topics were removed from UNIT I + IV.
6.	19B6ME7	Introduction to Artificial Intelligence	UNIT I, III & V modified	10	Few topics were removed from UNIT I, III & V
7.	19B6ME8	Mobile Computing using Android	UNIT III is replaced with UNIT IV and UNIT IV is replaced with some section from UNIT V	20	UNIT V had more weightage so for deeper learning is split it into UNIT IV & UNIT V.
8.	19B6ME9	Big Data Fundamentals	UNIT II is replaced	20	UNIT II has been replaced with big data drivers, ICT and business analytical methods have been included.

4. Pass the syllabus for the new courses to be introduced.

All the 4 new papers introduced have Global relevance and has scope for Employability, Entrepreneurship and skill development.

S.No	Course Code	Course Title	Need for introduction
1.	22B2CC3	Python Programming	Python is the future of programming so introduced in the II semester in the place of Programming in C++.
2.	22B2CC4	Lab II – Python Programming	The lab is introduced in tune with the major core 22B2CC3 to learn in parallel with Theory.
3.	22B4CC8	Lab IV – RDBMS and Data Analytics using Spread-sheets.	Introduced in tune with the theory. Also facilitates placement
4.	22B5SB3	Web Application using Angular	Since Skill Based paper I is removed this paper is

		introduced to fill that space created.

Suggestions & Recommendations.

* To organise more sessions with Alumnae to keep the students aware of the current trends in the industry
* To create awareness about the work from home opportunities.

G. GERMINE MARY

S. ARUL JOTHI

G. RAJATHILAGAM

P. MEENAKSHI SUNDARI

C. SURESH KUMAR

(DY. M. THANGARAJ)

(N. MALATHI)

(S. VIDYA)

Mrs. K. Sudha Rani

Mrs. K. Rosemary Euphrasia

A. VIMALA

GRACESON TONY P

15/3/22

Fatima College (Autonomous), Madurai
The minutes of the Board of Studies meeting

Name of the Department : Computer Science
Programme : M.Sc.

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Convened on 16.~~4~~3.2022 at 2 p.m.

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   Associate Prof. & Head
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Dept. of Computer Science
MSN college. Sivagangai.

8. Dr. N. Malathy — Dean of Academic Affairs
Asst. Prof in Zoology
Fatima college. 16/3/2022

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15. Mrs. M. Rajathilagam
Asst. Professor — Rajathilagam

AGENDA:

* To pass the change in course title.
* To pass the changes in the syllabus of courses offered.
* To pass the syllabus for the new courses to be introduced.
* Action taken on the report of previous BoS.

1. Change in course title.

S.No	old course code	New course code	old Title	New Title
1.	19PG23B12	22PG2B8	Digital Image Processing	Digital Image Processing

Need for change: The paper is shifted from III semester to II Semester.

S.No	old course code	New course code	old Title	New Title
2.	19PG23B14	22PG2B11	Lab V Digital Image Processing	Lab IV Digital Image Processing

2. Revision of Courses

All the 3 courses mentioned below have global relevance and has employability, entrepreneurship and skill development scope.

Sno	Course Code	Course Title	No. of UNITs and the title revised and need for revision	% Revised
1.	19PG3BE7	Distributed Database Management System	UNITS I, II, III & IV Modified Few topics in the mentioned units were removed.	10
2.	19PG3BE8	Compiler Design	UNIT II, IV & V modified. Few topics in the mentioned units were removed.	10
3.	19PG3BE10	Advanced computer graphics and animation	UNITS IV & V Modified. New concepts added in both the units.	15

2 Paste the syllabus for the new courses introduced.

All the 4 papers introduced have Global relevance and scope for employability, entrepreneurship and skill.....

S.No	Course Code	Course Title	Need for introducti
1.	22PG3B12	Machine Learning	The ability to process large numbers of features makes machine learning powerful. Essential for research.
2.	22PG3B14	Lab V - Machine Learning with Python	Provides practical skill for 22PG3B12
3.	22PG3BEB	Mobile communication	Latest technology which is very essential.
4.	22PG3BE12	Cyber Forensics	Needed for the investigation of crimes and law enforcement in cyber crime.

4. Action taken on the report of previous BoS

Suggestion	Action Taken
University nominee suggested to follow LOCF (Learning outcome based curriculum framework)	Already OBE is followed. LOCF will be introduced during institutional restructuring

Suggestions & Recommendations.

* To organise more sessions with Alumnae to keep the students aware of the current trends in the industry
* To create awareness about the work from home oppurtunities.

Signature	Name
[signature]	(G. GERMINE MARY
S. Aruljo [signature]	S. ARUL JOTHI
[signature]	[signature]
C. SURESHKUMAR	(Dr. M. THANAMANI)
Rajathilagam [signature]	RAJATHILAGAM, G.
Malathi 16/3/2022	(N. MALATHI)
[signature]	S. VIDYA
P. Meenakshi	P. MEENAKSHI SUNDARI
Sudharani	K. SUDHARANI
K. Rosy Euphrasia	K. Rosemary Euphrasia
A. Vimala	A. VIMALA
P. Graceson Tony	GRACESON TONY P

[signature] 16/3/22

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VISION OF THE DEPARTMENT

To be in the Zenith of Scholastic Excellence in Computer Science by imparting Value Based, Skill Based and Career Oriented Education for Holistic Development.

MISSION OF THE DEPARTMENT

- Empower Women and First generation learners
- Inculcate lateral thinking and make them professionally competent to meet the global challenge in the field of Computer Science
- Develop the programming skills of the young learners to meet the current trends of Computer Science
- Motivate the students to be socially responsible and acquire entrepreneurial skills to become global leaders
- Promote quality and ethics among the students through Value Based Education

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1	Our graduates will be academic, digital and information literates; creative, inquisitive, innovative and committed researchers who would be desirous for the "more" in all aspects
PEO 2	They will be efficient individual and team performers who would deliver excellent professional service exhibiting progress, flexibility, transparency, accountability and in taking up initiatives in their professional work
PEO 3	The graduates will be effective managers of all sorts of real – life and professional circumstances, making ethical decisions, pursuing excellence within the time framework and demonstrating apt leadership skills
PEO 4	They will engage locally and globally evincing social and environmental stewardship demonstrating civic responsibilities and employing right skills at the right moment.

GRADUATE ATTRIBUTES (GA)

Fatima College empowers her women graduates holistically. A Fatimite achieves all-round empowerment by acquiring Social, Professional and Ethical competencies. A graduate would sustain and nurture the following attributes:

I. SOCIAL COMPETENCE	
GA 1	Deep disciplinary expertise with a wide range of academic and digital literacy
GA 2	Hone creativity, passion for innovation and aspire excellence
GA 3	Enthusiasm towards emancipation and empowerment of humanity
GA 4	Potentials of being independent
GA 5	Intellectual competence and inquisitiveness with problem solving abilities befitting the field of research
GA 6	Effectiveness in different forms of communications to be employed in personal and professional environments through varied platforms
GA 7	Communicative competence with civic, professional and cyber dignity and decorum
GA 8	Integrity respecting the diversity and pluralism in societies, cultures and religions
GA 9	All – inclusive skill - sets to interpret, analyse and solve social and environmental issues in diverse environments
GA 10	Self-awareness that would enable them to recognise their uniqueness through continuous self-assessment in order to face and make changes building their strengths and improving on their weaknesses

GA 11	Finesse to co-operate exhibiting team-spirit while working in groups to achieve goals
GA 12	Dexterity in self-management to control their selves in attaining the kind of life that they dream for
GA 13	Resilience to rise up instantly from their intimidating setbacks
GA 14	Virtuosity to use their personal and intellectual autonomy in being life-long learners
GA 15	Digital learning and research attributes
GA 16	Cyber security competence reflecting compassion, care and concern towards the marginalised
GA 17	Rectitude to use digital technology reflecting civic and social responsibilities in local, national and global scenario
II. PROFESSIONAL COMPETENCE	
GA 18	Optimism, flexibility and diligence that would make them professionally competent
GA 19	Prowess to be successful entrepreneurs and employees of trans-national societies
GA 20	Excellence in Local and Global Job Markets
GA 21	Effectiveness in Time Management
GA 22	Efficiency in taking up Initiatives
GA 23	Eagerness to deliver excellent service
GA 24	Managerial Skills to Identify, Commend and tap Potentials

III. ETHICAL COMPETENCE	
GA 25	Integrity and discipline in bringing stability leading a systematic life promoting good human behaviour to build better society
GA 26	Honesty in words and deeds
GA 27	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life
GA 28	Social and Environmental Stewardship
GA 29	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience
GA 30	Right life skills at the right moment

PROGRAMME OUTCOMES (PO)

On completion of M.Sc. Computer Science Programme, the learner will be able to

PO 1	Apply acquired scientific knowledge to solve major and complex issues in the society/industry.
PO 2	Attain research skills to solve complex cultural, societal and environmental issues.
PO 3	Employ latest and updated tools and technologies to solve complex issues
PO 4	Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives.

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of M.Sc. Computer Science programme, the learner will be able to

PSO 1	Develop professionally competent citizens by applying the scientific knowledge of Computer Science with the ability to think clearly, rationally and creatively to support in evolving solutions to the social/public/scientific issues with responsible democratic participation
PSO 2	Enterprising resourcefulness to identify, plan, formulate, design and evaluate solutions for complex computing problems that address the specific needs with appropriate consideration for Societal, Cultural, Environmental and Industrial domains
PSO 3	Holistic development to ignite the lateral thinking ability in problem solving, acquisition of new skills, open-minded and organized way of facing problems with self awareness and evolving analytical solutions
PSO 4	Create and initiate innovations effectively and communicate efficiently with the computing community and society at large to bridge the gap between computing industry and academia
PSO 5	Through Digital Literacy, understand, assess and commit to professional and ethical principles, norms and responsibilities of the cyber world and the ability for work efficacy as a part of a team and engage effectively with diverse stakeholders
PSO 6	Ability and willingness to embark on new ventures and initiatives with critical thinking and desire for more continuous learning focusing on life skills
PSO 7	Use research-based knowledge and research methods to design, analyse, and interpret data and to synthesize information to provide valid findings to serve community

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF COMPUTER SCIENCE

For those who joined in June 2019 onwards

MAJOR CORE – 60 CREDITS

PROGRAMME CODE:PSCS

S. No	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	19PG1B1	Advanced Programming in Java	5	4	40	60	100
2.		19PG1B2	Distributed Operating Systems	4	4	40	60	100
3.		19PG1B3	Object Oriented Software Engineering	4	4	40	60	100
4.		19PG1B4	Theory of Computation	4	4	40	60	100
5.		19PG1B5	Lab I – Advanced Programming In Java	5	3	40	60	100
6.		19PG1B6	Lab II – Operating System	5	3	40	60	100
7.	II	19PG2B7	Extreme Programming – Asp.Net	4	4	40	60	100
8.		22PG2B8	Digital Image Processing	4	4	40	60	100
9.		19PG2B9	Design and Analysis of Algorithms	4	4	40	60	100
10.		19PG2B10	Lab III – Extreme Programming – Asp.Net	5	3	40	60	100
11.		22PG2B11	Lab IV – Digital Image Processing	5	3	40	60	100
12.	III	22PG3B12	Machine Learning	5	5	40	60	100
13.		19PG3B13	Data Mining and Data Warehousing	5	5	40	60	100
14.		22PG3B14	Lab V- Machine Learning With Python	5	3	40	60	100
15.		19PG3B15	Lab VI – Data Mining And Data Warehousing	5	3	40	60	100
16.	IV	19PG4B16	Principles Of Internet Of Things (Self Study)	-	4	40	60	100
			TOTAL	**69**	**60**			

MAJOR ELECTIVE / EXTRA DEPARTMENTAL COURSE / INTERNSHIP/ PROJECT -30 CREDITS

S.No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. Mks
1.	I	19B1EDC	WEB DEVELOPMENT	3	3	40	60	100
2.	II	19B2EDC	WEB DEVELOPMENT	3	3	40	60	100
3.		19PG2BE1	COMPUTATIONAL INTELLIGENCE	5	5	40	60	100
4.		19PG2BE2	NEURAL NETWORKS	5	5	40	60	100
5.		19PG2BE3	SOFTWARE TESTING	5	5	40	60	100
6.		19PG2BE4	EMBEDDED SYSTEMS	5	5	40	60	100
7.	III	19PG3BE5	PYTHON PROGRAMMING	5	5	40	60	100
8.		19PG3BE6	CRYPTOGRAPHY AND NETWORK SECURITY	5	5	40	60	100
9.		19PG3BE7	DISTRIBUTED DATABASE MANAGEMENT SYSTEM	5	5	40	60	100
10.		19PG3BE8	COMPILER DESIGN	5	5	40	60	100
11.		19PG3BE9	CLOUD COMPUTING	5	5	40	60	100
12.		19PG3BE10	ADVANCED COMPUTER GRAPHICS & ANIMATION	5	5	40	60	100
13.		19PG3BE11	BIG DATA ANALYTICS	5	5	40	60	100
14.		22PG3BE12	CYBER FORENSICS	5	5	40	60	100
15.		22PG3BE13	MOBILE COMMUNICATION	5	5	40	60	100
16.		19PG3BSI	SUMMER INTERNSHIP/ TRAINING/ ONLINE CERTIFICATION	-	3	40	60	100
17.	IV	19PG4BPR	PROJECT	-	6	40	60	100
			TOTAL	**21**	**30**			

OFF-CLASS PROGRAMMES

ADD-ON COURSES

COURSE CODE	COURSES	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
19PAD2SS	**SOFT SKILLS**	40	3	I	40	60	100
19PADCM	**CONTENT MANAGEMENT SYSTEM** (Offered by Dept. Of Computer Science)	40	4	II	40	60	100
21PADAJ	**Scripting using Angular JS**(Offered by Dept. Of Computer Science)	40	4	II	40	60	100
19PAD4CV	**COMPREHENSIVE VIVA** (Question bank to be prepared for all the papers by the respective course teachers)	-	2	IV	-	-	100
19PAD4RC	**READING CULTURE**	15/ Semester	1	I-IV	-	-	-

EXTRA CREDIT COURSES

Course Code	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
19PGBSL1	**SELF LEARNING COURSE for ADVANCED LEARNERS** BIOINFORMATICS	-	5	I & II	40	60	100
21PGBSL2	**SELF LEARNING COURSE for ADVANCED LEARNERS** DEVELOPING WEB SERVICES	-	5	III & IV	40	60	100
21PGBSL3	**SELF LEARNING COURSES for ADVANCED LEARNERS** EVOLUTIONARY COMPUTING	-	5	III & IV	40	60	100
	MOOC COURSES (Department Specific Courses) * Students can opt other than the listed course from UGC-SWAYAM portal as well as from NPTEL	-	Respective Credits allotted by UGC	-	-	-	100

OLD syllabus

II M.Sc. Computer Science

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
PSCS	19PG3BE7	DISTRIBUTED DATABASE MANAGEMENT SYSTEM	LECTURE	5	5

COURSE DESCRIPTION

Distributed Database contains Overview of Distributed Database, Query Processing , Distributed Concurrency Control , Reliability and Replication, Distributed Object Database Management

COURSE OBJECTIVES

- To understand the basic concepts of Distributed Database
- To interpret Objectives of Query Processing
- To understand Concurrency Control of Distributed Database
- To describe Reliability and Replication protocols and understand fundamental Object Concepts and Object Models

UNITS

UNIT I : Overview Of Distributed Database (15 Hrs)

Distributed Data Processing - What is a Distributed Database System? - Data Delivery Alternatives - Promises of DDBSs- Complicating factors - Problem Areas16 -Distributed Database Design - Top-Down Design Process - Bottom-up Design Process - Distribution Design - Fragmentation – Allocation.

UNIT II : Overview Of Query Processing (15 Hrs)

Query Processing Problem - Objectives of Query Processing - Complexity of Relational Algebra Operations - Characterization of Query Processors - Layers of Query Processing - Query Decomposition - Localization of Distributed Data.

UNIT III : Distributed Concurrency Control (15 Hrs)

Serializability Theory - Taxonomy of Concurrency Control Mechanisms - Locking-Based Concurrency Control Algorithms - Timestamp-Based Concurrency Control Algorithms - Optimistic Concurrency Control Algorithms - Deadlock Management - "Relaxed" Concurrency Control.

UNIT IV : Reliability And Replication (15 Hrs)

Reliability Concepts and Measures - Failures in Distributed DBMS – Local Reliability Protocols - Distributed Reliability Protocols – Dealing with Site - Network Partitioning - Consistency of Replicated Databases - Replication Protocols - Group Communication - Replication and Failures.

UNIT V : Distributed Object Database Management (15 Hrs)

Fundamental Object Concepts and Object Models - Object Distribution Design - Architectural Issues - Object Management - Distributed Object Storage - Object Query Processing - Transaction Management.

SELF STUDY :

UNIT I: Overview of Distributed Database: - Promises of DDBSs- Complicating factors
UNIT II: Query Processing Problem - Objectives of Query Processing
UNIT III: Optimistic Concurrency Control Algorithms
UNIT IV: **Reliability And Replication** : Failures in Distributed DBMS, Dealing with Site
UNIT V: **Distributed Object Database Management** : Architectural Issues

TEXT BOOK

Principles of Distributed Database Systems, M. Tamer Özsu and Patrick Valduriez, 3rd Edition, Springer, 2010. Chapters:1, 3, 6, 7, 11, 12, 13, 15.

REFERENCES:

1. ***Principles of Distributed database systems,*** M.T. Ozsu and S. Sridhar, Pearson Education Publication, 2008.
2. ***Distributed Database Systems***, Chhanda Ray, Pearson Education, India, 2009.
3. ***Distributed Database Management Systems: A Practical Approach,*** Saeed K.Rahini & Frank.S.Haug, Wiley-IEEE Computer Society Press, 2010.

Digital Open Educational Resources (DOER)

1. https://cs.uwaterloo.ca/~tozsu/courses/cs856/F02/lecture-1-ho.pdf
2. https://docs.oracle.com/cd/B19306_01/server.102/b14231/ds_concepts.htm
3. https://www.brainkart.com/article/Distributed-Database-Concepts_11590/

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I: Overview Of Distributed Database				
1.1	Distributed Data Processing - What is a Distributed Database System?	1	Chalk & Talk	Black Board
1.2	Data Delivery Alternatives - Promises of DDBSs	2	Lecture	Smart Board
1.3	Complicating factors	2	Lecture	Smart Board
1.4	Problem Areas16	2	Lecture	Black Board
1.5	Distributed Database Design - Top-Down Design Process	2	Chalk & Talk	Black Board
1.6	Bottom-up Design Process -	2	Discussion	Google classroom
1.7	Distribution Design - Fragmentation	2	Lecture	PPT & Smart Board
1.8	Allocation	2	Lecture	PPT & Smart Board
UNIT II: Overview Of Query Processing				
2.1	Query Processing Problem	1	Chalk & Talk	Black Board
2.2	Objectives of Query Processing	2	Chalk & Talk	Black Board
2.3	Complexity of Relational Algebra Operations	3	Discussion	Google classroom
2.4	Characterization of Query Processors	2	Lecture	PPT & Smart Board
2.5	Layers of Query Processing	3	Chalk & Talk	Black Board
2.6	Query Decomposition	2	Lecture	PPT & Smart Board
2.7	Localization of Distributed Data	2	Chalk & Talk	Black Board
UNIT III: Distributed Concurrency Control				
3.1	Serializability Theory	1	Chalk & Talk	Black Board
3.2	Taxonomy of Concurrency Control Mechanisms	2	Chalk & Talk	Black Board
3.3	Locking-Based Concurrency Control Algorithms	2	Lecture	PPT & Smart Board
3.4	Timestamp-Based Concurrency Control Algorithms	3	Lecture	PPT & Smart Board

3.5	Optimistic Concurrency Control Algorithms	3	Chalk & Talk	Black Board
3.6	Deadlock Management	2	Flipped Learning	Online/ E-Content/ Text Books
3.7	Relaxed" Concurrency Control	2	Chalk & Talk	Black Board
UNIT IV: Reliability And Replication				
4.1	Reliability Concepts and Measures	1	Lecture	PPT & Smart Board
4.2	Failures in Distributed DBMS	1	Chalk & Talk	Black Board
4.3	Local Reliability Protocols	2	Lecture	PPT & Smart Board
4.4	Distributed Reliability Protocols	2	Discussion	Black Board
4.5	Dealing with Site	2	Chalk & Talk	Black Board
4.6	Network Partitioning	2	Lecture	PPT & Smart Board
4.7	Consistency of Replicated Databases	2	Lecture	PPT & Smart Board
4.8	Replication Protocols - Group Communication	2	Flipped Learning	Online/ E-Content/ Text Books
4.9	Replication and Failures	1	Lecture	PPT & Smart Board
UNIT V: Distributed Object Database Management				
5.1	Fundamental Object Concepts and Object Models	1	Seminar	PPT & Smart Board
5.2	Object Distribution Design	2	Seminar	PPT & Smart Board
5.3	Architectural Issues	2	Seminar	PPT & Smart Board
5.4	Object Management	3	Seminar	PPT & Smart Board
5.5	Distributed Object Storage	3	Seminar	PPT & Smart Board
5.6	Object Query Processing	2	Seminar	PPT & Smart Board
5.7	Transaction Management	2	Seminar	PPT & Smart Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K2	4	4	-	-	-	8	-	8	20 %
K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✓ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are:**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse, **K5-**Synthesis

EVALUATION PATTERN

	SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

COURSE OUTCOMES (CO)

On the successful completion of the course, students will be able to

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Compare normal and distributed DBMS and to explain various approaches of DDBMS.	K1	PSO1& PSO2	PO1
CO 2	Formulate various kinds of retrieving statements to retrieve information from DDB.	K1,,K2	PSO3& PSO4	PO2
CO 3	Explain multiple processes dealing with distributed database system without clash	K1K2	PSO5	PO1
CO 4	Describe the set of protocols used in DDBMS to make effective communication.	K3,K4	PSO6	PO3
CO 5	Discuss object concepts and object models.	K1,K2	PSO7	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	3	3	2	2	2	2	2
CO2	1	1	3	3	1	2	2
CO3	2	2	2	2	3	2	2
CO4	2	2	2	2	1	3	1
CO5	2	2	2	2	1	3	1

Mapping COs Consistency with POs

CO/ PO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	3	1	1
CO3	3	1	1	1
CO4	1	1	2	1
CO5	1	1	1	2

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:

Dr.S.Arul Jothi

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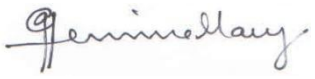


(Dr.G.Germine Mary)

HOD'S Signature & Name

10 % reduced (NEW)

II M.Sc. Computer Science

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
PSCS	19PG3BE7	DISTRIBUTED DATABASE MANAGEMENT SYSTEM	LECTURE	5	5

COURSE DESCRIPTION

Distributed Database contains Overview of Distributed Database, Query Processing , Distributed Concurrency Control , Reliability and Replication, Distributed Object Database Management

COURSE OBJECTIVES

- To understand the basic concepts of Distributed Database
- To interpret Objectives of Query Processing
- To understand Concurrency Control of Distributed Database
- To describe Reliability and Replication protocols and understand fundamental Object Concepts and Object Models

UNITS

UNIT I : Overview Of Distributed Database (15 Hrs)

Distributed Data Processing - What is a Distributed Database System? - Data Delivery Alternatives -Promises of DDBSs-Complicating factors -Problem Areas16 -Distributed Database Design - Top-Down Design Process-Bottom-up Design Process - Distribution Design – Fragmentation.

UNIT II : Overview Of Query Processing (15 Hrs)

Query Processing Problem - Objectives of Query Processing -Complexity of Relational Algebra Operations - Characterization of Query Processors - Layers of Query Processing - Query Decomposition.

UNIT III : Distributed Concurrency Control (15 Hrs)

Serializability Theory - Taxonomy of Concurrency Control Mechanisms - Locking-Based Concurrency Control Algorithms- Timestamp-Based Concurrency Control Algorithms - Optimistic Concurrency Control Algorithms-Deadlock Management.

UNIT IV : Reliability And Replication **(15 Hrs)**

Reliability Concepts and Measures - Failures in Distributed DBMS – Local Reliability Protocols - Distributed Reliability Protocols – Dealing with Site - Network Partitioning - Consistency of Replicated Databases - Replication Protocols - Group Communication .

UNIT V : Distributed Object Database Management **(15 Hrs)**

Fundamental Object Concepts and Object Models - Object Distribution Design Architectural Issues - Object Management - Distributed Object Storage - Object Query Processing - Transaction Management.

SELF STUDY :

UNIT I: Overview of Distributed Database: - Promises of DDBSs- Complicating factors
UNIT II: Query Processing Problem - Objectives of Query Processing UNIT III: Optimistic Concurrency Control Algorithms
UNIT IV: **Reliability And Replication** : Failures in Distributed DBMS, Dealing with Site
UNIT V: **Distributed Object Database Management** : Architectural Issues

TEXT BOOK

Principles of Distributed Database Systems, M. Tamer Özsu and Patrick Valduriez, 3rd Edition, Springer, 2010. Chapters:1, 3, 6, 7, 11, 12, 13, 15.

REFERENCES:

1. ***Principles of Distributed database systems,*** M.T. Ozsu and S. Sridhar, Pearson Education Publication, 2008.
2. ***Distributed Database Systems***, Chhanda Ray, Pearson Education, India, 2009.
3. ***Distributed Database Management Systems: A Practical Approach,*** Saeed K.Rahini&Frank.S.Haug, Wiley-IEEE Computer Society Press, 2010.

Digital Open Educational Resources (DOER)

1. https://cs.uwaterloo.ca/~tozsu/courses/cs856/F02/lecture-1-ho.pdf
2. https://docs.oracle.com/cd/B19306_01/server.102/b14231/ds_concepts. htm
3. https://www.brainkart.com/article/Distributed-Database-Concepts_11590/

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I: Overview Of Distributed Database				
1.1	Distributed Data Processing - What is a Distributed Database System?	2	Chalk & Talk	Black Board
1.2	Data Delivery Alternatives - Promises of DDBSs	2	Lecture	Smart Board
1.3	Complicating factors	2	Lecture	Smart Board
1.4	Problem Areas16	2	Lecture	Black Board
1.5	Distributed Database Design - Top-Down Design Process	2	Chalk & Talk	Black Board
1.6	Bottom-up Design Process -	3	Discussion	Google classroom
1.7	Distribution Design - Fragmentation	2	Lecture	PPT & Smart Board
UNIT II: Overview Of Query Processing				
2.1	Query Processing Problem	1	Chalk & Talk	Black Board
2.2	Objectives of Query Processing	2	Chalk & Talk	Black Board
2.3	Complexity of Relational Algebra Operations	3	Discussion	Google classroom
2.4	Characterization of Query Processors	3	Lecture	PPT & Smart Board
2.5	Layers of Query Processing	3	Chalk & Talk	Black Board
2.6	Query Decomposition	3	Lecture	PPT & Smart Board
UNIT III: Distributed Concurrency Control				
3.1	Serializability Theory	1	Chalk & Talk	Black Board
3.2	Taxonomy of Concurrency Control Mechanisms	2	Chalk & Talk	Black Board
3.3	Locking-Based Concurrency Control Algorithms	2	Lecture	PPT & Smart Board
3.4	Timestamp-Based Concurrency Control Algorithms	3	Lecture	PPT & Smart Board
3.5	Optimistic Concurrency Control Algorithms	3	Chalk & Talk	Black Board
3.6	Deadlock Management	2	Flipped Learning	Online/ E-Content/ Text Books

UNIT IV: Reliability And Replication				
4.1	Reliability Concepts and Measures	1	Lecture	PPT & Smart Board
4.2	Failures in Distributed DBMS	1	Chalk & Talk	Black Board
4.3	Local Reliability Protocols	2	Lecture	PPT & Smart Board
4.4	Distributed Reliability Protocols	2	Discussion	Black Board
4.5	Dealing with Site	2	Chalk & Talk	Black Board
4.6	Network Partitioning	2	Lecture	PPT & Smart Board
4.7	Consistency of Replicated Databases	2	Lecture	PPT & Smart Board
4.8	Replication Protocols - Group Communication	2	Flipped Learning	Online/ E-Content/ Text Books
UNIT V: Distributed Object Database Management				
5.1	Fundamental Object Concepts and Object Models	1	Seminar	PPT & Smart Board
5.2	Object Distribution Design	2	Seminar	PPT & Smart Board
5.3	Architectural Issues	2	Seminar	PPT & Smart Board
5.4	Object Management	3	Seminar	PPT & Smart Board
5.5	Distributed Object Storage	3	Seminar	PPT & Smart Board
5.6	Object Query Processing	2	Seminar	PPT & Smart Board
5.7	Transaction Management	2	Seminar	PPT & Smart Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K2	4	4	-	-	-	8	-	8	20 %
K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✔ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are:**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse, **K5-**Synthesis

EVALUATION PATTERN

	SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

COURSE OUTCOMES (CO)

On the successful completion of the course, students will be able to

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Compare normal and distributed DBMS and to explain various approaches of DDBMS.	K1	PSO1& PSO2	PO1
CO 2	Formulate various kinds of retrieving statements to retrieve information from DDB.	K1,,K2	PSO3& PSO4	PO2
CO 3	Explain multiple processes dealing with distributed database system without clash	K1K2	PSO5	PO1
CO 4	Describe the set of protocols used in DDBMS to make effective communication.	K3,K4	PSO6	PO3
CO 5	Discuss object concepts and object models.	K1,K2	PSO7	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	**3**	**3**	**2**	**2**	**2**	**2**	**2**
CO2	**1**	**1**	**3**	**3**	**1**	**2**	**2**
CO3	**2**	**2**	**2**	**2**	**3**	**2**	**2**
CO4	**2**	**2**	**2**	**2**	**1**	**3**	**1**
CO5	**2**	**2**	**2**	**2**	**1**	**3**	**1**

Mapping COs Consistency with POs

CO/ PO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	3	1	1
CO3	3	1	1	1
CO4	1	1	2	1
CO5	1	1	1	2

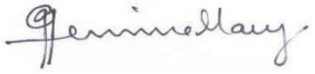
Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:

Dr.S.Arul Jothi

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature & Name

II M.Sc. Computer Science

SEMESTER –III

For those who joined in 2019 onwards

OLD syllabus

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
PSCS	19PG3BE8	COMPILER DESIGN	LECTURE	5	5

COURSE DESCRIPTION

Explore the principles, algorithms, and data structure involved in the design and construction of compilers.

COURSE OBJECTIVES

- To provide knowledge on system oriented concepts
- To help them to write efficient programs, understanding the implementational requirements

UNITS

UNIT I - INTRODUCTION TO COMPILING (15 Hrs)

Compilers – Analysis of the source program – Phases of a compiler – Cousins of the Compiler – Grouping of Phases – Compiler construction tools – Lexical Analysis – Role of Lexical Analyzer – Input Buffering – Specification of Tokens.

UNIT II - SYNTAX ANALYSIS (15 Hrs)

Role of the parser –Context-Free Grammars – Writing Grammars- Top Down parsing –Bottom-up parsing – Operator Precedent Parsing – LR Parsers.

UNIT III - INTERMEDIATE CODE GENERATION (15 Hrs)

Intermediate languages – Declarations – Assignment Statements – Boolean Expressions –Case Statements – Back patching – Procedure calls.

UNIT IV - CODE GENERATION (15 Hrs)

Issues in the design of code generator – The target machine – Runtime Storage management – Basic Blocks and Flow Graphs – Next-use Information

– A simple Code generator –Register allocation and Assignment – DAG representation of Basic Blocks – Peephole Optimization.

UNIT V - CODE OPTIMIZATION (15 Hrs)

Introduction– Principal Sources of Optimization – Optimization of basic Blocks – Loops in flow Graphs – Introduction to Global Data Flow Analysis.

SELF STUDY:

UNIT I:Role of Lexical Analyzer – Input Buffering – Specification of Tokens.
UNIT II**:** LR Parsers.
UNIT III: Procedure calls.
UNIT IV: Peephole Optimization.
UNIT V: Introduction to Global Data Flow Analysis

TEXT BOOK

Compilers Principles, Techniques and Tools, Alfred Aho, Ravi Sethi, Jeffrey D Ullman,2nd Edition Pearson Education Asia.2015

Chapter 1,3.1 to 3.3 , 4.1 to 4.7, 8, 9.1 to 9.9, 10.1 to 10.5

REFERENCES:

1. ***Compiler Design*** *,H.S.Mohan,Narosa Publishing House,2014*
2. ***Compiler Design in*** *R. Venkatesh and N. Uma Maheswari and S.Jeyanthi, Yes DeePublishing Pvt Lid,2015*
3. ***Compiler Design ,****R,Godfrey Winster,S. Aruna Devi, R.Sujatha,Published By Yes DeePublishing Pvt.Ltd, 2017*

Digital Open Educational Resources (DOER)

1. https://www.vssut.ac.in/lecture_notes/lecture1422914957.pdf
2. https://www.guru99.com/compiler-design-tutorial.html
3. http://www.svecw.edu.in/Docs%5CCSECDLNotes2013.pdf

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I - INTRODUCTION TO COMPILING				
1.1	Compilers – Analysis of the source program	3	Chalk & Talk	Black Board
1.2	Phases of a compiler	2	Lecture	Smart Board
1.3	Cousins of the Compiler	1	Discussion	PPT
1.4	Grouping of Phases	2	Lecture	Black Board
1.5	Compiler construction tools	2	Chalk & Talk	Black Board
1.6	Lexical Analysis – Role of Lexical Analyzer	3	Discussion	Google classroom
1.7	Input Buffering – Specification of Tokens	2	Lecture	LCD
UNIT II - SYNTAX ANALYSIS				
2.1	Role of the parser	2	Chalk & Talk	Black Board
2.2	Context-Free Grammars	3	Chalk & Talk	LCD
2.3	Writing Grammars	2	Discussion	Google classroom
2.4	Top Down parsing	2	Lecture	Video
2.5	Bottom-up parsing	1	Discussion	Smart Board
2.6	Operator Precedent Parsing	3	Lecture	PPT
2.7	LR Parsers	2	Chalk & Talk	Black Board
UNIT III - INTERMEDIATE CODE GENERATION				
3.1	Intermediate languages	2	Chalk & Talk	LCD
3.2	Declarations – Assignment Statements	3	Chalk & Talk	Black Board
3.3	Boolean Expressions	2	Discussion	Google classroom
3.4	Case Statements	2	Lecture	PPT

3.5	Back patching	2	Chalk & Talk	Smart Board
3.6	Procedure calls	4	Discussion	Black Board
UNIT IV - CODE GENERATION				
4.1	Issues in the design of code generator	2	Lecture	PPT
4.2	The target machine – Runtime Storage management	3	Chalk & Talk	Black Board
4.3	Basic Blocks and Flow Graphs	2	Lecture	PPT & Smart Board
4.4	Next-use Information – A simple Code generator	1	Discussion	Black Board
4.5	Register allocation and Assignment	2	Chalk & Talk	Black Board
4.6	DAG representation of Basic Blocks	3	Lecture	PPT
4.7	Peephole Optimization	2	Chalk & Talk	Smart Board
UNIT V - CODE OPTIMIZATION				
5.1	Introduction– Principal Sources of Optimization	4	Seminar	PPT & Smart Board
5.2	Optimization of basic Blocks	3	Seminar	PPT & Smart Board
5.3	Loops in flow Graphs	4	Seminar	PPT & Smart Board
5.4	Introduction to Global Data Flow Analysis	4	Seminar	PPT & Smart Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K2	4	4	-	-	-	8	-	8	20 %
K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

- ✓ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are:**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse, **K5**-Synthesis

EVALUATION PATTERN

	SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

COURSE OUTCOMES (CO)

On the successful completion of the course, students will be able to

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Describe the phases of Compiler	K1/K2/K3	PSO1& PSO2	PO1
CO 2	Explain the role and type of Parser	K1/K2/K3	PSO3& PSO4	PO1
CO 3	Analyze and use Intermediate languages	K1/K2/K3/K4	PSO5	PO2
CO 4	Describe the design of code generation with register utilization	K1/K2/K3	PSO6	PO3
CO 5	Demonstrate code optimization techniques.	K1/K2/K3	PSO7	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	3	3	1	1	1	2	2
CO2	1	1	3	3	1	2	2
CO3	2	2	2	2	3	2	2
CO4	2	2	2	2	1	3	1
CO5	2	2	2	2	1	2	2

Mapping COs Consistency with POs

CO/ PO	PO1	PO2	PO3	PO4
CO1	3	1	2	2
CO2	3	1	2	2
CO3	2	3	2	2
CO4	2	2	3	2
CO5	2	2	1	3

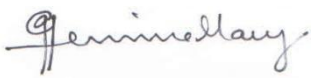
Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:

Dr.S.Arul Jothi

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature & Name

10 % reduced (NEW)

II M.Sc. Computer Science

SEMESTER –III

For those who joined in 2019onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CA TEGORY	HRS/ WEEK	CREDITS
PSCS	19PG3BE8	COMPILER DESIGN	LECTURE	5	5

COURSE DESCRIPTION

Explore the principles, algorithms, and data structure involved in the design and construction of compilers.

COURSE OBJECTIVES

- To provide knowledge on system oriented concepts
- To help them to write efficient programs, understanding the implementation requirements

UNITS

UNIT I - INTRODUCTION TO COMPILING (15 Hrs)

Compilers – Analysis of the source program – Phases of a compiler – Cousins of the Compiler – Grouping of Phases – Compiler construction tools – Lexical Analysis – Role of Lexical Analyzer – Input Buffering – Specification of Tokens.

UNIT II - SYNTAX ANALYSIS (15 Hrs)

Role of the parser –Context-Free Grammars – Writing Grammars- Top Down parsing –Bottom-up parsing – Operator Precedent Parsing

UNIT III - INTERMEDIATE CODE GENERATION (15 Hrs)

Intermediate languages – Declarations – Assignment Statements – Boolean Expressions –Case Statements – Back patching – Procedure calls.

UNIT IV - CODE GENERATION (15 Hrs)

Issues in the design of code generator – The target machine – Runtime Storage management – Basic Blocks and Flow Graphs – Next-use Information – A simple Code generator –Register allocation and Assignment – DAG representation of Basic Blocks.

UNIT V - CODE OPTIMIZATION (15 Hrs)

Introduction– Principal Sources of Optimization – Optimization of basic Blocks – Loops in flow Graphs

SELF STUDY:

UNIT I: Role of Lexical Analyzer – Input Buffering – Specification of Tokens.
UNIT II: LR Parsers.

UNIT III: Procedure calls.
UNIT IV: DAG representation of Basic Blocks.
UNIT V: Loops in flow Graphs

TEXT BOOK

Compilers Principles, Techniques and Tools, Alfred Aho, Ravi Sethi, Jeffrey D Ullman,2nd Edition Pearson Education Asia.2015
Chapter 1,3.1 to 3.3, 4.1 to 4.7, 8, 9.1 to 9.8, 10.1 to 10.4

REFERENCES:

1. ***Compiler Design*** *,H.S.Mohan,Narosa Publishing House,2014*
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1. https://www.vssut.ac.in/lecture_notes/lecture1422914957.pdf
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3. http://www.svecw.edu.in/Docs%5CCSECDLNotes2013.pdf

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I - INTRODUCTION TO COMPILING				
1.1	Compilers – Analysis of the source program	3	Chalk & Talk	Black Board
1.2	Phases of a compiler	2	Lecture	Smart Board
1.3	Cousins of the Compiler	1	Discussion	PPT
1.4	Grouping of Phases	2	Lecture	Black Board
1.5	Compiler construction tools	2	Chalk & Talk	Black Board
1.6	Lexical Analysis – Role of Lexical Analyzer	3	Discussion	Google classroom
1.7	Input Buffering – Specification of Tokens	2	Lecture	LCD
UNIT II - SYNTAX ANALYSIS				
2.1	Role of the parser	2	Chalk & Talk	Black Board
2.2	Context-Free Grammars	3	Chalk & Talk	LCD
2.3	Writing Grammars	2	Discussion	Google classroom

2.4	Top Down parsing	2	Lecture	Video
2.5	Bottom-up parsing	1	Discussion	Smart Board
2.6	Operator Precedent Parsing	3	Lecture	PPT
UNIT III - INTERMEDIATE CODE GENERATION				
3.1	Intermediate languages	2	Chalk & Talk	LCD
3.2	Declarations – Assignment Statements	3	Chalk & Talk	Black Board
3.3	Boolean Expressions	2	Discussion	Google classroom
3.4	Case Statements	2	Lecture	PPT
3.5	Back patching	2	Chalk & Talk	Smart Board
3.6	Procedure calls	4	Discussion	Black Board
UNIT IV - CODE GENERATION				
4.1	Issues in the design of code generator	2	Lecture	PPT
4.2	The target machine – Runtime Storage management	3	Chalk & Talk	Black Board
4.3	Basic Blocks and Flow Graphs	2	Lecture	PPT & Smart Board
4.4	Next-use Information – A simple Code generator	1	Discussion	Black Board
4.5	Register allocation and Assignment	2	Chalk & Talk	Black Board
4.6	DAG representation of Basic Blocks	3	Lecture	PPT
UNIT V - CODE OPTIMIZATION				
5.1	Introduction– Principal Sources of Optimization	4	Seminar	PPT & Smart Board
5.2	Optimization of basic Blocks	3	Seminar	PPT & Smart Board
5.3	Loops in flow Graphs	4	Seminar	PPT & Smart Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
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K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✓ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are:**

K1- Remember, **K2-**Understand, **K3-**Apply, **K4-**Analyse, **K5-**Synthesis

EVALUATION PATTERN

	SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

COURSE OUTCOMES (CO)

On the successful completion of the course, students will be able to

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Describe the phases of Compiler	K1/K2/K3	PSO1& PSO2	PO1
CO 2	Explain the role and type of Parser	K1/K2/K3	PSO3& PSO4	PO1
CO 3	Analyze and use Intermediate languages	K1/K2/K3/K4	PSO5	PO2
CO 4	Describe the design of code generation with register utilization	K1/K2/K3	PSO6	PO3
CO 5	Demonstrate code optimization techniques.	K1/K2/K3	PSO7	PO4

Mapping COs Consistency with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO1	3	3	1	1	1	2	2
CO2	1	1	3	3	1	2	2
CO3	2	2	2	2	3	2	2
CO4	2	2	2	2	1	3	1
CO5	2	2	2	2	1	2	2

Mapping COs Consistency with POs

CO/ PO	PO1	PO2	PO3	PO4
CO1	3	1	2	2
CO2	3	1	2	2
CO3	2	3	2	2
CO4	2	2	3	2
CO5	2	2	1	3

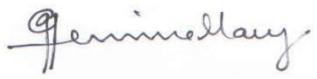
Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:

Dr.S.Arul Jothi

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature & Name

II M.Sc. Computer Science

SEMESTER –III

For those who joined in 2019 onwards

OLD syllabus

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
PSCS	19PG3BE10	ADVANCED COMPUTER GRAPHICS & ANIMATION	LECTURE	5	5

COURSE DESCRIPTION

To make the students familiar with techniques of clipping, three dimensional graphics and three dimensional transformations.

COURSE OBJECTIVES

- To understand the basics of geometry processing.
- To understand the fundamentals of pipelined rasterization rendering of meshed objects and curved surfaces.
- To understand and work with advanced rendering methods such as radiosity.
- To design programs for advanced animation methods and
- To become proficient at graphics programming using OpenGL

UNITS

UNIT I: Output Primitive Of Attributes (15 Hrs)

Points and Lines – Line-drawing algorithms – Loading the frame buffer – Line function – Circle-generating algorithms – Ellipse-generating algorithms – Other curves – Parallel curve algorithms – Curve functions – Pixel addressing – Filled-area primitives – Line attributes – Curve attributes – Color and grayscale levels – Area-fill attributes – Character attributes.

UNIT II: Two-Dimensional Geometric Transformations (15 Hrs)

Basic Transformations – Matrix representations – Composite transformations – Other transformations – Transformations between coordinate systems.

UNIT III: Two-Dimensional Viewing (15 Hrs)

The viewing pipeline – Viewing coordinate reference frame – Window-to-viewport coordinate transformation - Two-Dimensional viewing functions – Clipping operations – Point clipping – Line clipping – Polygon clipping – Curve clipping – Text clipping.

UNIT IV: Introduction To Animation, Interpolation (15 Hrs)

Perception – The heritage of animation – Animation production – Interpolation – Controlling the motion of a point.

UNIT V: Interpolation-Based Animation (15 Hrs)

Key-frame systems – Animation languages – Deforming objects.

SELF STUDY:

UNIT I:Output Primitive: Color & grayscale levels, Area-fill attributes, Character attributes.
UNIT II: Two-Dimensional Geometric Transformations : Basic Transformations– Matrix representations
UNIT III:Two-Dimensional Viewing Window-to-viewport coordinate transformation
UNIT IV:Introduction To Animation, Interpolation : Controlling the motion of a point.
UNIT V:Interpolation-Based Animation: Deforming objects

TEXT BOOKS

1. ***Computer Graphics***, Donald D. Hearn, M. Pauline Baker, 4th Edition, Pearson Education Publication, 2014.

   Chapters: 3.1 – 3.11, 4.1 – 4.5, 5.1 – 5.5, 6.1 – 6.10

2. ***Computer Animation-Algorithms and Techniques***, Rick Parent, Morgan Kaufman Publishers, 2nd Edition, 2009.

Chapters: 1.1 – 1.3, 3.1 – 3.2, 4.1 – 4.3

REFERENCES:

1. ***Computer Graphics, Multimedia and Animation***, Malay K.Pakhira, 2nd Edition, PHI Learning Pvt. Ltd., 2010.
2. ***Interactive Computer Graphics: A top-down approach with OpenGL***, Edward Angel and Dave Shreiner, 6th Edition, Addison Wesley, 2012.
3. ***Computer Graphics Principles and Practice***, Foley, Van Dam, Feiner, Hughes, 3rd Edition, C. Addison Wesley, 2014.
4.

Digital Open Educational Resources (DOER)

1. https://en.wikipedia.org/wiki/Computer_graphics
2. http://what-when-how.com/advanced-methods-in-computer-graphics/introduction-to-advanced-methods-in-computer-graphics/
3. https://inst.eecs.berkeley.edu/~cs294-13/fa09/

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Content Delivery Method	Teaching Aids
UNIT I: Output Primitive Of Attributes				
1.1	Points and Lines – Line-drawing algorithms	3	Lecture	Black Board
1.2	Loading the frame buffer – Line function	2	Lecture	Video
1.3	Circle-generating algorithms – Ellipse-generating algorithms	1	Chalk & Talk	Smart Board
1.4	Other curves – Parallel curve algorithms	2	Lecture	LCD
1.5	Curve functions – Pixel addressing	2	Discussion	Black Board
1.6	Filled-area primitives – Line attributes	1	Chalk & Talk	Google classroom
1.7	Curve attributes – Color and grayscale levels	3	Lecture	Black Board
1.8	Area-fill attributes – Character attributes	1	Chalk & Talk	Smart Board
UNIT II: Two-Dimensional Geometric Transformations				
2.1	Basic Transformations	3	Chalk & Talk	LCD
2.2	Matrix representations	4	Chalk & Talk	Black Board
2.3	Composite transformations	3	Discussion	Google classroom
2.4	Other transformations	3	Lecture	PPT & Smart Board
2.5	Transformations between coordinate systems	2	Lecture	Black Board

UNIT III: Two-Dimensional Viewing				
3.1	The viewing pipeline	2	Discussion	Smart Board
3.2	Viewing coordinate reference frame	3	Chalk & Talk	Black Board
3.3	Window-to-viewport coordinate transformation	2	Discussion	Google classroom
3.4	Two-Dimensional viewing functions	2	Lecture	PPT
3.5	Clipping operations – Point clipping	1	Chalk & Talk	Black Board
3.6	Line clipping – Polygon clipping	2	Lecture	Black Board
3.7	Curve clipping – Text clipping	3	Discussion	LCD
UNIT IV: Introduction To Animation, Interpolation				
4.1	Perception	2	Lecture	PPT & Smart Board
4.2	The heritage of animation	3	Chalk & Talk	Black Board
4.3	Animation production	3	Lecture	PPT & Smart Board
4.4	Interpolation	4	Discussion	Black Board
4.5	Controlling the motion of a point	3	Chalk & Talk	Black Board
UNIT V: Interpolation-Based Animation				
5.1	Key-frame systems	4	Seminar	PPT & Smart Board
5.2	Animation languages	6	Seminar	PPT & Smart Board
5.3	Deforming objects	5	Seminar	PPT & Smart Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K2	4	4	-	-	-	8	-	8	20 %
K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

✓ **The levels of CIA Assessment based on Revised Bloom's Taxonomy are:**

K1- Remember, **K2**-Understand, **K3**-Apply, **K4**-Analyse, **K5**-Synthesis

EVALUATION PATTERN

	SCHOLASTIC				NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

COURSE OUTCOMES (CO)

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED	POs ADDRESSED
CO 1	Explain the basic concepts in computer graphics.	K2	PSO1& PSO2	PO1
CO 2	Analyze various algorithms and to convert the basic geometrical primitives.	K2, K3	PSO3& PSO4	PO2
CO 3	Demonstrate the importance of viewing and clipping.	K2, K4	PSO5	PO4
CO 4	Discuss the fundamentals of animation	K2, K3 & K4	PSO6	PO2
CO 5	Describe Interpolation-Based Animation	K3& K5	PSO7	PO3

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	3	3	1	1	1	2	2
CO2	1	1	3	3	1	2	2
CO3	2	2	2	2	3	2	2
CO4	2	2	2	2	1	3	1
CO5	2	2	2	2	1	1	3

Mapping COs Consistency with POs

CO/ PO	PO1	PO2	PO3	PO4
CO1	2	2	2	2
CO2	1	3	1	1
CO3	2	2	2	3
CO4	1	2	1	1
CO5	2	2	2	1

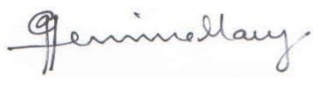
Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:

Dr.S.Arul Jothi

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature & Name

II M.Sc. Computer Science

SEMESTER –III

For those who joined in 2019 onwards

10 % added (NEW)

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
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COURSE DESCRIPTION

To make the students familiar with techniques of clipping, three dimensional graphics and three dimensional transformations.

COURSE OBJECTIVES

- To understand the basics of geometry processing.
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- To design programs for advanced animation methods and
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UNITS

UNIT I: Output Primitive Of Attributes (15 Hrs)

Points and Lines – Line-drawing algorithms – Loading the frame buffer – Line function – Circle-generating algorithms – Ellipse-generating algorithms – Other curves – Parallel curve algorithms – Curve functions – Pixel addressing – Filled-area primitives – Line attributes – Curve attributes – Color and grayscale levels – Area-fill attributes – Character attributes.

UNIT II: Two-Dimensional Geometric Transformations (15 Hrs)

Basic Transformations – Matrix representations – Composite transformations – Other transformations – Transformations between coordinate systems.

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The viewing pipeline – Viewing coordinate reference frame – Window-to-viewport coordinate transformation - Two-Dimensional viewing functions – Clipping operations – Point clipping – Line clipping – Polygon clipping – Curve clipping – Text clipping.

UNIT IV: Introduction To Animation, Interpolation (15Hrs)

Perception – The heritage of animation – Animation production – Computer

Animation production – A Brief history of computer animation – Interpolation – Controlling the motion of a point – Interpolation of orientations.

UNIT V: Interpolation-Based Animation (15 Hrs)

Key-frame systems – Animation languages – Deforming objects – Morphing.

SELF STUDY:

UNIT I: Output Primitive: Color& grayscale levels, Area-fill attributes, Character attributes.
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3.1	The viewing pipeline	2	Discussion	Smart Board
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3.4	Two-Dimensional viewing functions	2	Lecture	PPT
3.5	Clipping operations – Point clipping	1	Chalk & Talk	Black Board
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4.3	Animation production	3	Lecture	PPT & Smart Board
4.4	Interpolation	4	Discussion	Black Board
4.5	Controlling the motion of a point, Interpolation of orientations	3	Chalk & Talk	Black Board
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5.3	Deforming objects, Morphing	5	Seminar	PPT & Smart Board

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
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K3	2	2	-	5	-	9	-	9	22.5 %
K4	2	2	-	-	5	9	-	9	22.5 %
K5	2	2	5	-	-	9	-	9	22.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

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CO 2	Analyze various algorithms and to convert the basic geometrical primitives.	K2, K3	PSO3& PSO4	PO2
CO 3	Demonstrate the importance of viewing and clipping.	K2, K4	PSO5	PO4
CO 4	Discuss the fundamentals of animation	K2, K3 & K4	PSO6	PO2
CO 5	Describe Interpolation-Based Animation	K3& K5	PSO7	PO3

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO1	**3**	**3**	**1**	**1**	**1**	**2**	**2**
CO2	**1**	**1**	**3**	**3**	**1**	**2**	**2**
CO3	**2**	**2**	**2**	**2**	**3**	**2**	**2**
CO4	**2**	**2**	**2**	**2**	**1**	**3**	**1**
CO5	**2**	**2**	**2**	**2**	**1**	**1**	**3**

Mapping COs Consistency with POs

CO/ PO	PO1	PO2	PO3	PO4
CO1	2	2	2	2
CO2	1	3	1	1
CO3	2	2	2	3
CO4	1	2	1	1
CO5	2	2	2	1

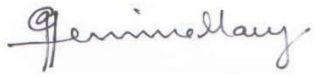
Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**

♦ Weakly Correlated -**1**

COURSE DESIGNER:

Dr.S.Arul Jothi

Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature & Name