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 : 2023– 2024

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 2023-2024 onwards. Convened on 3.4.2023 at 2 pm in the Department of Computer Scien

Members present

1. Dr. G. Germine Mary — Chairman
   Head, Dept. of Computer Science
   Fatima College
   GerrineMary 3/4/23

2. Dr. P. Kabilan — University Nominee
   Assistant Professor
   Dept. of Computer Science
   Madurai Kamaraj University College
   3/4/23

3. Dr. S. Vimala — Subject Expert
   Associate Professor
   Dept. of Computer Science
   MTWU, Kodaikanal
   Absent

4. Dr. Sr. Shantha Mary Joshita — Subject Expert
   Associate Prof. & Head
   Dept. of Computer Science
   Jayaraj Annapackiam College
   Periyakulam
   3/4/23

5. Mr. G. Sahaya Raj — Industrialist
Principal Software Engineer
Dell International Pvt. Ltd.
Bangalore
3/4/23

6 Dr. S. Shaik Parveen — Alumna
Assistant Professor
Dept. of Computer Science
The American college
Madurai
3/4/23

7. Dr. A. Rajeswari — Dean of Academic Affairs – Science
Assistant Prof in chemistry
Fatima College
3/4/2023

Staff Members of the Department

8. Dr. S. Vidya
Associate Professor
Vidya

9. Dr. K. Rosemary Euphrasia
Associate Professor
K. Rosemary Euphrasia
3/4/2023

10. Dr. A. Vimala
Associate Professor
Vimala
3.4.2023

11. Dr. P. Meenakshi Sundari
Assistant Professor
P. Meenakshi

12. Dr. S. Arul Jothi
Assistant Professor
Absent

13. Dr. T. Vasantha
Assistant Professor
T. Vasantha 3/4/2023

14. Ms. C. Swetha
Assistant Professor.

AGENDA

1. Presentation of the action taken report of the previous BoS.
2. To pass the UG framework as suggested by TANSCHE
3. To pass the detailed syllabus for all the courses offered by the dept. in I & II. semesters.
4. To pass the changes in the syllabus of the courses offered in IV, V and VI semesters
5. To pass the syllabus of the Value added online course "Latest Computing Technologies"
6. To pass the syllabus for the Computer Application courses offered by the Dept. of Sociology with Computer Applications

1. Action Taken Report on previous BoS

Suggestion	Action Taken
* To organise more sessions with Alumnae to keep the students aware of the current trends in the industry	3 sessions were organised with Alumnae and students interacted with them
* To create awareness about the work from home opportunities.	An interactive guest lecture was organised to create awareness about work from home opportunities.

2. The framework for UG as suggested by TANSCHE fitting in all the papers for all the 6 semesters was created and passed in the board.

The following are the core courses offered.

SEMESTER	COURSE TITLE
I	1. Python Programming
	2. LAB I – Python Programming
II	3. Data Structures & Algorithms
	4 LAB II – Data Structures using C
III	5. Relational Database System Concepts
	6. LAB III – RDBMS
IV	7. Industry Module – Programming in JAVA
	8. LAB IV – Programming in JAVA
V	9. J2EE Programming
	10. Operating System Concepts
	11. LAB V – J2EE Programming.
	12. Project I
VI	13. PHP Programming
	14. Project II
	15. LAB VI – PHP Programming

Need for introduction – All the papers offered under core courses are mandatory courses for every student learning Computer Science at the UG level.

The following are the general and discipline specific elective courses offered during all 6 semesters.

Generic – G Discipline Specific – DS

Generic/ DS-SEM	Course Title
G-I	1. Programming in C
G-I	2. Web Development
G-II	3. Computer System Architectur
G-II	4. Object Oriented Programming in G
G-III	5. Programming in JAVA
G-III	6. Client side programming using JAVA Script.
G-IV	7. Python Programming
G-IV	8. RDBMS
DS-V	9. Software Engineering
DS-V	10. Cloud computing
DS-V	11. Computer Graphics
DS-V	12. Data Mining and Warehousi
DS-VI	13. Data Communications and Networking
DS-VI	14. Software Testing
DS-VI	15. Introduction to Artificia Intelligence
DS-VI	16. Big Data Analytics

Need for introduction - The preliminary courses of Computer Science are offered as Generic Electives.

Courses offered as DS are courses which will provide completeness to the Compute Science Programme at the UG level.

The following are the various Skill Enhancement Courses (SEC), Foundation, Internship and Professional competency

Courses Offered under Part IV

Type & SEM	Course Title
SEC I	1. Still Graphics using CORELDRAW (Non Major Elective)
FC - I	2. Desktop Applications
SEC - II	3. Still Graphics using Photoshop
SEC - II	4. Web designing using HTML & CSS
SEC - III	5. DTP - COREL DRAW
SEC - III	6. Client side programming using JAVA Script.
SEC - IV	7. Server side programming using ASP .NET
SEC - IV	8. Web services Development using XML
Internship - V	9. Internship (II year summer vacation)
SEC - VI	10. Advanced Excel

All the courses offered under core, elective and Part IV have Global relevance and have scope for employability Entrepreneurship and skill development.

3. The detailed syllabus for all the papers offered in the I and II semesters were framed and passed in the BOard.

4. Revision of Courses

All the 3 courses mentioned below have Global relevance and have scope for employability, entrepreneurship and

skill development:

S.No	Course code	Course Title	No. of UNITS and the title revised and need for revision	% revised
1.	22B4CC8	LAB IV – RDBMS and Data Analytics using Spreadsheets to LAB IV – RDBMS	Spreadsheets removed and focus only on SQL	20
2.	19B5CC9	Programming in JAVA	UNIT III & V – few concepts removed. To facilitate detailed study some advanced topics are removed	20
3.	19B6CC12	J2EE Programming	UNIT I & III modified Advanced topics dealt in PG are removed	15

5. Introduction of online Value added certificate course on "Latest computing Technologies" meant for advanced learners.

Course Title	MOU with industry	Skills Sharpened
Latest Computing Technologies	—	Acquire knowledge of latest technologies like mobile computing & cloud computing

6. The syllabus for the computer Applications courses offered by the Dept. of Sociology and Social work was passed in the board.

SUGGESTIONS & RECOMMENDATIONS: The TANSCHE framework & the syllabus for I year was reviewed and passed.

3/4/23. P. Moenakshi 3/4 T. Vasantha 3/4/2023

3/4/23 3/4/2023 K. Durgapri 3/4/2023

3/4/'23 3/4/2023

3/4/23 3/4/2023

3/4/23 Srimala 3.4.2023

03/04/2023

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

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

To be implemented from the academic year 2023-2024 onwards. Convened on 3.4.2023 at 2pm in the Department of Computer Science

Members present

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Assistant Prof.
Absent

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Assistant Prof.
T. Vasantha 3.4.2023

14. Ms. C. Swetha
Assistant Prof.

C. Swetha

AGENDA

1. To pass the PG framework as suggested by TANSCHE
2. To pass the detailed syllabus for all the courses offered by dept for M.Sc Computer Science in I and II semesters
3. To pass the changes made in 19PGCB13 course of the III semester.

1. The framework for PG as suggested by TANSCHE filling in all the courses for all the 4 semesters were created and passed in the board.

The following are the core courses offered.

SEMESTER	COURSE TITLE
I	1. Advanced programming in JAVA
	2. Theory of computation
	3. Practical I – Advanced Programming in JAVA
II	4. Design and Analysis of Algorithm
	5. Object oriented Software Engineering
	6. LAB-II – Extreme Programming – ASP.NGT
III	7. Digital Image Processing
	8. Data mining and Data Warehousing
	9. LAB-III – Digital Image Processing
	10. Software Testing – Industry
IV	11. Machine Learning

	12. Network Security & Cryptography 13. Lab IV – Machine Learning 14. Project

Need for introduction – All the papers offered under core courses will facilitate students to have indepth knowledge while learning at the PG level.

The following are the generic [G] and discipline specific [DS] elective courses offered during all IV semesters.

G/DS & SEM	Course Title
DS – I	1. Advanced Computer Graphics
DS – I	2. Advanced Database Systems Concepts
DS – I	3. Distributed operating Systems
DS – I	4. LAB – Computer Graphics
DS – I	5. LAB – Advanced RDBMS
DS – I	6. LAB – LINUX for networking
G – II	7. Web Development & Advanced Excel
DS – II	8. Multimedia Technologies
DS – II	9. Computational Data Processing using Python
DS – II	10. Advanced Communication Networks
DS – III	11. Neural networks in Image Processing
DS – III	12. Big Data Analytics
DS – III	13. Security in Computing
DS – IV	14. Introduction to Video processing

DS – IV	15. Web Database and information System
DS – IV	16. Principles of IoT

Need for introduction – The preliminary course of Computer Science are offered as Generic elective.

Courses offered as DS are courses which will facilitate specialization at the PG level.

The following are the Skill Enhancement courses offered:

SEM	Course Title
I	Lab – Python Programming
II	Lab – Mobile Application Development Using Android Studio
III	UGC – NET Syllabus – Part – I
IV	UGC – NET Syllabus – Part – II

All the courses offered under core, Generic / DS electives and skill enhancement have Global relevance and have scope for employability, Entrepreneurship and skill development.

2. The detailed syllabus for the courses offered in the I and II semesters were framed and passed in the board.

3. Revision of Courses:

The course mentioned below has global relevance and scope for employability, entrepreneurship and skill development.

Course code	Course Title	No. of units revised and need for revision	% revised
19PG73B13	Data Mining and Data Warehousing	UNIT II, III & IV modified. To facilitate indepth study of the topics, some topics were removed.	10

SUGGESTIONS & RECOMMENDATIONS —

* Libraries and frameworks to be introduced
* Industry module to be replaced with cloud computing trends. * Knowledge of Devops to be imparted.

3/4/23 P. Meenakshi 3/4/'23 3/4/2023

3/4/'23 K. Ranjusri 3/4/23 3/4/23 T. Vasantha 3/4/2023

3/4/23 3/4/23

3/4/23 3.4.2023

03/04/2023 3/4/2023.

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 2023 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**	23PG1B1	Core – I :Analysis& Design of Algorithms	6	5	40	60	100
2.		23PG1B2	Core – II : Python Programming	6	5	40	60	100
3.		23PG1B3	Core - III: Python Programming Lab	6	4	40	60	100
4.		23PG1BE1 23PG1BE2	**Elective I:** Advanced Software Engineering Advanced Computer Graphics	5	3	40	60	100
5.		23PG1BE3 23PG1BE4	**Elective II** Advanced Database Systems Object Oriented Analysis and Design & C++	5	3	40	60	100
6.		23PG1BAE	Web Development	2	1	40	60	100
			TOTAL	**30**	**21**			
7.	**II**	23PG2B4	Core –IV : Advanced Java Programming	6	5	40	60	100
8.		23PG2B5	Core – V: Data Mining and Warehousing	6	5	40	60	100
9.		23PG2B6	Core – VI : AdvancedJava Programming Lab	6	4	40	60	100
10.		23PG2BE5 23PG2BE6	**Elective - III :** Data Mining Lab using R Operating System Lab	4	3	40	60	100
11.		23PG2BE7 23PG2BE8	**Elective –IV :** Advanced Operating System Multimedia Technologies	4	3	40	60	100
12.		23PG2BAE	**WEB Designing using CSS & JavaScript**	4	2	40	60	100
			TOTAL	**30**	**22**			

S.No		SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
13.		III	22PG3B12	Machine Learning	5	5	40	60	100
14.			19PG3B13	Data Mining and Data Warehousing	5	5	40	60	100
15.			22PG3B14	Lab V – Machine Learning Lab with Python	5	3	40	60	100
16.			19PG3B15	Lab VI – Data Mining And Data Warehousing	5	3	40	60	100
17.		IV	19PG4B16	Principles Of Internet Of Things (Self Study)	-	4	40	60	100

MAJOR ELECTIVE / EXTRA DEPARTMENTAL COURSE / INTERNSHIP/ PROJECT

S. No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. Mks
1.	III	19PG3BE5	PYTHON PROGRAMMING	5	5	40	60	100
2.		19PG3BE6	CRYPTOGRAPHY AND NETWORK SECURITY	5	5	40	60	100
3.		19PG3BE7	DISTRIBUTED DATABASE MANAGEMENT SYSTEM	5	5	40	60	100
4.		19PG3BE8	COMPILER DESIGN	5	5	40	60	100
5.		19PG3BE9	CLOUD COMPUTING	5	5	40	60	100
6.		19PG3BE10	ADVANCED COMPUTER GRAPHICS & ANIMATION	5	5	40	60	100
7.		19PG3BE11	BIG DATA ANALYTICS	5	5	40	60	100

8.		19PG3BE12	CYBER FORENSICS	5	5	40	60	100
9.		19PG3BE13	MOBILE COMMUNICATION	5	5	40	60	100
10.		19PG3BSI	SUMMER INTERNSHIP/ TRAINING/ ONLINE CERTIFICATION	-	3	40	60	100
11.	**IV**	19PG4BPR	PROJECT	-	6	40	60	100

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	III & IV	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

OFF-CLASS PROGRAMMES
ADD-ON COURSES

COURSE CODE	COURSES	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED
23PAD1SS	**SOFT SKILLS**	40	3	I
23PAD2CS	**Cyber Security**	Online	1	I and II
23PADAJ	**Scripting using Angular JS** (Offered by Dept. Of Computer Science)	40	2	II
23PAD4CV	**COMPREHENSIVE VIVA** (Question bank to be prepared for all the papers by the respective course teachers)	-	2	IV
23PAD4RC	**READING CULTURE**	20/ Year	2	I - IV

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	19PG3B13	DATA MINING AND DATA WAREHOUSING	LECTURE	5	5

COURSE DESCRIPTION

Data Mining and Data Warehousing consists of introduction about data mining, data pre-processing, mining frequent pattern, association, classification and cluster analysis and applications of data mining

COURSE OBJECTIVES

- To interpret the contribution of data mining and data warehousing to the decision support level of organizations
- To understand different models used for OLAP and data pre-processing
- To categorize and differentiate between situations for applying different data mining techniques: mining frequent pattern, association, classification and cluster analysis
- To utilize Data Mining techniques in various real applications

UNITS

UNIT I: INTRODUCTION (15 Hrs)

Introduction to Data Mining-its importance — Data Mining on what kind of Data- Data Mining Functionalities-What Kinds of Patterns Can Be Mined – Are All of the Patterns Interesting – Classification of Data Mining Systems – Data Mining Task Primitives – Integration of Data Mining System with a Database or Data Warehouse System – Major Issues in Data Mining.

UNIT II: DATA PREPROCESSING (15 Hrs)

Need to Pre-process the Data - Descriptive Data Summarization – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation. Data Warehouse and OLAP Technology : An Overview - What is a Data Warehouse – A Multidimensional Data Model – Data Warehouse Architecture – Data Warehouse Implementation – From Data Warehousing to a Data Mining.

UNIT III: MINING FREQUENT PATTERNS AND CLASSIFICATION (15 Hrs)

Efficient and Scalable Frequent Itemset Mining Methods: The Apriori Algorithm : Finding Frequent Itemsets Using Candidate Generation- Generating Association Rules from Frequent Itemsets- Improving the

Efficiency of Apriori – Mining Frequent Itemsets without Candidate Generation- Mining Frequent Itemsets Using Vertical Data Format – Mining Closed Frequent Itemsets. Classification - Prediction – Issues Regarding Classification and Prediction – Classification by Decision Tree Induction – Bayesian Classification – Rule-Based Classification – Classification by Back propagation – Support Vector Machines.

UNIT IV: CLUSTER ANALYSIS (15 Hrs)

What is Cluster Analysis – Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical Methods – Density-Based Methods – Grid-Based Methods – Model-Based Clustering Methods.

UNIT V: APPLICATIONS AND TRENDS IN DATA MINING (15 Hrs)

Data Mining Applications – Data Mining System Products and Research Prototypes – Additional Themes on Data Mining – Social Impacts of Data Mining – Trends in Data Mining.

SELF STUDY:

UNIT I: Integration of Data Mining System with a Database or Data Warehouse System

UNIT II: A Multidimensional Data Model – Data Warehouse Architecture

UNIT IV: Grid-Based Methods – Model-Based Clustering Methods.

UNIT V: Data Mining System Products and Research Prototypes – Additional Themes on Data Mining

TEXT BOOK

Data Mining Concepts and Techniques, Jiawei Han and Micheline Kamber, 2nd Edition, Morgan Kaufmann Publishers An Imprint of Elsevier, 2009.

Chapters:1, 2, 3, 5.2, 6.1 - 6.7, 7.1 – 7.8, 11

REFERENCES:

1. ***Data Mining Techniques and Applications: An Introduction,***Hongbo DLL, Cengage Lmg Business Press, 2010.
2. ***Data Warehousing: Concepts, Techniques, Products and Applications***, 3rd Edition, PHI Learning, Delhi, 2012.
3. ***Data Mining & Data Warehousing***, Udit Agarwal, 1st Edition, S.K.Kataria& sons Publication, 2016.
4. ***Data Mining: Concepts and Techniques***, Jiawei Han, Micheline Kamber, 3rd Edition Morgan Kauffmann Publishers, 2011.

Digital Open Educational Resources (DOER)

1. https://hanj.cs.illinois.edu/bk3/bk3_slidesindex.htm
2. https://www.guru99.com/data-mining- tutorial.html
3. https://www.youtube.com/watch?v=syY4tCAxGfk

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 fundamental concept of Data Mining andanalyze and evaluate the data cleaning, integration , transformation and reduction techniques	K1	PSO1& PSO2	PO1
CO 2	Design multidimensional data using Data Warehouse architecture.	K1,,K2	PSO3& PSO4	PO2
CO 3	Design and evaluate Classification algorithms	K1,K3,K4	PSO7	PO3
CO 4	Identify the types of data in Cluster Analysis and categorize the Cluster Methods	K3,K4	PSO5	PO3
CO 5	Utilize the Data Mining techniques in various real applications and in major issues	K1,K2	PSO6, PSO7	PO4

Mapping COs Consistency with PSOs

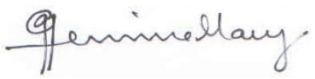
CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO1	3	1	3	1	1	2	2
CO2	1	2	1	2	1	2	2
CO3	2	2	2	2	1	1	3
CO4	2	2	2	2	3	1	3
CO5	2	2	2	2	1	3	2

Mapping COs Consistency with POs

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

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:
Dr.T.Vasantha
Forwarded By



(Dr.G.Germine Mary)

HOD'S Signature & Name

10 % [reduced}

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	19PG3B13	DATA MINING AND DATA WAREHOUSING	LECTURE	5	5

COURSE DESCRIPTION

Data Mining and Data Warehousing consists of introduction about data mining, data pre-processing, mining frequent pattern, association, classification and cluster analysis and applications of data mining

COURSE OBJECTIVES

- To interpret the contribution of data mining and data warehousing to the decision support level of organizations
- To understand different models used for OLAP and data pre-processing
- To categorize and differentiate between situations for applying different data mining techniques: mining frequent pattern, association, classification and cluster analysis
- To utilize Data Mining techniques in various real applications

UNITS

UNIT I: INTRODUCTION (15 Hrs)

Introduction to Data Mining-its importance — Data Mining on what kind of Data- Data Mining Functionalities-What Kinds of Patterns Can Be Mined – Are All of the Patterns Interesting – Classification of Data Mining Systems – Data Mining Task Primitives – Integration of Data Mining System with a Database or Data Warehouse System – Major Issues in Data Mining.

UNIT II: DATA PREPROCESSING (15 Hrs)

Need to Pre-process the Data - Descriptive Data Summarization – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation. Data Warehouse and OLAP Technology : An Overview - What is a Data Warehouse – A Multidimensional Data Model – Data Warehouse Architecture – Data Warehouse Implementation.

UNIT III: MINING FREQUENT PATTERNS AND CLASSIFICATION (15 Hrs)

Efficient and Scalable Frequent Itemset Mining Methods: The Apriori Algorithm : Finding Frequent Itemsets Using Candidate Generation- Generating Association Rules from Frequent Itemsets- Improving the Efficiency of Apriori – Mining Frequent Itemsets without Candidate Generation- Mining Frequent Itemsets Using Vertical Data Format – Mining Closed Frequent Itemsets. Classification - Prediction – Issues Regarding Classification and Prediction – Classification by Decision Tree Induction – Bayesian Classification – Rule-Based Classification – Classification by Back propagation.

UNIT IV: CLUSTER ANALYSIS (15 Hrs)

What is Cluster Analysis – Types of Data in Cluster Analysis – A Categorization of Major Clustering Methods – Partitioning Methods – Hierarchical Methods – Density-Based Methods – Grid-Based Methods.

UNIT V: APPLICATIONS AND TRENDS IN DATA MINING (15 Hrs)

Data Mining Applications – Data Mining System Products and Research Prototypes – Additional Themes on Data Mining – Social Impacts of Data Mining – Trends in Data Mining.

SELF STUDY:

UNIT I: Integration of Data Mining System with a Database or Data Warehouse System

UNIT II: A Multidimensional Data Model – Data Warehouse Architecture

UNIT IV: Grid-Based Methods – Model-Based Clustering Methods.

UNIT V: Data Mining System Products and Research Prototypes – Additional Themes on Data Mining

TEXT BOOK

Data Mining Concepts and Techniques, Jiawei Han and MichelineKamber, 2nd Edition, Morgan Kaufmann Publishers An Imprint of Elsevier, 2009.

Chapters:1, 2, 3, 5.2, 6.1 - 6.7, 7.1 – 7.8, 11

REFERENCES:

1. ***Data Mining Techniques and Applications: An Introduction,***Hongbo DLL, CengageLmg Business Press, 2010.
2. ***Data Warehousing: Concepts, Techniques, Products and Applications***, 3rd Edition, PHI Learning, Delhi, 2012.

3. ***Data Mining & Data Warehousing***, Udit Agarwal, 1st Edition, S.K.Kataria& sons Publication, 2016.
4. ***Data Mining: Concepts and Techniques***, Jiawei Han, MichelineKamber, 3rd Edition Morgan Kauffmann Publishers, 2011.

Digital Open Educational Resources (DOER)

1. https://hanj.cs.illinois.edu/bk3/bk3_slidesindex.htm
2. https://www.guru99.com/data-mining- tutorial.html
3. https://www.youtube.com/watch?v=syY4tCAxGfk

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 fundamental concept of Data Mining and analyze and evaluate the data cleaning, integration , transformation and reduction techniques	K1	PSO1& PSO2	PO1
CO 2	Design multidimensional data using Data Warehouse architecture.	K1,,K2	PSO3& PSO4	PO2
CO 3	Design and evaluate Classification algorithms	K1,K3,K4	PSO7	PO3
CO 4	Identify the types of data in Cluster Analysis and categorize the Cluster Methods	K3,K4	PSO5	PO3
CO 5	Utilize the Data Mining techniques in various real applications and in major issues	K1,K2	PSO6, PSO7	PO4

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