FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A" Grade by NAAC (3rd Cycle)
74th Rank in India Ranking 2020 (NIRF) by MHRD
Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: INFORMATION TECHNOLOGY

NAME OF THE PROGRAMME : M.Sc.

PROGRAMME CODE : PSIT

ACADEMIC YEAR : 2021-2022

VISION OF THE DEPARTMENT

To be the center of excellence in training the students in Information Technology to excel both as a professional and as a human in the society.

MISSION OF THE DEPARTMENT

- Empower women by teaching them technology and life lessons.
- Encourage students to be the change in the society.
- Educate students and prepare them in various aspects of IT industry.
- Provide leadership quality for effective strategic and tactical planning in use of technology.
- Instill the power of faith and hope, so they could be the blessing to their next generation.

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)

The learners 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.IT programme, the graduates would be able to

PSO 1	Understand the concepts and applications in the field of Information Technology like Web designing and development, Mobile application development, and Network communication technologies.
PSO 2	Ability to understand the structure and development methodologies of software systems.
PSO 3	Apply the learning from the courses and develop applications for real world problems.
PSO 4	Understand the technological developments in the usage of modern design and development tools to analyze and design for a variety of applications.
PSO 5	Familiarity and practical competence with a broad range of programming language and open source platforms.
PSO 6	Demonstrate the understanding of the principles and working of the hardware and software aspects of computer systems
PSO 7	Possess professional skills and knowledge of software design process.
PSO 8	Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing problems.

PSO 9	Communicate in both oral and written forms, demonstrating the practice of professional ethics and the concerns for social welfare.

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF INFORMATION TECHNOLOGY

MAJOR CORE – 70 CREDITS

PROGRAMME CODE: PSIT

S. No	SEM.	COURSE CODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. MKs
1.	I	21PG1IT1	Java & J2ME	4	4	40	60	100
2.		21PG1IT2	Soft Computing	4	4	40	60	100
3.		21PG1IT3	Data Management using R Programming	4	4	40	60	100
4.		21PG1IT4	Distributed Operating System	4	4	40	60	100
5.		21PG1IT5	LAB I: Java & J2ME	5	3	40	60	100
6.		21PG1IT6	LAB II : Data Management using R-Programming	5	3	40	60	100
7.	II	21PG2IT7	Data Science	4	4	40	60	100
8.		21PG2IT8	Digital Image Processing	4	4	40	60	100
9.		21PG2IT9	Android Programming	4	4	40	60	100
10.		21PG2IT10	LAB III : Digital Image Processing	5	3	40	60	100
11.		21PG2IT11	LAB IV: Android Programming	5	3	40	60	100
12.	III	19PG3IT13	Data Mining and Data Warehousing	5	5	40	60	100
13.		19PG3IT14	Python Programming	5	5	40	60	100
14.		19PG3IT17	LAB V: Data Mining and Data Warehousing	5	3	40	60	100
15.		19PG3IT18	LAB VI: Python Programming	5	3	40	60	100
16.	IV	19PG4IT19	R- Programming	-	4	40	60	100
			Total	**68**	**60**			

MAJOR ELECTIVE / EXTRA DEPARTMENTAL COURSE / INTERNSHIP/ PROJECT

S. No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. Mks
1.	I	21IT1EDC	EDC 1- Animation Software	3	3	40	60	100
2.	II	21IT2EDC	EDC 2 - Animation Software	3	3	40	60	100
3.		21PG2ITE1/ 21PG2ITE2/ 21PG2ITE3	Elective - I Adhoc Network/ Machine Learning/ Cyber Security/	4	5	40	60	100
4.	III	19PG3IT15A/ 19PG3IT15B/ 19PG3IT15C	Elective - II Software Testing/ Digital Image Processing/ Linux Shell Programming	4	4	40	60	100
5.		19PG3IT16A/ 19PG3IT16B/ 19PG3IT16C	Elective - III Big Data Analytics/ Internet of Things/ Mobile Communication/	5	5	40	60	100
6.		19PG3ITSI	Internship	-	3	50	50	100
7.	IV	19PG4ITPR	Project & Viva Voce	-	6	50	50	100
			TOTAL	**19**	**29**			

OFF-CLASS PROGRAMMES

ADD-ON COURSES

COURSE CODE	COURSES	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
	SOFT SKILLS	40	4	I	40	60	100
	COMPUTER APPLICATIONS (Dept. Specific Course)	40	4	II	40	60	100
	COMPREHENSIVE VIVA (Question bank to be prepared for all the papers by the respective course teachers)	-	2	IV	-	-	100
	READING CULTURE	15/ Semester	1	I-IV	-	-	-
	TOTAL		**11**				

EXTRA CREDIT COURSES

COURSE CODE	COURSES	HRS.	CREDITS	SEMESTER IN WHICH THE COURSE IS OFFERED	CIA MKS	ESE MKS	TOTAL MARKS
21PGCASLIT1	**SELF LEARNING COURSE for ADVANCED LEARNERS**	-	2	I	40	60	100

	SUPPLY CHAIN MANAGEMENT						
	MOOC COURSES / International Certified online Courses (Department Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM /UGC /CEC	-	Minimum 2 Credits	I – IV	-	-	

- **Lab Courses :**
  - A range of 10-15 experiments per semester

- **Summer Internship:**
  - Duration-1 month (2nd Week of May to 2nd week of June-before college reopens)
- **Project:**
  - Off class
  - Evaluation components-Report writing + Viva Voce (Internal marks-40) + External marks 60
- **EDC:**

Syllabus should be offered for two different batches of students from other than the parent department in Sem-I & Sem-II

Employability 100%

I M.Sc.IT

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG1IT1	JAVA & J2ME	Lecture	4	4

COURSE DESCRIPTION

This course provides various techniques of Java Programming and help them to create effective programs in this language.

COURSE OBJECTIVES

This course is aimed to apply variety of technologies in JAVA for different platforms.

UNITS

UNIT –I INTRODUCTION& BASIC CONCEPTS (11 HRS.)

Java Program Structure-Java Tokens-Java Statements- Implementing a Java Program-Java Virtual machine. Packages: Introduction- Java API Packages- Using System Packages- Nesting Conventions-Creating Packages-Accessing a Package- Using a Package- Adding a Class to a Package- Hiding Classes Applet Programming: Introduction- How Applets Differ from Applications- Preparing to Write Applets – Building Applet Code- Applet Life Cycle- Creating an Executable Applet- Designing a web page- Applet Tag-Adding Applet to HTML File- Running the Applet- More about Applet Tag- Passing Parameters to Applets- Aligning the Display – More About HTML Tags- **Displaying Numerical Values- Getting input from the user (Self Study)**

UNIT –II SWINGS (11 Hrs)

GUI Programming with Swing: Introducing Swing – Two key swing features – The MVG Connection – Components and Containers – Swing Packages – Event Handling – Swing Applet – Painting in Swing.

Exploring Swing: JLabel and ImageIcon – JTextField – The Swing Buttons – JTabbedPane – **JScrollPane – JList – JComboBox – Trees – JTable (Self Study)**.

UNIT –III: JDBC (12 Hrs)

JDBC- Java Database Connectivity: Introducing JDBC Driver Types - Creating Your First First JDBC Program – Performing Batch Updates – Using Save points - Configuring the JDBC-ODBC Bridge- Explaining Database Connection pools and data sources-**Revisiting DBProcessor-Using the RowSet Interface (Self Study)**

UNITIV : J2ME Overview (12 Hrs)

Inside J2ME - J2ME and Wireless devices – J2ME Architecture – MIDlet Programming- J2ME Software development kits – J2ME Style- Multiple MIDlets- J2ME wireless toolkit.

UNIT V : J2ME UI (12 Hrs)

Commands- Items- Event Processing- High level Display : Screens – Low level Display :Canvas

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (3 Hrs)

Implementation of Real-time application using JAVA

REFERENCES:

1. E. Balagurusamy, "Programming with JAVA", TataMcGraw-Hill Publications, 2015, 5th Edition.
2. ***Java The Complete Reference,*** Herbert Schildt 9thEdition, Mc Graw Hill Education, 2016.
   Chapters: 22, 30, 31, 32, 33,38
3. ***James McGovern***, Rahim Adatia and others, ***J2EE 1.4 Bible,*** 1st Edition, Wiley India (P) Ltd, (2008). Chapters: 6,7,18
4. Philip Heller and Simon Roberts, "JAVA 2 Developer's Handbook", BPB Publications, 2000
5. C.Xavier , "Projects on JAVA", SCITECH Publications
6. Cay S. Horstmann GaryCornell,"Core Java Volume I fundamentals" , Pearson Education, 2008, Eigth edition.
7. Jamie Jaworski, "Java 2 Platform Unleashed" , Techmedia Publications, 1999

Digital Open Educational Resources

(DOER):https://www.tutorialspoint.com/java/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**INTRODUCTION & BASIC CONCEPTS**			
1.1	Java Program Structure-Java Tokens-Java Statements-Implementing a Java Program-Java Virtual machine	1	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.2	Packages: Introduction- Java API Packages- Using System Packages- Nesting Conventions-Creating Packages- Accessing a Package- Using a Package- Adding a Class to a Package- Hiding Classes .	1	Chalk & Talk	LCD
1.3	Applet Programming: Introduction- How Applets Differ from Applications- Preparing to Write Applets – Building Applet Code- Applet Life Cycle-	4	Lecture	PPT & White board
1.4	Creating an Executable Applet- Designing a web page- Applet Tag-Adding Applet to HTML File- Running the Applet-	2	Lecture	Smart Board
1.5	More about Applet Tag- Passing Parameters to Applets- Aligning the Display – More About HTML Tags	2	Lecture	Black Board
1.6	Displaying Numerical Values- Getting input from the user(Self Study)	1	Discussion	Google classroom
UNIT -2 SWINGS				
2.1	GUI Programming with Swing: Introducing Swing – Two key swing features – The MVG Connection – Components and Containers	1	Lecture	Green Board Charts

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.2	– Swing Packages – Event Handling – Swing Applet – Painting in Swing	3	Chalk & Talk	Green Board
2.3	Exploring Swing: JLabel and ImageIcon – JTextField – The Swing Buttons- JTabbedPane	3	Chalk & Talk	Green Board
2.4	JScrollPane – JList – JComboBox-Trees – JTable(self study)	4	Discussion	Google Classroom
UNIT -3 SWINGS MENUS				
3.1	Swing Menus: Menu Basics – Overview of JMenuBar, JMenu, and JMenuItem	3	Chalk & Talk	Black Board
3.2	Create a Main Menu – Add Mnemonics and Accelerators to Menu Item	3	Chalk & Talk	LCD
3.3	Add Images and Tooltips to Menu Items – Use JRadioButtonMenuItem and JCheckBoxMenuItem	3	Lecture	Smart Board
3.4	Create a Popup Menu – Create a Toolbar – Use Actions – Entire MenuDemo Program Together(Self Study)	2	Discussion	Google Classroom
UNIT -4 JDBC				
4.1	JDBC- Java Database Connectivity: Introducing JDBC Driver Types - Creating Your First First JDBC Program	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
4.2	Performing Batch Updates – Using Save points - Configuring the JDBC-ODBC Bridge-.	3	Lecture	Smart Board
4.3	ExplainingDatabase Connection pools and data sources	3	Chalk & Talk	LCD
4.4	Revisiting DBProcessor-Using the RowSet Interface(Self Study)	3	Discussion	Google Classroom
UNIT -5 J2ME UI				
5.1	Background, The Life Cycle of a Servlet	3	Lecture	Smart Board
5.2	Using Tomcat For Servlet Development, A Simple Servlet-Servlet	3	Chalk & Talk	Black Board
5.3	API: The Javax Servlet Package, Reading Servlet Parameters, Javax. Servlet .http Package, Handling HTTP Requests & Responses	3	Chalk & Talk	LCD
5.4	Using Cookies, Session Tracking, Security Issues	3	Chalk & Talk	LCD
UNIT -6 DYNAMISM				
6.1	Implementation of Real-time application	3	Assignment & Group discussion	PPT

INTERNAL - PG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks	CIA Total	

							C6		% 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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	35
Non Scholastic	5

40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

****The best out of two will be taken into account***

COURSE OUTCOMES

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
CO 1	To understand the structure and model of the Java programming language.	K2	PSO1, PSO4
CO 2	To explain the concepts of Packages, Interfaces and strings.	K2, K3	PSO4, PSO5
CO 3	To develop software implementing Exception handling mechanisms	K3, K4	PSO3, PSO6
CO 4	To design software for database connectivity and able to design GUI applications	K3, K4	PSO3, PSO9
CO 5	To implement server side programming using SERVLETS	K4, K5	PSO6, PSO8

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2	1	3	2	1	1	1	1
CO2	1	1	2	3	2	3	1	1	1
CO3	2	1	1	1	3	3	1	1	1
CO4	1	1	1	3	1	1	1	1	3
CO5	1	1	2	1	2	3	1	3	2

Mapping of COs with POs

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

CO4	**3**	**2**	**1**	**1**
CO5	**3**	**2**	**1**	**1**

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Mrs. V. Mageshwari**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

I M.Sc.IT

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG1IT2	SOFT COMPUTING	Lecture	4	4

COURSE DESCRIPTION

This course emphasizes learning various soft computing techniques.

COURSE OBJECTIVES

To facilitate the student to apply soft computing techniques to solve problems.

UNITS

UNIT –I INTRODUCTION (12 HRS.)

Introduction-Artificial Intelligence-Artificial Neural Networks-Fuzzy Systems-Genetic Algorithm and Evolutionary Programming-Swarm Intelligent Systems-Classification of ANNs-McCulloch and Pitts Neuron Model-Learning Rules: Hebbian and Delta- Perceptron Network-Adaline Network-Madaline Network.

UNIT –II: ARTIFICIAL NEURAL NETWORKS (12 HRS.)

Back propagation Neural Networks – Kohonen Neural Network -Learning Vector Quantization -Hamming Neural Network – Hopfield Neural Network-Bi-directional Associative Memory -Adaptive Resonance Theory Neural Networks- Support Vector Machines – Spike Neuron Models.

UNIT –III: FUZZY SYSTEMS (12 HRS.)

Introduction to Fuzzy Logic, Classical Sets and Fuzzy Sets – Classical Relations and Fuzzy Relations -Membership Functions -Defuzzification – Fuzzy Arithmetic and Fuzzy Measures -Fuzzy Rule Base and Approximate Reasoning – Introduction to Fuzzy Decision Making.

UNIT –IV :GENETIC ALGORITHMS (12 HRS.)

Basic Concepts- Working Principles -Encoding- Fitness Function – Reproduction -Inheritance Operators – Cross Over – Inversion and Deletion -Mutation Operator – Bit-wise Operators -Convergence of Genetic Algorithm.

UNIT –V: SWARM INTELLIGENT SYSTEM (11 HRS.)

Introduction – Ant Colony System – Any colony Optimization – particle Swarm Intelligent Systems – Artificial Bee colony System

UNIT –VI: DYNAMISM (Evaluation Pattern-CIA only) (1 HRS.)

Ant colony System

TEXT BOOK:

1. N.P.Padhy, S.P.Simon, “Soft Computing with MATLAB Programming”, Oxford University Press, 2015.

   Unit I – Chapter 1
   Unit II – Chapter 3, 4
   Unit III – Chapter 5, 6
   Unit IV – Chapter 7
   Unit V – Chapter 8

REFERENCE BOOK:

1. S.N.Sivanandam ,S.N.Deepa, “Principles of Soft Computing”, Wiley India Pvt. Ltd., 2nd Edition, 2011.
2. S.Rajasekaran, G.A.VijayalakshmiPai, “Neural Networks, Fuzzy Logic and Genetic Algorithm, Synthesis and Applications “, PHI Learning Pvt. Ltd., 2017.
3. Jyh-Shing Roger Jang, Chuen-Tsai Sun, EijiMizutani, —Neuro-Fuzzy and Soft Computing, Prentice-Hall of India, 2002.
4. KwangH.Lee, —First course on Fuzzy Theory and Applications, Springer,

2005.
5. George J. Klir and Bo Yuan, —Fuzzy Sets and Fuzzy Logic-Theory and Applications, Prentice Hall, 1996.
6. James A. Freeman and David M. Skapura, —Neural Networks Algorithms, Applications, and Programming Techniques, Addison Wesley, 2003.

Digital Open Educational Resources (DOER) :

1) https://www.javatpoint.com/what-is-soft-computing

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Introduction-Artificial Intelligence	1	Discussion	Black Board
1.2	Artificial Neural Networks-Fuzzy Systems	1	Chalk & Talk	Black Board
1.3	Genetic Algorithm and Evolutionary Programming	2	Lecture	LCD
1.4	Swarm Intelligent Systems-Classification of ANNs-McCulloch and Pitts Neuron Model	2	Discussion	Google classroom
1.5	Learning Rules: Hebbian and Delta	2	Chalk & Talk	Black Board
1.6	Perceptron Network-Adaline Network	2	Chalk & Talk	Black Board
1.7	Madaline Network.	2	Lecture	PPT & White board
UNIT -2 ARTIFICIAL NEURAL NETWORKS				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.1	Back propagation Neural Networks	2	Lecture	PPT &White board
2.2	Kohonen Neural Network -Learning Vector Quantization	2	Chalk & Talk	Green Board
2.3	Hamming Neural Network – Hopfield Neural Network	2	Chalk & Talk	Black Board
2.4	Bi-directional Associative Memory	2	Chalk & Talk	Black Board
2.5	Adaptive Resonance Theory Neural Networks- Support Vector Machines	2	Chalk & Talk	Black Board
2.6	Spike Neuron Models	2	Chalk & Talk	Black Board
UNIT – 3 FUZZY SYSTEMS				
3.1	Introduction to Fuzzy Logic	2	Discussion	PPT & White board
3.2	Classical Sets and Fuzzy Sets	2	Chalk &Talk	Green Board
3.3	Classical Relations and Fuzzy Relations	2	Chalk & Talk	Black Board
3.4	Membership Functions -Defuzzification	2	Chalk & Talk	Black Board
3.5	Fuzzy Arithmetic and Fuzzy Measures -Fuzzy Rule Base and Approximate Reasoning	2	Discussion	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.6	– Introduction to Fuzzy Decision Making.	2	Lecture	PPT & White board
UNIT – 4 GENETIC ALGORITHMS				
4.1	Basic Concepts- Working Principles	2	Discussion	PPT & White board
4.2	Encoding- Fitness Function	2	Chalk & Talk	Green Board
4.3	Reproduction -Inheritance Operators	2	Chalk & Talk	Black Board
4.4	Cross Over – Inversion and Deletion	2	Chalk & Talk	Black Board
4.5	Mutation Operator	2	Discussion	Black Board
4.6	Bit-wise Operators -Convergence of Genetic Algorithm	2	Lecture	Green Board
UNIT – 5 SWARM INTELLIGENT SYSTEM				
5.1	Introduction	2	Lecture	PPT & White board
5.2	Ant Colony System	2	Chalk & Talk	Black Board
5.3	Any colony Optimization	2	Lecture	Black Board
5.4	particle Swarm Intelligent Systems	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.5	Artificial Bee colony System	2	Chalk & Talk	Black Board
5.6	Artificial Bee colony System	2	Chalk &Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Ant colony System	1	Discussion	Black Board

INTERNAL - PG

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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks

C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	Understand basic model in soft computing	K2	PSO1&PSO2
CO 2	Elaborate artificial neural network concepts	K2, K4	PSO3
CO 3	Be familiar with design of various neural networks	K2	PSO5&PSO6
CO 4	Understand genetic programming.	K4, K6	PSO4
CO 5	exposed to various hybrid systems.	K4	PSO8

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	1	3	1	1	1	1	1	1
CO3	2	1	1	1	3	3	1	1	1
CO4	1	1	1	3	1	1	1	1	1
CO5	1	1	2	1	2	1	1	3	2

Mapping of COs with Pos

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: Dr. V. Jane Varamani Sulekha**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

I M.Sc.IT

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG1IT3	DATA MANAGEMENT USING R-PROGRAMMMING	Lecture	4	4

COURSE DESCRIPTION:

This course provides an in-sight to learn and understand the concepts of relational database management and its programming using R.

COURSE OBJECTIVES :

The course is aimed to expose the student to the fundamental concepts and techniques in database use and development as well provides a foundation for data management and storage using R.

UNITS

UNIT I :DATA INPUT,OUTPUT & MANAGEMENT (11 Hrs)

Input-Output- Structure and Metadata – Derived variables and data manipulation – Merging, combining, and subsetting datasets – data and time variables – Probability distributions and random number generation – Mathematical functions – Matrix operations.

UNIT II : PROGRAMMING & COMMON STATISTICAL PROCEDURES (11 Hrs)

Control flow, programming and data generation – functions – Integration with the operating system – Summary statistics – Contingency tables – Tests for continuous variables.

UNIT –III :LINEAR REGRESSION AND ANOVA (11 Hrs)

Model fitting – Tests, contrasts, and linear functions of parameters – Model results and diagnostics – Model parameters and results – Generalized linear model – Further generalization – Robust methods – Models for correlated data – Survival analysis.

UNIT –IV : GRAPHICAL COMPENDIUM AND CONFIGURATIONS (11 Hrs)

Univariate plots – Univariate plots by grouping variable – Bivariate plots – Multivariate plots – Special purpose plots - Adding elements – Options and parameters – saving graphs.

UNIT –V: SIMULATIONS ADVANCED STATISTICAL METHODS (11 Hrs)

Generating data – Simulation applications – Bayesian methods – Propensity scores – Bootstrapping – Missing data.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 Hrs)

R Data Frame: Create, Append, Select, Subset - R Vs Python - SAS Vs R

TEXT BOOKS :

1. "Using R and RStudio for DataManagement, Statistical Analysis, and Graphics" , by Nicholas J. Horton and Ken Kleinman, CRC Press, New York, Second Edition
2. "Beginning R – The Statistical Programming Language", by Dr. Mark Gardener, Wiley India Pvt., Ltd., 2017.

REFERENCE :

1. Frank. P. Coyle, "XML, Web Services and The Data Revolution", Pearson Education,2012.

Digital Open Educational Resources (DOER) :

https://www.atnyla.com/syllabus/r-programming-language/7

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 DATA INPUT,OUTPUT & MANAGEMENT				
1.1	Input-Output- Structure and Metadata	1	Discussion	Black Board
1.2	Derived variables and data manipulation	1	Chalk & Talk	Black Board
1.3	Merging, combining, and sub setting datasets	2	Lecture	LCD
1.4	Data and time variables	2	Discussion	Google classroom
1.5	Probability distributions and random number generation	2	Chalk & Talk	Black Board
1.6	Mathematical functions – Matrix operations.	2	Chalk & Talk	Black Board
UNIT -2 PROGRAMMING & COMMON STATISTICAL PROCEDURES				
2.1	Control flow	1	Lecture	PPT & White board
2.2	Programming and data generation	2	Chalk & Talk	Green Board
2.3	Functions	2	Chalk & Talk	Black Board
2.4	Integration with the operating system	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.5	Summary statistics	2	Chalk & Talk	Black Board
2.6	Contingency tables – Tests for continuous variables.	2	Chalk & Talk	Black Board
UNIT – 3 LINEAR REGRESSION AND ANOVA				
3.1	Model fitting – Tests, contrasts, and linear functions of parameters	1	Discussion	PPT & White board
3.2	Model results and diagnostics	2	Chalk &Talk	Green Board
3.3	Model parameters and results	2	Chalk & Talk	Black Board
3.4	Generalized linear model	2	Chalk & Talk	Black Board
3.5	Further generalization – Robust methods	2	Discussion	Black Board
3.6	Models for correlated data – Survival analysis.	2	Lecture	PPT & White board
UNIT – 4 GRAPHICAL COMPENDIUM AND CONFIGURATIONS				
4.1	Univariate plots	1	Discussion	PPT & White board
4.2	Univariate plots by grouping variable	2	Chalk & Talk	Green Board
4.3	Bivariate plots – Multivariate plots	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
4.4	Special purpose plots	2	Chalk & Talk	Black Board
4.5	Adding elements	2	Discussion	Black Board
4.6	Options and parameters – saving graphs.	2	Lecture	Green Board
UNIT – 5 SIMULATIONS ADVANCED STATISTICAL METHODS				
5.1	Generating data	1	Lecture	PPT & White board
5.2	Simulation applications	2	Chalk & Talk	Black Board
5.3	Bayesian methods	2	Lecture	Black Board
5.4	Propensity scores	2	Chalk & Talk	Black Board
5.5	Bootstrapping	2	Chalk & Talk	Black Board
5.6	Missing data.	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	R Data Frame: Create, Append, Select	2	Discussion	Black Board
6.2	Subset - R Vs Python - SAS Vs R	2	Discussion	Black Board

INTERNAL - PG

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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	To understand the basic concepts in R- Programming.	K2	PSO1,PSO2
CO 2	Illustrate various statements used in R-Programming	K2, K3	PSO3, PSO5
CO 3	Analyze various techniques to import and export the data set.	K3,K4	PSO5, PSO6
CO 4	To know about the aggregate functions.	K4, K5	PSO6, PSO7
CO 5	Implementation of R-Progamming in current scenario	K4,K5	PSO8, PSO9

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	1	3	1	3	1	1	1	1
CO3	2	1	1	1	3	3	1	1	1
CO4	1	1	1	2	1	3	3	1	1
CO5	1	1	2	1	2	1	1	3	3

Mapping of COs with Pos

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **V. Mageshwari**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

I M.Sc.IT

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG1IT4	DISTRIBUTED OPERATING SYSTEM	Lecture	4	4

COURSE DESCRIPTION

To understand the concept of design and implementation in the context of distributed operating systems.

COURSE OBJECTIVES

To apply the concepts of distributed systems in designing large systems, and will additionally apply these concepts to develop sample systems.

To recognize the inherent difficulties that arise due to distribution of computing resources.

UNITS

UNIT –I INTRODUCTION (10 Hrs)

Fundamentals – Distributed computing systems – Evolution of distributed computing systems – Distributed computing system models – Popularity of distributed computing systems – Distributed operating system – **issues in designing a distributed operating system– Introduction to distributed computing environment(DCE)(Self Study)**.

UNIT –II MESSAGE PASSING (11 Hrs)

Message Passing – Introduction – Desirable features of a good message-passing system – Issues in IPC by message passing – Synchronization – Buffering – Multidatagram messages – Remote

Procedure Calls – Introduction – The RPC model – Transparency of RPC – Implementing RPC mechanism.

UNIT –III DISTRIBUTED SHARED MEMORY (12 Hrs)

Distributed Shared Memory – Introduction – General architecture of DSM systems – Design and implementation issues of DSM – Synchronization – Introduction – Clock synchronization – Election Algorithms. **Resource Management – Introduction – Desirable features of a good global scheduling algorithm – load sharing approach. (Self Study)**

UNIT –IV PROCESS MANAGEMENT (12 Hrs)

Process Management – Introduction – Process migration - Distributed File Systems – Introduction – Desirable features of a good distributed file system – File models– File-Accessing models – File-Sharing semantics – **File-Caching schemes – File replication – Fault tolerance. (Self Study)**

UNIT –V LINUX (12 Hrs)

The Linux Shell and File Structure: The Shell – The Command Line – History – Filename Expansion – Standard Input/Output and Redirection – Pipes – Ending Processes – The shell scripts and Programming –Shell Variables – Shell Scripts – Environment Variables and Subshells – Control Structures – **TCSH/C Shell Control structures.(Self Study)**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (3 Hrs.)

Analysis of different types of Operating systems in real time applications.

REFERENCES:

1. ***Distributed Operating Systems Concepts and Design,*** Pradeep K. Sinha, Prentice Hall of India Private Limited, 2012.
2. Linux: The Complete Reference, Richard Petersen, McGraw Hill Education (India) Private Limited, 6th Edition, 2011.
2. ***Operating Systems,*** Stuart Madnick, John Donovan, McGraw Hill Education, 2012.
3. ***Distributed Operating Systems***, Andrew S. Tanenbaum, Pearson Education, New Delhi, 2013.

4. ***Beginning Linux Programming***, Neil Matthew, Richard Stones, Wiley India Pvt. Ltd, 2014

Digital Open Educational Resources

(DOER):https://www.javatpoint.com/distributed-operating-system

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Fundamentals – Distributed computing systems	1	Chalk & Talk	Black Board
1.2	Evolution of distributed computing systems	2	Chalk & Talk	LCD
1.3	Distributed computing system models – Popularity of distributed computing systems	4	Lecture	PPT & White board
1.4	Distributed operating system – Issues in designing a distributed operating system(Self Study)	1	Discussion	Google Classroom
1.5	Introduction to distributed computing environment(DCE)	2	Lecture	Black Board
UNIT -2 MESSAGE PASSING				
2.1	Introduction – Desirable features of a good message-passing system	1	Lecture	Green Board Charts
2.2	Issues in IPC by message passing – Synchronization – Buffering	2	Chalk & Talk	Green Board
2.3	Multidatagram messages – Remote Procedure Calls	3	Chalk & Talk	Black Board
2.4	Introduction – The RPC model – Transparency of RPC	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.5	Implementing RPC mechanism	2	Chalk &Talk	Black Board
UNIT -3 DISTRIBUTED SHARED MEMORY				
3.1	Introduction – General architecture of DSM systems	3	Chalk & Talk	Black Board
3.2	Design and implementation issues of DSM	3	Lecture	Green Board Charts
3.3	Synchronization – Introduction – Clock synchronization – Election Algorithms.	3	Chalk & Talk	Black Board
3.4	Resource Management – Introduction – Desirable features of a good global scheduling algorithm – load sharing approach. (Self Study)	3	Discussion	Google Classroom
UNIT - 4 PROCESS MANAGEMENT				
4.1	Introduction – Process migration	2	Chalk & Talk	Black Board
4.2	Distributed File Systems – Introduction – Desirable features of a good distributed file system	3	Lecture	Green Board
4.3	File models– File-Accessing models	3	Chalk & Talk	Black Board
4.4	File-Sharing semantics	2	Lecture	Green Board
4.5	File-Caching schemes – File replication – Fault tolerance. (Self Study)		Discussion	Google Classroom

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT - 5 LINUX				
5.1	The Shell – The Command Line – History – Filename Expansion	3	Chalk &Talk	Black Board
5.2	Standard Input/Output and Redirection – Pipes – Ending Processes	3	Lecture	Green Board
5.3	The shell scripts and Programming –Shell Variables	3	Chalk & Talk	Black Board
5.4	Shell Scripts – Environment Variables and Sub shells -Control Structures	2	Chalk & Talk	Black Board
5.5	TCSH/C Shell Control structures.(Self Study)	1	Discussion	Google Classroom
UNIT – 6 DYNAMISM				
6.1	Analysis of different types of Operating systems in real time applications.	3	Assignment submission	Google Classroom

INTERNAL - PG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1	T2	Seminar	Assignment	OBT/PPT				
	10 Mks.	10 Mks.	5 Mks.	5 Mks	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 %**

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	**10**	**5**	**-**	**-**	**-**	**15**	25 %
K3	**-**	**5**	**10**	**-**	**-**	**15**	25 %
K4	**-**	**5**	**-**	**-**	**10**	**15**	25 %
K5	**-**	**5**	**-**	**10**	**-**	**15**	25 %
Total	**10**	**20**	**10**	**10**	**10**	**60**	**100 %**

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

****The best out of two will be taken into account***

COURSE OUTCOMES

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
CO 1	Understand the core concepts of distributed systems.	K2	PSO1, PSO2
CO 2	Analyze various message passing mechanisms with its model.	K2, K4	PSO4,PSO6

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 3	Identify the inherent difficulties that arise due to distribution of computing resources.	K3& K4	PSO3,PSO6
CO 4	Explain migration with the process management policies.	K2, K3	PSO2,PSO5
CO 5	Explain the basic concepts, design and structure of the LINUX operating system.	K2 & K4	PSO4,PSO6

Mapping of C0s with PSOs

CO / PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO 1	**3**	**3**	**1**	**2**	**2**	**1**	**2**	**1**	**1**
CO 2	**1**	**1**	**2**	**3**	**1**	**3**	**1**	**1**	**2**
CO 3	**2**	**2**	**3**	**2**	**1**	**3**	**1**	**2**	**1**
CO 4	**1**	**3**	**2**	**2**	**3**	**1**	**2**	**1**	**2**
CO 5	**2**	**2**	**1**	**3**	**2**	**3**	**2**	**2**	**2**

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Dr. Arul Jothi**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

I M.Sc.IT

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG1IT5	LAB I - JAVA & J2ME	Practical	5	3

COURSE DESCRIPTION

This course provides programming skills on various concepts in JAVA.

COURSE OBJECTIVES

This course is aimed to learn and practice the various programming concepts in JAVA

UNITS

1. Programs using the concept of Overloading.
2. Programs using the concept of Inheritance and Constructor
3. Programs using the concept of Interface and Overriding .
4. Programs using the concept of Built_in and User defined Exception Handling.
5. Programs using the concept of Threads.
6. Programs using the concept of String Handling.
7. Programs using the concept of Packages
8. Programs for creating Applet.
9. Programs using Event Handling.
10. Programs using the concept of swing
11. Programs using the concept of J2ME

12. Programs using Data Base Connectivity

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
LAB PROGRAMS				
1	Programs using the concept of Overloading.	5	Demonstration	Desktop
2	Programs using the concept of Inheritance and Constructor	10	Demonstration	Desktop
3	Programs using the concept of Interface and Overriding .	5	Demonstration	Desktop
4	Programs using the concept of Built_in and User defined Exception Handling.	5	Demonstration	Desktop
5	Programs using the concept of Threads.	5	Demonstration	Desktop
6	Programs using the concept of String Handling.	5	Demonstration	Desktop
7	Programs using the concept of Packages	10	Demonstration	Desktop
8	Programs for creating Applet.	10	Demonstration	Desktop
9	Programs using Event Handling	5	Demonstration	Desktop
10	Programs using the concept of swing	10	Demonstration	Desktop

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
11	Programs using the concept of J2ME	10	Demonstration	Desktop
12	Programs using Data Base Connectivity	10	Demonstration	Desktop

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	C2	C3	CIA	ESE	Total
20	15	5	40	60	100

- **PG CIA Components**

C1 – Average of Two Model test Marks

C 2- Program Completion and Record Work

C 3 – Non - Scholastic

COURSE OUTCOMES

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
CO 1	To understand the concept of Object Oriented Programming & Java Programming Constructs.	K4 & K5	PSO3,PSO5
CO 2	To practice the concepts of operators, classes, objects, inheritance, packages ,Enumeration and various keywords.	K4 & K5	PSO1,PSO2
CO 3	To apply exception handling mechanisms.	K4 & K5	PSO6,PSO9
CO 4	To design the applications of Java & Java applet, Swings and JDBC	K4 & K5	PSO7,PSO9
CO 5	To Analyze and implement J2ME	K4 & K5	PSO8,PSO9

Mapping of C0s with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1	**2**	**2**	**3**	**1**	**3**	**1**	**1**	**1**	**1**
CO2	**3**	**3**	**2**	**1**	**2**	**1**	**1**	**1**	**1**
CO3	**2**	**1**	**1**	**1**	**2**	**3**	**1**	**1**	**3**
CO4	**1**	**1**	**1**	**3**	**1**	**1**	**3**	**1**	**3**

CO5	**1**	**1**	**2**	**1**	**2**	**1**	**1**	**3**	**3**

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Mrs. V. Mageshwari**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

I M.Sc.IT

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG1IT6	LAB II: DATA MANAGEMENT USING R - PROGRAMMING	Practical	5	3

COURSE DESCRIPTION

This course provides to understand the Data storage, management and organization techniques.

COURSE OBJECTIVES

The major objective of this lab is to provide a strong formal foundation in database concepts, technology, relating to query processing in SQL and PLSQL

PROGRAM LIST

1. Arithmetic Operations
2. Access-system date – create date, time variables, extract month, weekdays, quarters and year details
3. Scanning data
4. Scanning character
5. Setting location
6. Data entry using spreadsheet
7. Mathematical functions
8. List, vector and matrix
9. List – a combination of string, numbers, vectors and logical values
10. List-vector, matrix, data about list data
11. List- add element
12. List- element selection
13. Array
14. Array concatenation

15. Framing
16. Factors
17. Matrix- create from vector, combine vectors
18. Matrix creation, addition, transpose, multiplication
19. Matrix- dimension check, determinant matrix, subset of matrix, diagonal matrix, vector from matrix, vector diagonal matrix
20. For loop to print characters from a string
21. For loop to find sum of real numbers
22. While loop to print a substring of a string
23. While loop to convert decimal to binary
24. If- else – to check whether the given number is +ve, -ve or zero
25. Nested if -else to check the occurrence of a string in a list
26. Nested if – to find leap year or not
27. Switch – perform arithmetic calculator
28. Switch – print area of shapes
29. Fibonacci series
30. Factorial of a given number
31. Program to Check prime number or not
32. Program to check Armstrong number or not
33. String palindrome
34. Number palindrome
35. Age calculation from given Date of birth
36. Function – to check even or odd
37. Function – area of shapes (square, rectangle, circle) in a single function
38. Function – to find LCM
39. Function – arithmetic calculator
40. Inline function – to print the result of a mathematical expression
41. Create a dataset using merging
42. Dataset creation for student mark list-export as csv file
43. Selection queries in student dataset
44. Dataset – create and select values from employee dataset
45. Student dataset- create and update with total and grade columns after calculation
46. Linear regression for height and weight data- predict and assess the prediction using R2 score
47. Multiple regression – mtcars
48. Multiple regression – student dataset
49. ANOVA – compare linear and multiple regressions – mtcars
50. ANOVA – compare two models – student dataset
51. Survival analysis – Kaplan – Meier Method
52. Survival analysis – Cox Proportional hazard model
53. Univariate plots
54. Bivariate plots
55. Multivariate plots

56. Pie chart – students' details
57. Pie chart – car showroom
58. Special purpose plotting (12 programs)
59. Saving plots in different format
60. Generate a linear model using normal distribution(rnorm,dnorm,rpois)
61. Simulating dataframe #students # mtcars#airquality
62. Testing , recode and exclude

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**TITLE**			
1	Arithmetic Operations - Access-system date – create date, time variables, extract month, weekdays, quarters and year detailsScanning data -Scanning character - Setting location	15	Demonstration	Desktop
2	Data entry using spreadsheet -Mathematical functions -List, vector and matrix -List – a combination of string, numbers, vectors and logical values -List-vector, matrix, data about list data -List- add element -List- element selection –Array -Array concatenation	5	Demonstration	Desktop
3	Framing – Factors -Matrix- create from vector, combine vectors -Matrix creation, addition, transpose, multiplication -Matrix- dimension check, determinant matrix, subset of matrix,	5	Demonstration	Desktop

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	diagonal matrix, vector from matrix, vector diagonal matrix			
4	For loop to print characters from a string -For loop to find sum of real numbers -While loop to print a substring of a string -While loop to convert decimal to binary	5	Demonstration	Desktop
5	If- else – to check whether the given number is +ve, -ve or zero -Nested if -else to check the occurrence of a string in a list -Nested if – to find leap year or not -Switch – perform arithmetic calculator -Switch – print area of shapes	5	Demonstration	Desktop
6	Fibonacci series -Factorial of a given number -Program to Check prime number or not -Program to check Armstrong number or not -String palindrome -Number palindrome -Age calculation from given Date of birth	5	Demonstration	Desktop
7	Function – to check even or odd -Function – area of shapes (square, rectangle, circle) in a single function -Function – to find LCM -Function – arithmetic calculator -Inline function – to print the result of a mathematical expression -Create a dataset using merging	5	Demonstration	Desktop

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
8	Dataset creation for student mark list-export as csv file -Selection queries in student dataset -Dataset – create and select values from employee dataset -Student dataset- create and update with total and grade columns after calculation -Linear regression for height and weight data- predict and assess the prediction using R2 score	10	Demonstration	Desktop
9	Multiple regression – mtcars -Multiple regression – student dataset -ANOVA – compare linear and multiple regressions – mtcars -ANOVA – compare two models – student dataset -Survival analysis – Kaplan – Meier Method	10	Demonstration	Desktop
10	Survival analysis – Cox Proportional hazard model -Univariate plots -Bivariate plots -Multivariate plots -Pie chart – students' details -Pie chart – car showroom -Special purpose plotting	10	Demonstration	Desktop
11	Saving plots in different format -Generate a linear model using normal distribution(rnorm,dnorm,rpois) -Simulating dataframe -#students # mtcars#airquality -Testing , recode and exclude	10	Demonstration	Desktop

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

- **PG CIA Components**

C1 – Average of Two Model test Marks

C 2- Program Completion and Record Work

C 3 – Non - Scholastic

COURSE OUTCOMES

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
CO 1	Implement Basic Data Access, List	K4 & K5	PSO1 & PSO2
CO 2	Develop programs using Array, function	K4 & K5	PSO5 & PSO7
CO 3	Use Linear Regression and ANOVA	K4 & K5	PSO7 & PSO9
CO 4	Understand Graphical Configurations.	K4 & K5	PSO8 & PSO9
CO 5	Develop program using simulation and statistical method.	K4 & K5	PSO6 & PSO7

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	1	3	1	1	1	3	1	1
CO3	2	1	1	1	2	2	3	1	3
CO4	1	1	1	3	1	1	1	3	3
CO5	1	1	2	1	2	3	3	2	1

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1.Staff Name : Mrs. V. Mageshwari

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

I M.Sc.IT

SEMESTER I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21IT1EDC	ANIMATION SOFTWARE	Practical	3	3

COURSE DESCRIPTION

This course is designed to facilitate different animation techniques in animation software.

COURSE OBJECTIVES

To facilitate the student to understand the animation techniques and make the students to develop their 3D animations.

UNITS

UNIT 1 : EXPLORING THE INTERFACE: (6 Hrs)

Introduction to Alice - download and install Alice 3.1-A brief tour of the Alice 3 IDE -A brief tour of the Menu Bar- Set Preferences -Touring the Gallery

UNIT-2: SETTING THE SCENE (6 Hrs)

Adding an object to a scene- set object properties in the Scene editor- set special effects in a scene-Marking - position and resize an object in the Scene editor- Positioning sub-parts in Scene editor- align objects using a Snap grid- Cut, Copy, and Paste with the Clipboard

UNIT -3: LEARNING TO PROGRAM THROUGH ALICE (6 Hrs)

Sequential & Parallel Execution - Do in order - Do together- Further nesting- Branching & Looping-Conditional execution-Relational Operators-Randomness-Repetition-While loops- Lists

UNIT-4: EVENT HANDLING AND METHODS: (6 Hrs)

Interactive programming & event handling - Control of flow- Events- Event handing methods.

UNIT -5: 3D TEXT AND BILLBOARDS, SOUND: (6 Hrs)

Create 3D Text- Billboards- Creating a Sound- Adding a Sound - Posting on YouTube

PROGRAM LIST

1. Alice Interface
2. Alice Objects
3. Alice Scene
4. Sequential and Parallel Execution
5. Branching and Looping
6. Event Handling
7. Methods
8. 3D text

REFERENCES:

"Introduction to Programming with Green foot ", by Micheal Kolling

Digital Open Educational Resources (DOER):
http://www.alice.org/3.1/materials_videos.php

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**EXPLORING THE INTERFACE**			
1.1	Introduction to Alice - download and install Alice 3.1-A brief tour of the Alice 3 IDE	3	Chalk & Talk	Black Board
1.2	A brief tour of the Menu Bar-Set Preferences -Touring the Gallery	3	Chalk & Talk	Black Board
UNIT -2	**SETTING THE SCENE**			
2.1	Adding an object to a scene-set object properties in the Scene editor	2	Lecture	PPT & White board
2.2	set special effects in a scene-Marking - position and resize an object in the Scene editor- Positioning sub-parts in Scene editor- align objects using a Snap grid	2	Demonstration	Desktop
2.3	Cut, Copy, and Paste with the Clipboard	2	Lecture	Black Board
UNIT -3	**LEARNING TO PROGRAM THROUGH ALICE**			
3.1	Sequential & Parallel Execution - Do in order - Do together	2	Discussion	Black Board
3.2	Further nesting- Branching & Looping-Conditional execution	2	Lecture	Green Board Charts

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.3	Relational Operators-Randomness-Repetition-While loops- Lists	2	Chalk & Talk	Green Board
UNIT -4	**EVENT HANDLING AND METHODS**			
4.1	Interactive programming & event handling	2	Lecture	Smart Board
4.2	Control of flow- Events-	2	Demonstration	Desktop
4.3	Event handing methods.	2	Lecture	Smart Board
UNIT -5	**3D TEXT AND BILLBOARDS, SOUND**			
5.1	Create 3D Text	2	Demonstration	Desktop
5.2	Billboards- Creating a Sound	2	Demonstration	Desktop
5.3	Adding a Sound - Posting on YouTube	2	Demonstration	Desktop

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	C2	C3	CIA	ESE	Total
20	15	5	40	60	100

- **PG CIA Components**

C1 – Average of Two Model test Marks

C 2- Program Completion and Record Work

C 3 – Non - Scholastic

COURSE OUTCOMES

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
CO 1	Understand basic concepts in Alice.	K3,K4 &K5	PSO1, PSO2& PSO3
CO 2	Construct a scene.	K3,K4 &K5	PSO4, PSO5 & PSO7
CO 3	Build program in Alice using looping and branching.	K3,K4 &K5	PSO6, PSO7 & PSO8
CO 4	Apply event handlers in alice.	K3,K4 &K5	PSO8 & PSO9
CO 5	Develop 3D animations.	K3,K4 &K5	PSO6 & PSO9

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	3	1	1	1	1	1	1
CO2	1	1	2	3	3	1	3	1	1
CO3	2	1	1	1	1	3	3	3	1
CO4	1	1	1	2	1	1	1	3	3
CO5	1	1	2	1	2	3	1	1	3

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Mrs. T. Leena Prema Kumari**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

I M.Sc.IT

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG2IT7	DATA SCIENCE	Lecture	4	4

COURSE DESCRIPTION

This course emphasizes learning various concepts in data science.

COURSE OBJECTIVES

To provide strong foundation for data science and application area related to it and understand the underlying core concepts and emerging technologies in data science.

UNITS

UNIT –I INTRODUCTION (12 HRS.)

Big Data and Data Science Hype – Why data science – Getting Past the Hype – The Current Landscape – Data Scientist - Data Science Process Overview – Defining goals – Retrieving data – Data preparation – Data exploration – Data modeling – Presentation.

UNIT –II: BIG DATA (12 HRS.)

Problems when handling large data – General techniques for handling large data – Case study – Steps in big data – Distributing data storage and processing with Frameworks – Case study.

UNIT –III: MACHINE LEARNING (12 HRS.)

Machine learning – Modeling Process – Training model – Validating model – Predicting new observations –Supervised learning algorithms – Unsupervised learning algorithms.

UNIT –IV : DEEP LEARNING (12 HRS.)

Introduction – Deep Feedforward Networks – Regularization – Optimization of Deep Learning – Convolutional Networks – Recurrent and Recursive Nets – Applications of Deep Learning.

UNIT –V: DATA VISUALIZATION, ETHICS AND RECENT TRENDS

(11 HRS.)

Introduction to data visualization – Data visualization options – Filters – MapReduce – Dashboard development tools – Creating an interactive dashboard with dc.js-summary.Data Science Ethics – Doing good data science – Owners of the data - Valuing different aspects of privacy - Getting informed consent - The Five Cs – Diversity – Inclusion – Future Trends.

UNIT –VI: DYNAMISM (Evaluation Pattern-CIA only) (1 HRS.)

Data Science Ethics

TEXT BOOK:

1. Introducing Data Science, Davy Cielen, Arno D. B. Meysman, Mohamed Ali, Manning Publications Co., 1st edition, 2016
   Unit I – Chapter 1,2
   Unit II – Chapter 4,5
   Unit III – Chapter 3
   Unit V – Chapter 9

2. Deep Learning, Ian Goodfellow, YoshuaBengio, Aaron Courville, MIT Press, 1st edition, 2016
   Unit IV – Chapter 6, 7
3. Ethics and Data Science, D J Patil, Hilary Mason, Mike Loukides, O' Reilly, 1st edition, 2018 Unit V – Chapter 1,3,4

REFERENCE BOOK:

1. Data Science from Scratch: First Principles with Python, Joel Grus, O'Reilly, 1st edition, 2015
2. Doing Data Science, Straight Talk from the Frontline, Cathy O'Neil, Rachel Schutt, O' Reilly, 1st edition, 2013
3. Mining of Massive Datasets, Jure Leskovec, Anand Rajaraman, Jeffrey David Ullman, Cambridge University Press, 2nd edition, 2014

Digital Open Educational Resources (DOER) :

1) https://www.javatpoint.com/data-science

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Big Data and Data Science Hype	2	Discussion	Black Board
1.2	Why data science – Getting Past the Hype	2	Chalk & Talk	Black Board
1.3	The Current Landscape	2	Lecture	LCD
1.4	Data Scientist - Data Science Process Overview	2	Discussion	Google classroom
1.5	Defining goals – Retrieving data – Data preparation	2	Chalk & Talk	Black Board
1.6	Data exploration – Data modeling – Presentation.	2	Chalk & Talk	Black Board
UNIT -2 BIG DATA				
2.1	Problems when handling large data	2	Lecture	PPT & White board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.2	General techniques for handling large data	2	Chalk & Talk	Green Board
2.3	Case study – Steps in big data	2	Chalk & Talk	Black Board
2.4	Distributing data storage and processing with Frameworks	2	Chalk & Talk	Black Board
2.5	Distributing data storage and processing with Frameworks	2	Chalk & Talk	Black Board
2.6	Case study.	2	Chalk & Talk	Black Board
UNIT – 3 MACHINE LEARNING				
3.1	Machine learning	2	Discussion	PPT & White board
3.2	Modeling Process	2	Chalk &Talk	Green Board
3.3	Training model	2	Chalk & Talk	Black Board
3.4	Validating model	2	Chalk & Talk	Black Board
3.5	Predicting new observations –Supervised learning algorithms	2	Discussion	Black Board
3.6	Unsupervised learning algorithms.	2	Lecture	PPT & White board
UNIT – 4 DEEP LEARNING				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
4.1	Introduction – Deep Feedforward Networks	2	Discussion	PPT &White board
4.2	Regularization	2	Chalk & Talk	Green Board
4.3	Optimization of Deep Learning	2	Chalk & Talk	Black Board
4.4	Convolutional Networks	2	Chalk & Talk	Black Board
4.5	Recurrent and Recursive Nets	2	Discussion	Black Board
4.6	Applications of Deep Learning.	2	Lecture	Green Board
UNIT – 5 DATA VISUALIZATION, ETHICS AND RECENT TRENDS				
5.1	Introduction to data visualization – Data visualization options – Filters – MapReduce	2	Lecture	PPT & White board
5.2	Dashboard development tools – Creating an interactive dashboard with dc.js-summary	2	Chalk & Talk	Black Board
5.3	Data Science Ethics	2	Lecture	Black Board
5.4	Doing good data science – Owners of the data	2	Chalk & Talk	Black Board
5.5	Valuing different aspects of privacy - Getting informed consent	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.6	The Five Cs – Diversity – Inclusion – Future Trends.	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Data Science Ethics	1	Discussion	Black Board

INTERNAL - PG

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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks

C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	Understand the fundamental concepts of data science	K2	PSO1&PSO2
CO 2	Evaluate the data analysis techniques for applications handling large data	K2, K4	PSO3
CO 3	Demonstrate the various machine learning algorithms used in data science process	K2	PSO5&PSO6
CO 4	Understand the ethical practices of data science.	K4, K6	PSO4
CO 5	Learn to think through the ethics surrounding privacy, data sharing and algorithmic decision-making	K4	PSO8

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	1	3	1	1	1	1	1	1
CO3	2	1	1	1	3	3	1	1	1
CO4	1	1	1	3	1	1	1	1	1
CO5	1	1	2	1	2	1	1	3	2

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: Dr. V. Jane Varamani Sulekha**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

II M.Sc.IT

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG2IT8	DIGITAL IMAGE PROCESSING	Lecture	4	4

COURSE DESCRIPTION

The course helps to create interest in image processing techniques and infuse research thirst in this area

COURSE OBJECTIVES

- To inculcate ideas and create interest in processing images techniques.
- To provide a research orientation inducing them to pursue research.

UNITS

UNIT I : INTRODUCTION (14 Hrs)

Introduction- What is Digital Image Processing- The Origins of Digital Image Processing – Examples of Fields that Use Digital Image Processing – Fundamental Steps in Digital Image Processing – **Components of an Image Processing System(Self Study).**

UNIT II : DIGITAL IMAGE FUNDAMENTALS (14 Hrs)

Elements of Visual Perception – Light and the Electromagnetic Spectrum – Image Sensing and Acquisition – Image Sampling and Quantization – image interpolation - Some Basic Relationships between Pixels – **An Introduction to the Mathematical Tools Used in Digital Image Processing. (Self Study)**

UNIT III: INTENSITY TRANSFORMATIONS AND SPATIAL FILTERING (14 Hrs)

Background-Some Basic Intensity Transformation Functions - Histogram Processing – Fundamentals of Spatial Filtering – Smoothing Spatial Filters – Sharpening Spatial Filters – **Combining Spatial Enhancement Methods.(Self Study)**

UNIT IV: IMAGE RESTORATION AND RECONSTRUCTION (14 Hrs)

A Model of the Image Degradation/Restoration Process-Noise Models - Restoration in the Presence of Noise Only-Spatial Filtering.**Color Image Processing:** Color Fundamentals – **Color Models(Self Study)**

UNIT V: IMAGE COMPRESSION AND SEGMENTATION (14 Hrs)

Fundamentals – Huffman coding – Golomb coding- Arithmetic coding – LZW coding- Runlength coding - **Segmentation Fundamentals - Point, Line and Edge Detection(Self Study)**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 Hrs)

Image processing tools in current real time problems

REFERENCES:

1. ***Digital Image Processing***, Rafael.C.Gonzalez and Richard E.Woods, 3rd Edition, Pearson Publications, 2014.
   Chapters: 1, 2, 3.1 – 3.7, 5.1 – 5.3, 6.1, 6.2, 8.1 - 8.2.5, 10.1, 10.2
2. ***Fundamentals of Digital image processing***, Anil Jain, PHI Learning Pvt Ltd. 2011.
3. ***Digital Image Processing & Analysis***, B.Chanda, D.Dutta Majumder, 2nd Edition, PHI Learning Pvt Ltd. 2013.
4. ***Digital Image Processing***, Chaturvedi, 1st Edition, Vayu Educaton India Publisher, 2013.
5. ***Digital Image Processing: Principles and Applications***, Wilhelm **Burger and Mark J. Burge,** 2nd Edition, Springer, 2016.

Digital Open Educational Resources (DOER):

https://www.tutorialspoint.com/dip/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Introduction- What is Digital Image Processing- The Origins of Digital Image Processing	4	Chalk & Talk	Black Board
1.2	Examples of Fields that Use Digital Image Processing	4	Chalk & Talk	LCD
1.3	Fundamental Steps in Digital Image Processing	3	Lecture	PPT & White board
1.4	Components of an Image Processing System(Self Study)	3	Discussion	Black Board
UNIT -2 DIGITAL IMAGE FUNDAMENTALS				
2.1	Elements of Visual Perception – Light and the Electromagnetic Spectrum	4	Lecture	Black Board
2.2	Image Sensing and Acquisition – Image Sampling and Quantization	4	Lecture	PPT & White board
2.3	image interpolation - Some Basic Relationships between Pixels	4	Lecture	Black Board
2.4	An Introduction to the Mathematical Tools Used in Digital Image Processing(Self Study)	2	Discussion	Black Board
UNIT -3 INTENSITY TRANSFORMATIONS AND SPATIAL FILTERING				
3.1	Background-Some Basic Intensity Transformation Functions	4	Lecture	Green Board Charts

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.2	Histogram Processing – Fundamentals of Spatial Filtering	4	Chalk &Talk	Green Board
3.3	Smoothing Spatial Filters Sharpening Spatial Filters	4	Chalk & Talk	Green Board
3.4	Combining Spatial Enhancement Methods(Self Study)	2	Discussion	Black Board
UNIT -4 IMAGE RESTORATION AND RECONSTRUCTION				
4.1	A Model of the Image Degradation/Restoration Process	2	Chalk & Talk	Green Board
4.2	Noise Models - Restoration in the Presence of Noise Only	3	Chalk & Talk	Black Board
4.3	Spatial Filtering.	5	Chalk & Talk	Black Board
4.4	Color Fundamentals	2	Chalk & Talk	Black Board
4.5	Color Models(Self Study)	2	Discussion	Black Board
UNIT -5IMAGE COMPRESSION AND SEGMENTATION				
5.1	Fundamentals – Huffman coding – Golomb coding	4	Chalk & Talk	Black Board
5.2	Arithmetic coding – LZW coding-	4	Chalk & Talk	Green Board
5.3	Runlength coding	4	Chalk & Talk	Green Board
5.4	Segmentation Fundamentals -Point, Line and Edge Detection(Self Study)	2	Discussion	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -6DYNAMISM				
6.1	Image processing tools in current real time problems	5	Group Discussion	Black Board

INTERNAL - PG

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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks

C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	Understand the representation of digital image and its manipulations	K2	PSO1,PSO2
CO 2	Analyze image sampling and quantization requirements and implications	K2, K3	PSO4,PSO5
CO 3	Describe various Transformation and Filtering Techniques	K2, K3	PSO4,PSO5
CO 4	Demonstrate Restoration And Reconstruction models	K3, K4	PSO5,PSO6
CO 5	Utilize Image Compression And Segmentation for efficient storage	K3, K5	PSO5,PSO8

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO9
CO1	**3**	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
CO2	**1**	**1**	**2**	**3**	**3**	**1**	**1**	**1**	**1**
CO3	**2**	**1**	**1**	**3**	**3**	**2**	**1**	**1**	**1**

CO4	1	1	1	2	3	3	1	1	1
CO5	1	1	2	1	3	1	1	3	2

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

Dr. P.Meenakshi sundari

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

I M.Sc.IT

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG2IT9	ANDROID PROGRAMMING	Lecture	4	4

COURSE DESCRIPTION

The primary goals will be design the next generation of mobile website, apps and other mobile interfaces across multiple platform such as IOS, android, windows and mobile web.

COURSE OBJECTIVES

The course is aimed to develop basic android application and understand the application development lifestyle.

UNITS

UNIT I: INTRODUCTION (10 Hrs)

A Brief History of Mobile: -The Evolution of Devices. The Mobile Ecosystem**:** Operators -Networks -Devices -Platforms - Operating Systems -Application Frameworks - Size and Scope of the Mobile Market- **The Addressable Mobile Market- Mobile As a Medium. (Self Study)**

UNIT II: DESIGNING FOR CONTEXT (12 Hrs)

Designing for Context: Thinking in Context -Taking the Next Steps .Developing a Mobile Strategy**:** New Rules.Types of Mobile Applications: **Mobile Application Medium Types. (Self Study)**

UNIT III: ARCHITECTURE (12 Hrs)

Mobile Information Architecture **:** Mobile Information Architecture -The Design Myth. Mobile Design: Interpreting Design-The Mobile Design

Tent-Pole-Designing for the Best Possible Experience-The Elements of Mobile Design -Mobile Design Tools -Designing for the Right Device -Designing for Different Screen Sizes. Mobile Web Apps Versus Native Applications: The Ubiquity Principle - **When to Make a Native Application - When to Make a Mobile Web Application. (Self Study)**

UNIT IV: MOBILE WEB DEVELOPMENT (10 Hrs)

Mobile 2.0**:** Mobile 2.0. Mobile Web Development**:** Web Standards -Designing for Multiple Mobile Browsers –Device Plans -Markup - CSS: Cascading Style Sheets- JavaScript. iPhone Web Apps: Markup- CSS- JavaScript- Creating a Mobile Web App- **Web Apps As Native Apps -PhoneGap -Tools and Libraries. (Self Study)**

UNIT V: ADAPTING TO DEVICES (12 Hrs)

Adapting to Devices**:** Strategy #1: Do Nothing- Strategy #2: Progressive Enhancement- Strategy #3: Device Targeting- Strategy #4: Full Adaptation- What Domain Do I Use. Making Money in Mobile: Working with Operators- Working with an App Store- Add Advertising- Invent a New Model. Supporting Devices: Having a Device Plan- Device Testing- **Desktop Testing- Usability(Self Study)**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (4 Hrs.)

Current trends in mobile application development

REFERENCES:

1. Mobile Design and Development: Practical concepts and techniques for creating mobile sites and web apps, Brian Fling, 1st Edition, O'Reilly Publications, 2018. Chapters: 1-15
2. Designing Mobile Interfaces: Patterns for Interaction Design, Steven Hoober,Eric Berkman, 1st Edition,O'Reilly Publications, 2012.
3. Mobile Design Pattern Gallery: UI Patterns for Smartphone Apps, Theresa Neil, 2nd Edition, O'Reilly Publications, 2014.
4. Android user interface design ,Lan G.Clifton 2nd Edition,Pearson Publication 2016
5. Wei-Meng Lee, Beginning Android 4 Application Development,Authorized reprint by wiley india pvt.ltd, 2016

6. Android Application Development(With Kitkat Support) Black Book DT Editorial Services &Pradeep Kothari Published By Dreamtech Press 2017

Digital Open Educational Resources (DOER):

1. https://www.tutorialspoint.com/android/index.htm1
2. https://www.vogella.com/tutorials/android.html

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	A Brief History of Mobile: -The Evolution of Devices.	1	Chalk & Talk	Black Board
1.2	The Mobile Ecosystem: Operators -Networks -Devices -Platforms	1	Chalk & Talk	LCD
1.3	Operating Systems -Application Frameworks	4	Lecture	Smart Board
1.4	Size and Scope of the Mobile Market	2	Lecture	Smart Board
1.5	The Addressable Mobile Market-Mobile As a Medium (Self study).	2	Discussion	Google classroom
UNIT -2 DESIGNING FOR CONTEXT				
2.1	Designing for Context: Thinking in Context -Taking the Next Steps	4	Chalk & Talk	LCD
2.2	Developing a Mobile Strategy: New Rules. Types of Mobile	4	Lecture	Smart Board
2.3	Applications: Mobile Application Medium Types(Self study)	4	Discussion	Google classroom

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -3 ARCHITECTURE				
3.1	Mobile Information Architecture **:** Mobile Information Architecture -The Design Myth. Mobile Design: Interpreting Design-.	3	Lecture	Green Board Charts
3.2	The Mobile Design Tent-Pole-Designing for the Best Possible Experience- The Elements of Mobile Design -Mobile Design Tools -	3	Chalk & Talk	Green Board
3.3	Designing for the Right Device -Designing for Different Screen Sizes.	2	Chalk & Talk	Black Board
3.4	Mobile Web Apps Versus Native Applications: The Ubiquity Principle	2	Lecture	Smart Board
3.5	When to Make a Native Application - When to Make a Mobile Web Application(Self study)	2	Discussion	Google classroom
UNIT -4 MOBILE WEB DEVELOPMENT				
4.1	Mobile 2.0**:** Mobile 2.0. Mobile Web Development**:** Web Standards	2	Chalk & Talk	LCD
4.2	Designing for Multiple Mobile Browsers –Device Plans -Markup	2	Chalk & Talk	Black Board
4.3	CSS: Cascading Style Sheets-JavaScript. iPhone Web Apps: Markup- CSS- JavaScript Creating a Mobile Web App	4	Lecture	Smart Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
4.4	Web Apps As Native Apps -PhoneGap -Tools and Libraries(Self study)	2	Discussion	Google classroom
UNIT -5ADAPTING TO DEVICES				
5.1	Adapting to Devices**:** Strategy #1: Do Nothing- Strategy #2: Progressive Enhancement- Strategy #3: Device Targeting- Strategy #4: Full Adaptation- What Domain Do I Use.	3	Chalk & Talk	Black Board
5.2	Making Money in Mobile: Working with Operators- Working with an App Store- Add Advertising-	3	Lecture	Smart Board
5.3	Invent a New Model. Supporting Devices: Having a Device Plan- Device Testing-	3	Chalk & Talk	Black Board
5.4	Desktop Testing- Usability(Self study)	3	Discussion	Google classroom
UNIT -6DYNAMISM				
6.1	Current trends in mobile application development	4	Discussion	Black board

INTERNAL - PG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1	T2	Seminar	Assignment	OBT/PPT				

	10 Mks.	10 Mks.	5 Mks.	5 Mks	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 %**

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	**10**	**5**	**-**	**-**	**-**	**15**	25 %
K3	**-**	**5**	**10**	**-**	**-**	**15**	25 %
K4	**-**	**5**	**-**	**-**	**10**	**15**	25 %
K5	**-**	**5**	**-**	**10**	**-**	**15**	25 %
Total	**10**	**20**	**10**	**10**	**10**	**60**	**100 %**

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	Design scripts to meet given interface and media control requirements	K2	PSO1, PSO4
CO 2	Utilize variables, properties and other code elements appropriately to implement the code design.	K2, K3	PSO2, PSO5

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 3	Implement and evaluate techniques for the installation of mobile applications.	K3, K4	PSO5, PSO6
CO 4	Explain the principles of technologies which support media production and delivery on a variety of platforms.	K3, K4	PSO3, PSO6
CO 5	Evaluate alternative mobile frameworks, and contrast different programming platforms	K4, K5	PSO6, PSO8

Mapping of C0s with PSOs

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO 1	**3**	**2**	**1**	**3**	**1**	**1**	**2**	**2**	**2**
CO 2	**1**	**3**	**2**	**2**	**3**	**2**	**2**	**2**	**2**
CO 3	**2**	**1**	**2**	**2**	**3**	**3**	**1**	**1**	**1**
CO 4	**1**	**2**	**3**	**1**	**2**	**3**	**2**	**3**	**2**
CO 5	**1**	**2**	**2**	**2**	**1**	**3**	**2**	**3**	**1**

Mapping of COs with POs

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

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

COURSE DESIGNER: Dr. P. Meenakshi sundari

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

I M.Sc. IT

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG2IT10	LAB III -DIGITAL IMAGE PROCESSING	Practical	5	3

COURSE DESCRIPTION

The course helps to create interest in image processing techniques and infuse research thirst in this area

COURSE OBJECTIVES

- To inculcate ideas and create interest in processing images techniques.
- To provide a research orientation inducing them to pursue research.

Programs are written using the following concepts

Image Enhancement Techniques

Histogram Processing, Median Filtering, Spatial Filtering, Filtering in Frequency

Domain.

Image Analysis and Segmentation

Feature Extraction, Edge deduction, Thresholding

Image Compression Techniques

Scalar and Vector Quantisation, Huffman encoding, Run Length encoding. Transform image coding

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
LAB PROGRAMS				
1	Histogram Processing	8	Demonstration	Desktop
2	Median Filtering	8	Demonstration	Desktop
3	Spatial Filtering	8	Demonstration	Desktop
4	Filtering in Frequency Domain.	10	Demonstration	Desktop
5	Feature Extraction	10	Demonstration	Desktop
6	Edge deduction	8	Demonstration	Desktop
7	Thresholding	8	Demonstration	Desktop
8	Scalar and Vector Quantisation,	8	Demonstration	Desktop
9	Huffman encoding	8	Demonstration	Desktop
10	Run Length encoding.	8	Demonstration	Desktop
11	Transform image coding	8	Demonstration	Desktop

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

- **PG CIA Components**

C1 – Average of Two Model test Marks

C 2- Program Completion and Record Work

C 3 – Non - Scholastic

COURSE OUTCOMES

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
CO 1	DemonstrateFundamental Steps involved in Digital Image Processing	K1	PSO1& PSO2
CO 2	Analyze and useMathematical Tools for Digital Image Processing	K1, K2,	PSO3

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 3	Apply Intensity Transformation functions and Spatial filtering methods	K1 & K3	PSO5
CO 4	UtiliseColor Image Processing with different Color Models	K1, K2, K3 &	PSO8, PSO9
CO 5	Implement Image Segmentation Techniquesand Image Compression Techniques using Huffman , Golomb and Arithmetic coding algorithms	K2 & K4	PSO6,PSO8

Mapping of C0s with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	2	1	2	1	2	1	2
CO2	1	1	3	1	1	1	2	1	1
CO3	2	1	1	1	3	2	1	1	1
CO4	1	2	1	2	1	1	1	3	3
CO5	1	1	2	1	2	3	1	3	2

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Dr. P. Meenakshi sundari**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

I M.Sc

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG2IT11	LAB IV :ANDROID PROGRAMMING	Practical	5	3

COURSE DESCRIPTION

To Mobile User Interface (UI) Design is also essential in the creation of Mobile Apps. mobile UI considers constraints, context, screen, input, and mobility as outlines for design.

COURSE OBJECTIVES

- Develop a grasp of the android OS architecture.
- Understand the application development lifecycle.
- Identify ,analyze and choose tools for android development including device emulator, profiling tools and IDE

LAB PROGRAMS :

- Simulate mobile application that uses GUI components.
- Simulate mobile application that uses Layout Managers and event listeners.
- Simulate mobile application to create native calculator application.
- Simulate mobile application that makes use of database.
- Simulate mobile application that makes use of RSS Feed.
- Simulate mobile a native application that uses GPS location information.

- Simulate mobile application that writes data to the SD card.
- Simulate mobile application that creates an alert upon receiving a message.
- Write a mobile application that creates alarm clock.

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**TITLE**			
1.	Simulate mobile application that uses GUI components.	10	Demonstration	Desktop
2.	Simulate mobile application that uses Layout Managers and event listeners.	10	Demonstration	Desktop
3.	Simulate mobile application to create native calculator application.	10	Demonstration	Desktop
4.	Simulate mobile application that makes use of database.	10	Demonstration	Desktop
5.	Simulate mobile application that makes use of RSS Feed.	10	Demonstration	Desktop
6.	Simulate mobile a native application that uses GPS location information.	10	Demonstration	Desktop
7.	Simulate mobile application that writes data to the SD card.	10	Demonstration	Desktop
8.	Simulate mobile application that creates an alert upon receiving a message.	10	Demonstration	Desktop

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
9.	Write a mobile application that creates alarm clock	10	Demonstration	Desktop

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	C2	C3	CIA	ESE	Total
20	15	5	40	60	100

- **PG CIA Components**

C1 – Average of Two Model test Marks

C 2- Program Completion and Record Work

C 3 – Non - Scholastic

COURSE OUTCOMES

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
CO 1	Develop enterprise-level mobile solutions.	K4 & K5	PSO1,PSO2
CO 2	Install and configure Android application development tools	K4 & K5	PSO4,PSO5
CO 3	Demonstrate Save State information across important operating system events	K4 & K5	PSO6,PSO9
CO 4	Develop advanced application programs using Android	K4 & K5	PSO4,PSO9
CO 5	Design and develop mobile applications.	K4 & K5	PSO8,PSO9

Mapping of C0s with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	1	2	3	3	1	1	1	1
CO3	2	1	1	1	2	3	1	1	3
CO4	1	1	1	3	1	1	1	1	3
CO5	1	1	2	1	2	1	1	3	3

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Dr. P. Meenakshi sundari**

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V. Mageshwari

HOD'S Signature & Name

Employability 100%

I M.Sc.

SEMESTER II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21IT2EDC	ANIMATION SOFTWARE	Practical	3	3

COURSE DESCRIPTION

This course is designed to facilitate different animation techniques in animation software.

COURSE OBJECTIVES

To facilitate the student to understand the animation techniques and make the students to develop their 3D animations.

UNITS

UNIT 1 : EXPLORING THE INTERFACE: (6 Hrs)

Introduction to Alice - download and install Alice 3.1-A brief tour of the Alice 3 IDE -A brief tour of the Menu Bar- Set Preferences -Touring the Gallery

UNIT-2: SETTING THE SCENE (6 Hrs)

Adding an object to a scene- set object properties in the Scene editor- set special effects in a scene-Marking - position and resize an object in the Scene editor- Positioning sub-parts in Scene editor- align objects using a Snap grid- Cut, Copy, and Paste with the Clipboard

UNIT -3: LEARNING TO PROGRAM THROUGH ALICE (6 Hrs)

Sequential & Parallel Execution - Do in order - Do together- Further nesting- Branching & Looping-Conditional execution-Relational Operators-Randomness-Repetition-While loops- Lists

UNIT-4: EVENT HANDLING AND METHODS: (6 Hrs)

Interactive programming & event handling - Control of flow- Events-Event handing methods.

UNIT -5: 3D TEXT AND BILLBOARDS, SOUND: (6 Hrs)

Create 3D Text- Billboards- Creating a Sound- Adding a Sound - Posting on YouTube

PROGRAM LIST

1. Alice Interface
2. Alice Objects
3. Alice Scene
4. Sequential and Parallel Execution
5. Branching and Looping
6. Event Handling
7. Methods
8. 3D text

REFERENCES:

"Introduction to Programming with Green foot ", by Micheal Kolling

Digital Open Educational Resources (DOER):
http://www.alice.org/3.1/materials_videos.php

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**EXPLORING THE INTERFACE**			
1.1	Introduction to Alice - download and install Alice 3.1-A brief tour of the Alice 3 IDE	3	Chalk & Talk	Black Board
1.2	A brief tour of the Menu Bar-Set Preferences -Touring the Gallery	3	Chalk & Talk	Black Board
UNIT -2	**SETTING THE SCENE**			
2.1	Adding an object to a scene-set object properties in the Scene editor	2	Lecture	PPT & White board
2.2	set special effects in a scene-Marking - position and resize an object in the Scene editor- Positioning sub-parts in Scene editor- align objects using a Snap grid	2	Demonstration	Desktop
2.3	Cut, Copy, and Paste with the Clipboard	2	Lecture	Black Board
UNIT -3	**LEARNING TO PROGRAM THROUGH ALICE**			
3.1	Sequential & Parallel Execution - Do in order - Do together	2	Discussion	Black Board
3.2	Further nesting- Branching & Looping-Conditional execution	2	Lecture	Green Board Charts

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.3	Relational Operators-Randomness-Repetition-While loops- Lists	2	Chalk & Talk	Green Board
UNIT -4	**EVENT HANDLING AND METHODS**			
4.1	Interactive programming & event handling	2	Lecture	Smart Board
4.2	Control of flow- Events-	2	Demonstration	Desktop
4.3	Event handing methods.	2	Lecture	Smart Board
UNIT -5	**3D TEXT AND BILLBOARDS, SOUND**			
5.1	Create 3D Text	2	Demonstration	Desktop
5.2	Billboards- Creating a Sound	2	Demonstration	Desktop
5.3	Adding a Sound - Posting on YouTube	2	Demonstration	Desktop

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	C2	C3	CIA	ESE	Total
20	15	5	40	60	100

- **PG CIA Components**

C1 – Average of Two Model test Marks

C 2- Program Completion and Record Work

C 3 – Non - Scholastic

COURSE OUTCOMES

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
CO 1	Understand basic concepts in Alice.	K3,K4 &K5	PSO1, PSO2 & PSO3
CO 2	Construct a scene.	K3,K4 &K5	PSO4, PSO5 & PSO6
CO 3	Build program in Alice using looping and branching.	K3,K4 &K5	PSO7, PSO8 & PSO9
CO 4	Apply event handlers in alice.	K3,K4 &K5	PSO2, PSO4 & PSO6
CO 5	Develop 3D animations.	K3,K4 &K5	PSO6, PSO8 & PSO9

Mapping of C0s with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	3	1	1	1	1	1	1
CO2	1	1	2	3	3	3	1	1	1

CO3	2	1	1	1	2	2	3	3	3
CO4	1	3	1	3	1	3	1	1	1
CO5	1	1	2	1	2	3	1	3	3

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. Mrs. T. Leena Prema Kumari

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

I M.Sc.IT

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG2ITE1	ADHOC NETWORK	Lecture	4	5

COURSE DESCRIPTION

This course provides architecture and protocols of ad hoc wireless networks

COURSE OBJECTIVES

This course is aimed to Analyze the components of ad hoc network showing how wireless technology exists.

UNITS

UNIT I : INTRODUCTION [12 Hrs]

Fundamentals of Wireless Communication Technology – The Electromagnetic Spectrum – Radio propagation Mechanisms – Characteristics of the Wireless Channel – Ad-hoc wireless network : Introduction- Issues in Ad Hoc Wireless networks

UNIT II: MAC PROTOCOLS FOR AD HOC WIRELESS NETWORKS [12 Hrs]

Issues in designing a MAC Protocol- Classification of MAC Protocols- Contention based protocols-Contention based protocols with Reservation Mechanisms- Contention based protocols with Scheduling Mechanisms.

UNIT III :ROUTING PROTOCOLS for AD HOC WIRELESS NETWORKS

[12Hrs]

Issues in designing a Routing protocol for Ad hoc wireless networks- Classification of routing protocol – Table-driven routing protocol - On-demand Routing protocol -Hybrid routing

UNIT IV : TRANSPORT LAYER AND SECURITY PROTOCOLS [12 Hrs]

TCP over Ad hoc Wireless network – other Transport layer protocol for adhoc wireless network – Security in ad hoc wireless network – network security requirements – Issues and challenges in Security Provisioning- network security attacks – Secure routing in Ad-hoc wireless network.

UNIT V : WIRELESS SENSOR NETWORK [10 Hrs]

Introduction – Sensor Network Architecture – Data Dissemination – Data Gathering – MAC protocols for Sensor networks – Location Discovery – Quality of sensor network – other issues

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (2 Hrs)

Recent Trends in Ad Hoc

TEXTBOOK

" Ad Hoc Wireless Network – Architecture and Protocols ", by C. Siva Ram Murthy , B.S. Manoj, Pearson Education Inc., 2014.

REFERENCE BOOKS

1. Barrie Sosinsky, "Cloud Computing Bible", Wiley Publishing, New Delhi, 2014.

2. Ray Rafaels, "Cloud Computing: From Beginning to End", Create Space Independent Publishing Platform, New Delhi, 2015.

Digital Open Educational Resources (DOER) :

https://www.tutorialspoint.com/what-is-ad-hoc-network

COURSE CONTENTS & LECTURE SCHEDULE

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1INTRODUCTION				
1.1	Fundamentals of Wireless Communication Technology	3	Discussion	Black Board
1.2	The Electromagnetic Spectrum – Radio propagation Mechanisms	3	Chalk & Talk	Black Board
1.3	Characteristics of the Wireless Channel – Ad-hoc wireless network	3	Lecture	LCD
1.4	Introduction- Issues in Ad Hoc Wireless networks	3	Discussion	Google classroom
UNIT -2 MAC PROTOCOLS FOR AD HOC WIRELESS NETWORKS				
2.1	Issues in designing a MAC Protocol	3	Lecture	PPT & White board
2.2	Classification of MAC Protocols	3	Chalk & Talk	Green Board
2.3	Contention based protocols-Contention based protocols with Reservation Mechanisms	3	Chalk & Talk	Black Board
2.4	Contention based protocols with Scheduling Mechanisms	3	Chalk & Talk	Black Board
UNIT – 3 ROUTING PROTOCOLS for AD HOC WIRELESS NETWORKS				
3.1	Issues in designing a Routing protocol for Ad hoc wireless networks	3	Discussion	PPT & White board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.2	Classification of routing protocol	3	Chalk &Talk	Green Board
3.3	Table-driven routing protocol	3	Chalk & Talk	Black Board
3.4	On-demand Routing protocol -Hybrid routing	3	Chalk & Talk	Black Board
UNIT – 4 TRANSPORT LAYER AND SECURITY PROTOCOLS				
4.1	TCP over Ad hoc Wireless network – other Transport layer protocol for adhoc wireless network	3	Discussion	PPT & White board
4.2	Security in ad hoc wireless network – network security requirements	3	Chalk & Talk	Green Board
4.3	Issues and challenges in Security Provisioning- network security attacks	3	Chalk & Talk	Black Board
4.4	Secure routing in Ad-hoc wireless network.	3	Chalk & Talk	Black Board
UNIT – 5 WIRELESS SENSOR NETWORK				
5.1	Introduction – Sensor Network Architecture	3	Lecture	PPT & White board
5.2	Data Dissemination – Data Gathering	2	Chalk & Talk	Black Board
5.3	MAC protocols for Sensor networks – Location Discovery – Quality of sensor network	3	Lecture	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.4	other issue	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Recent Trends	2	Discussion	Black Board

INTERNAL - PG

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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	

K2	**10**	**5**	**-**	**-**	**-**	**15**	25 %
K3	**-**	**5**	**10**	**-**	**-**	**15**	25 %
K4	**-**	**5**	**-**	**-**	**10**	**15**	25 %
K5	**-**	**5**	**-**	**10**	**-**	**15**	25 %
Total	**10**	**20**	**10**	**10**	**10**	**60**	**100 %**

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	Understand the design issues in ad hoc and sensor networks	K2	PSO1, PSO2 & PSO3
CO 2	Learn the different types of MAC protocols	K2,K4	PSO4, PSO5 & PSO6
CO 3	Be familiar with different types of adhoc routing protocols.	K3	PSO8 & PSO9
CO 4	Be expose to the TCP issues in adhoc networks	K3	PSO4, PSO5 & PSO6
CO 5	Learn the architecture and protocols of wireless sensor networks	K4	PSO5, PSO8 & PSO9

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	3	1	1	1	1	1	1
CO2	1	1	2	3	3	3	1	1	1
CO3	2	1	1	1	2	2	1	3	3
CO4	1	1	1	3	3	3	1	1	1
CO5	1	1	2	1	3	1	1	3	3

Mapping of COs with Pos

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: Mrs. V. Mageshwari

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

I M.Sc.IT

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG2ITE2	MACHINE LEARNING	Lecture	4	5

COURSE DESCRIPTION

This course emphasizes learning algorithms and theory including concept, decision tree, neural network, computational, Bayesian, instant and advanced learning.

COURSE OBJECTIVES

To facilitate the student to understand Machine Learning Techniques and applications.

UNITS

UNIT –I INTRODUCTION (12 HRS.)

Learning Problems – Perspectives and Issues – Concept Learning – Version Spaces and Candidate Eliminations – Inductive bias – Decision Tree learning – Representation – Algorithm – Heuristic Space Search.

UNIT –II: NEURAL NETWORKS AND GENETIC ALGORITHMS (12 HRS.)

Representation – Problems – Perceptrons – Multilayer Networks and Back Propagation Algorithms – Advanced Topics – Genetic Algorithms – Hypothesis Space Search – Genetic Programming – Models of Evaluation and Learning.

UNIT –III: BAYESIAN AND COMPUTATIONAL LEARNING (12 HRS.)

Bayes Theorem –Concept Learning – Maximum Likelihood – Minimum Description Length Principle– Bayes Optimal Classifier – Gibbs Algorithm – Naïve Bayes Classifier – Bayesian Belief Network – EM Algorithm – Probability Learning – Sample Complexity – Finite and Infinite Hypothesis Spaces – Mistake Bound Model.

UNIT –IV :INSTANT BASED LEARNING (12 HRS.)

K- Nearest Neighbour Learning – Locally weighted Regression – Radial Basis Functions – Case Based Learning.

UNIT –V: ADVANCED LEARNING (11 HRS.)

Learning Sets of Rules – Sequential Covering Algorithm – Learning Rule Set – First Order Rules – Sets of First Order Rules – Induction on Inverted Deduction – Inverting Resolution – Analytical Learning – Perfect Domain Theories – Explanation Base Learning – FOCL Algorithm – Reinforcement Learning– Task – Q-Learning – Temporal Difference Learning

UNIT –VI: DYNAMISM (Evaluation Pattern-CIA only) (1 HRS.)

Temporal Difference Learning

TEXT BOOK:

1. Tom M. Mitchell, ―Machine Learning, McGraw-Hill Education (India) Private Limited, 2013.

REFERENCE BOOK:

1. EthemAlpaydin, ―Introduction to Machine Learning (Adaptive Computation and Machine Learning), The MIT Press 2004.
2. Stephen Marsland, ―Machine Learning: An Algorithmic Perspective, CRC Press, 2009.
3. Michael Affenzeller, Stephan Winkler, Stefan Wagner, Andreas Beham,
4. Genetic Algorithms and Genetic Programming‖, CRC Press Taylor and Francis Group.

Digital Open Educational Resources (DOER) :

1. https://www.javatpoint.com/machine-learning

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1INTRODUCTION				
1.1	Learning Problems – Perspectives and Issues – Concept Learning	3	Discussion	Black Board
1.2	Version Spaces and Candidate Eliminations	3	Chalk & Talk	Black Board
1.3	Inductive bias – Decision Tree learning – Representation	3	Lecture	LCD
1.4	Algorithm – Heuristic Space Search.	3	Discussion	Google classroom
UNIT -2NEURAL NETWORKS AND GENETIC ALGORITHMS				
2.1	Representation – Problems – Perceptrons	3	Lecture	PPT & White board
2.2	Multilayer Networks and Back Propagation Algorithms – Advanced Topics	3	Chalk & Talk	Green Board
2.3	Genetic Algorithms – Hypothesis Space Search	3	Chalk & Talk	Black Board
2.4	Genetic Programming – Models of Evaluation and Learning.	3	Chalk & Talk	Black Board
UNIT – 3 BAYESIAN AND COMPUTATIONAL LEARNING				
3.1	Bayes Theorem –Concept Learning – Maximum Likelihood	3	Discussion	PPT & White board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.2	Minimum Description Length Principle– Bayes Optimal Classifier – Gibbs Algorithm	3	Chalk &Talk	Green Board
3.3	Naïve Bayes Classifier – Bayesian Belief Network – EM Algorithm – Probability Learning	3	Chalk & Talk	Black Board
3.4	Sample Complexity – Finite and Infinite Hypothesis Spaces – Mistake Bound Model.	3	Chalk & Talk	Black Board
UNIT – 4 INSTANT BASED LEARNING				
4.1	K- Nearest Neighbour Learning	3	Discussion	PPT & White board
4.2	Locally weighted Regression	3	Chalk & Talk	Green Board
4.3	Radial Basis Functions	3	Chalk & Talk	Black Board
4.4	Case Based Learning.	3	Chalk & Talk	Black Board
UNIT – 5 ADVANCED LEARNING				
5.1	Learning Sets of Rules – Sequential Covering Algorithm – Learning Rule Set – First Order Rules	3	Lecture	PPT & White board
5.2	Sets of First Order Rules – Induction on Inverted Deduction – Inverting Resolution	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.3	Analytical Learning – Perfect Domain Theories – Explanation Base Learning – FOCL Algorithm	3	Lecture	Black Board
5.4	Reinforcement Learning–Task – Q-Learning – Temporal Difference Learning	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Recent Trends	2	Discussion	Black Board

INTERNAL - PG

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 %**

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks

C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	understand the fundamental issues and challenges of machine learning concept	K2	PSO1& PSO2
CO 2	Understand, Analyse and identify the strengths and weaknesses of many popular machine-learning approaches.	K2, K4	PSO3
CO 3	Aware about the underlying mathematical relationships across Machine Learning algorithms and the paradigms of supervised and un-supervised learning.	K2	PSO5 & PSO6
CO 4	Ability to design and implement various machine learning algorithms in a range of real-world applications.	K4, K6	PSO4
CO 5	Perform evaluation of machine learning algorithms and model selection.	K4	PSO8

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	1	3	1	1	1	1	1	1
CO3	2	1	1	1	3	3	1	1	1
CO4	1	1	1	3	1	1	1	1	1
CO5	1	1	2	1	2	1	1	3	2

Mapping of COs with Pos

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:Dr. V. Jane Varamani sulekha

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

I M.Sc.IT

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG2ITE3	CYBER SECURITY	Lecture	4	5

COURSE DESCRIPTION

Cyber Security courses aims to equip students with the knowledge and skills required to defend the computer operating systems, networks and data from cyber-attacks.

COURSE OBJECTIVES

The learner will gain knowledge about securing both clean and corrupted systems, protect personal data, and secure computer networks.

UNITI : INTRODUCTION TO CYBER SECURITY [12 Hrs]

Overview of Cyber Security, Internet Governance – Challenges and Constraints, Cyber Threats:- Cyber Warfare-Cyber Crime-Cyber terrorism-Cyber Espionage, Need for a Comprehensive Cyber Security Policy, Need for a Nodal Authority, Need for an International convention on Cyberspace.

UNIT II :CYBER SECURITY VULNERABILITIES AND SAFEGUARDS

[12 Hrs]

Cyber Security Vulnerabilities-Overview, vulnerabilities in software, System administration, Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness. Cyber Security

Safeguards- Overview, Access control, Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management.

UNIT III : SECURING WEB APPLICATION, SERVICES AND SERVERS [12 Hrs]

Introduction, Basic security for HTTP Applications and Services, Basic Security for SOAP Services, Identity Management and Web Services, Authorization Patterns, Security Considerations, Challenges.

UNIT IV : INTRUSION DETECTION AND PREVENTION [12 Hrs]

Intrusion, Physical Theft, Abuse of Privileges, Unauthorized Access by Outsider, Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management, Network Session Analysis, System Integrity Validation.

UNIT V : CYBER LAW &CYBER FORENSICS [12 Hrs]

Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards. The INDIAN Cyberspace, National Cyber Security Policy 2013.((Self Study)

Introduction to Cyber Forensics, Handling Preliminary Investigations, Controlling an Investigation, Conducting disk-based analysis, Investigating Information-hiding, Scrutinizing E-mail, Validating E-mail header information, Tracing Internet access, Tracing memory in real-time.

TEXT BOOK

1. “Fundamental Of Cyber Security – Principles,Theory and Practices” by Mayank Bhushan ,Rajkumar Singh Rathore , Aatif Jamshed , BPB Publications, ISBN: 9789386551559, 9789386551559

REFERENCE BOOKS

1.” Cyber Security & IT infrastructure Protection” 1st Edition, by John Vacca, Syngress Publisher

2. Cyber Security and Cyber Lawsby Alfred Basta ,Nadine Basta ,Mary Brown , Ravinder Kumar, Cengage Learning India Private Limited Publisher (2018)

Digital Open Educational Resources (DOER) :

1. https://searchsecurity.techtarget.com/definition/cybersecurity
2. https://www.tutorialspoint.com/computer_security/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**INTRODUCTION TO CYBER SECURITY**			
1.1	Overview of Cyber Security, Internet Governance –	3	Chalk & Talk	Black Board
1.2	Challenges and Constraints, Cyber Threats:- Cyber Warfare-Cyber Crime- for a Nodal Authority, Need for an International convention on Cyberspace.	3	Chalk & Talk	LCD
1.3	Cyber terrorism-Cyber Espionage,	3	Lecture	Smart Board
1.4	Need for a Comprehensive	1	Lecture	Smart Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.5	Cyber Security Policy, Need	2	Discussion	Google classroom
UNIT -2 CYBER SECURITY VULNERABILITIES AND SAFEGUARDS				
2.1	Cyber Security Vulnerabilities-Overview, vulnerabilities in software, System administration, Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness.	4	Chalk & Talk	LCD
2.2	Cyber Security Safeguards-Overview, Access control, Audit, Authentication, Biometrics,	4	Lecture	Smart Board
2.3	Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management.	4	Discussion	Google classroom
UNIT -3 SECURING WEB APPLICATION, SERVICES AND SERVERS				
3.1	Introduction, Basic security for HTTP Applications and Services.	4	Lecture	Green Board Charts
3.2	Basic Security for SOAP Services, Identity Management and Web.	4	Chalk & Talk	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.3	Services, Authorization Patterns, Security Considerations, Challenges	4	Chalk & Talk	Black Board
UNIT -4 INTRUSION DETECTION AND PREVENTION				
4.1	Intrusion, Physical Theft, Abuse of Privileges,	3	Chalk & Talk	LCD
4.2	Unauthorized Access by Outsider, Malware infection, Intrusion detection and Prevention Techniques, Anti-	4	Chalk & Talk	Black Board
4.3	Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management,	3	Lecture	Smart Board
4.4	Network Session Analysis, System Integrity Validation.	2	Discussion	Google classroom
UNIT -5 CYBER LAW & CYBER FORENSICS				
5.1	Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace,	3	Chalk & Talk	Black Board
5.2	Cyber Security Standards. The INDIAN Cyberspace, National Cyber Security Policy 2013.	3	Lecture	Smart Board
5.3	Introduction to Cyber Forensics, Handling Preliminary Investigations, Controlling an Investigation,	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Conducting disk-based analysis,			
5.4	Investigating Information-hiding, Scrutinizing E-mail, Validating E-mail header information, Tracing Internet access, Tracing memory in real-time.	3	Discussion	Google classroom
UNIT -6 DYNAMISM				
6.1	Tracing memory in real-time.	4	Discussion	Black board

INTERNAL - PG

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 %**

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks

C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

****The best out of two will be taken into account***

COURSE OUTCOMES

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
CO 1	Analyze and evaluate the cyber security needs of an organization.	K2	PSO1, PSO4
CO 2	Measure the performance and troubleshoot cyber security systems..	K2, K3	PSO2, PSO5
CO 3	Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators g	K3, K4	PSO5, PSO6
CO 4	Design and develop a security architecture for an organization.	K3, K4	PSO3, PSO6
CO 5	Design operational and strategic cyber security strategies and policies.	K4, K5	PSO6, PSO8

Mapping COs Consistency with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2	1	3	1	1	1	1	1
CO2	1	3	2	1	3	1	1	1	1
CO3	2	1	1	1	3	3	1	1	1
CO4	1	1	3	2	1	3	1	1	1
CO5	1	1	2	1	2	3	1	3	1

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: V. Mageshwari**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT13	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

UNITS

UNIT I: INTRODUCTION (14 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 (Self study).**

UNIT II: DATA PREPROCESSING (14 Hrs)

Need to Preprocess 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(Self study).**

UNIT III: MINING FREQUENT PATTERNS AND CLASSIFICATION (18 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 (14 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 (10 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 –VI DYNAMISM (Evaluation Pattern-CIA only) (5 Hrs)

Current trends in implementation of Data Mining tools in real time applications.

REFERENCES:

1. ***Data Mining Concepts and Techniques***, Jiawei Han and Micheline Kamber, 2nd Edition, Morgan Kaufmann Publishers An Imprint of Elsevier, 2009. Chapters:1, 2, 3, 6.1 - 6.10, 7.1 – 7.8, 11

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

Digital Open Educational Resources (DOER) :

1. https://www.javatpoint.com/data-mining-cluster-vs-data-warehousing
2. https://www.dei.unipd.it/~capri/SI/MATERIALE/DWDM0405.pdf

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Introduction to Data Mining-its importance — Data Mining on what kind of Data- Data Mining Functionalities-	5	Chalk & Talk	Black Board
1.2	What Kinds of Patterns Can Be Mined – Are All of the Patterns Interesting – Classification of Data Mining Systems - Data Mining Task Primitives –	6	Chalk & Talk	LCD
1.3	Integration of Data Mining - System with a Database or Data Warehouse System- Major Issues in Data Mining (Self Study)	3	Discussion	Google Classroom
UNIT -2 DATA PREPROCESSING				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.1	Need to Preprocess the Data - Descriptive Data Summarization – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation	6	Lecture	Green Board
2.2	Data Warehouse and OLAP Technology : An Overview - What is a Data Warehouse – A Multidimensional Data Model - Data Warehouse Architecture	5	Chalk &Talk	Green Board
2.3	Data Warehouse implementation - From Data Warehousing to a Data Mining	3	Discussion	Google Classroom
UNIT -3MINING FREQUENT PATTERNS AND CLASSIFICATION				
3.1	Efficient and Scalable Frequent Itemset Mining Methods: The Apriori Algorithm : Finding Frequent Itemsets Using Candidate Generation- Generating Association Rules from Frequent Itemsets	4	Chalk & Talk	Black Board
3.2	Improving the Efficiency of Apriori – Mining Frequent Itemsets without Candidate Generation- Mining Frequent Itemsets Using Vertical Data Format – Mining Closed Frequent Itemsets.	5	Chalk & Talk	LCD
3.3	Classification - Prediction – Issues Regarding Classification and Prediction	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.4	Classification by Decision Tree Induction – Bayesian Classification – Rule-Based Classification	3	Lecture	Green Board
3.5	Classification by Back propagation – Support Vector Machines.	3	Lecture	Green Board
UNIT -4 CLUSTER ANALYSIS				
4.1	What is Cluster Analysis – Types of Data in Cluster Analysis	3	Chalk & Talk	Black Board
4.2	A Categorization of Major Clustering Methods Partitioning Methods	6	Lecture	Green Board
4.3	Hierarchical Methods – Density-Based Methods	3	Chalk & Talk	LCD
4.4	Grid-Based Methods – Model-Based Clustering Methods	2	Chalk & Talk	Black Board
UNIT -5 APPLICATIONS AND TRENDS IN DATA MINING				
5.1	Data Mining Applications – Data Mining System Products and Research Prototypes	6	Chalk & Talk	Black Board
5.2	Additional Themes on Data Mining -Social Impacts of Data Mining - Trends in Data Mining (Self Study)	4	Discussion	Google Classroom
UNIT -6 DYNAMISM				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
6.1	Current trends in implementation of Data Mining tools in real time applications.	5	Assignments	Google class room

INTERNAL - PG

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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks

C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	Understand the fundamental concept of Data Mining and analyze and evaluate the data cleaning, integration , transformation and reduction techniques	K2,K3	PSO1,PSO5
CO 2	Design multidimensional data using Data Warehouse architecture.	K2, K3	PSO2,PSO5
CO 3	Analyze and evaluate Classification algorithms	K3, K4	PSO3,PSO6
CO 4	Identify the types of data in Cluster Analysis and categorize the Cluster Methods	K3 ,K4	PSO4
CO 5	Utilize the Data Mining techniques in various real applications and in major issues.	K4 ,K5	PSO3,PSO6

Mapping of C0s with PSOs

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2	1	2	3	1	2	1	1
CO2	1	3	2	2	3	2	1	1	2
CO3	2	2	3	2	1	3	1	2	1
CO4	1	2	2	3	2	1	2	1	2
CO5	2	2	3	2	2	3	2	2	2

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Dr. V. Jane Varamani sulekha**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT14	PYTHON PROGRAMMING	Lecture	5	5

COURSE DESCRIPTION

The course helps to create interest in image processing techniques and infuse research thirst in this area

COURSE OBJECTIVES

- To inculcate ideas and create interest in processing images techniques.
- To provide a research orientation inducing them to pursue research.

UNITS

UNIT I: OVERVIEW (12 Hrs)

The Context Of Software Development: Software-Development Tools-Learning Programming With Python-Writing A Python Program-A Longer Python Program.

Values And Variables:Integer Values-Variables And Assignment-Identifiers-Floating Point Types-Control Code With In Strings-User Input-The Eval Function-Controlling The Print Function.

Expressions And Arithmetic: Expression-Operator Precedence And Associativity-Comments-Errors-Arithmetic Examples-More Arithmetic Operators-Algorithms (Self study)

UNIT II CONDITIONAL STATEMENT AND ITERATION (15 Hrs)

Conditional Execution :Boolean Expressions- Boolean Expressions – The Simple If Statement – The If/Else Statement – Compound Boolean

Expressions –Nested Conditionals – Multi-Way Decision Statements – Conditional Expressions – Errors In Conditional Statements

Iteration :The While Statement – Definite Loops Vs. Indefinite Loops – The For Statement – Nested Loops – Abnormal Loop Termination – Infinite Loops – Iteration Examples

UNIT III :LISTS& FUNCTIONS (15 Hrs)

List: Using Lists – List Assignment and Equivalence – List Bounds – Slicing – Cloning- Nested Lists-List and functions – Prime Generation with a List - List Processing : Sorting – Flexible Sorting – Search – List Permutations – Randomly Permuting a List – Reversing a List-

Functions : Introduction to Functions – Defining – Calling function –Passing Arguments- Keyword Arguments- Default Arguments – Required Arguments – Variable length Arguments – Return Statement – Nesting of Passing Arguments – Anonymous Function- Recursive function – Scope of Local and Global Variables .

UNIT IV: OBJECT ORIENTED PROGRAMMING PRINCIPLES (15 Hrs)

Class Statement – Class Body- Objects- Class Methods – Self Variable – Class Properties and Instance Properties – Static Method – Data Hiding – Deleting an object – Constructor – Method Overriding – Inheritance – Composition Object – Abstract classes and interfaces – Metaclass- Operator overloading.–Garbage Collections.

UNIT V : TKINTER , EVENTS & EXCEPTIONS (15 Hrs)

Tkinter : Introduction – Widget – Label – Button – Check button – Entry – List box – Radio button – Scroll bar – Text- Container – Frame – Menu – Label frame – Message – Combo box – Scale – Canvas.

Events: Event Object – Binding Call backs to Events – Events Names – Keyboard Events – Mouse events.

Handling Exceptions : Motivation – Exception Examples – Handling Exception in Invoked Function - Using Exceptions- Custom Exceptions (Self Study)

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (3 HRS.)

Application development based on case study

REFERENCES:

1. Richard L.Halterman ,"LEARNING TO PROGRAM WITH PYTHON",ELITE PUBLISHING, 2011
2. Ch. Satyanarayana, M. Radhika mani, B.N. Jagadesh, " Python Programming", Universities press,2018.

Digital Open Educational Resources (DOER):

1. www.universitiespress.com/chsatyanarayana/pythonprogramming
2. https://www.udemy.com/course/learn-advanced-python-programming-in-2020/
3. https://www.pluralsight.com/courses/advanced-python

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**OVERVIEW**			
1.1	The Context Of Software Development: Software-Development Tools-Learning Programming With Python-Writing A Python Program-A Longer Python Program.	4	Chalk & Talk	Black Board
1.2	Values And Variables:Integer Values-Variables And Assignment-Identifiers-Floating Point Types-Control Code With In Strings-User Input-The Eval Function-Controlling The Print Function.	4	Chalk & Talk	Black Board
1.3	Expressions And Arithmetic: Expression-Operator Precedence And Associativity-Comments-Errors -Arithmetic Examples-More Arithmetic	4	Group discussion	White board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Operators-Algorithms (Self Study)			
UNIT -2	**CONDITIONAL STATEMENT AND ITERATION**			
2.1	Conditional Execution :Boolean Expressions- Boolean Expressions – The Simple If Statement – The If/Else Statement	3	Lecture	Smart Board
2.2	Compound Boolean Expressions –Nested Conditionals – Multi-Way Decision Statements	3	Lecture	Black Board
2.3	Conditional Expressions – Errors In Conditional Statements	3	Lecture	Green Board
2.4	Iteration :The While Statement – Definite Loops Vs. Indefinite Loops – The For Statement	3	Chalk & Talk	Black Board
2.5	Nested Loops – Abnormal Loop Termination – Infinite Loops – Iteration Examples	3	Chalk & Talk	Black Board
UNIT -3 LISTS & FUNCTIONS				
3.1	**List:**Using Lists – List Assignment and Equivalence – List Bounds – Slicing – Cloning- Nested Lists-List and functions – Prime Generation with a List.	3	Chalk & Talk	Black Board
3.2	List Processing : Sorting – Flexible Sorting – Search – List Permutations – Randomly	4	Lecture	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Permuting a List – Reversing a List.			
3.3	**Functions :** Introduction to Functions – Defining – Calling function –Passing Arguments- Keyword Arguments- Default Arguments – Required Arguments – Variable length Arguments .	5	Chalk & Talk	Green Board
3.4	Return Statement – Nesting of Passing Arguments – Anonymous Function- Recursive function – Scope of Local and Global Variables	3	Lecture	Green Board
UNIT -4 OBJECT ORIENTED PROGRAMMING PRINCIPLES				
4.1	Class Statement – Class Body- Objects- Class Methods – Self Variable .	3	Chalk & Talk	Black Board
4.2	Class Properties and Instance Properties – Static Method – Data Hiding – Deleting an object – Constructor	5	Lecture	Green Board
4.3	Method Overriding – Inheritance – Composition Object – Abstract classes and interfaces .	5	Chalk & Talk	Black Board
4.4	Metaclass- Operator overloading.–Garbage Collections.	2	Lecture	Green Board
UNIT -5 TKINTER , EVENTS & EXCEPTIONS				
5.1	**Tkinter :** Introduction – Widget – Label – Button –	3	Lecture	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Check button – Entry – List box – Radio button.			
5.2	Scroll bar – Text- Container – Frame – Menu – Label frame – Message – Combo box – Scale – Canvas.	4	Chalk & Talk	Black Board
5.3	**Events:**Event Object – Binding Call backs to Events – Events Names – Keyboard Events – Mouse events.	4	Chalk & Talk	Black Board
5.4	Handling Exceptions : Motivation – Exception Examples – Handling Exception in Invoked Function - Using Exceptions- Custom Exceptions (Self Study)	4	Discussion	Google Classroom
UNIT -6 DYNAMISM				
6.1	Application development based on case study	3	Assignments	Google class room

INTERNAL - PG

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 %**

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	**10**	**5**	**-**	**-**	**-**	**15**	25 %
K3	**-**	**5**	**10**	**-**	**-**	**15**	25 %
K4	**-**	**5**	**-**	**-**	**10**	**15**	25 %
K5	**-**	**5**	**-**	**10**	**-**	**15**	25 %
Total	**10**	**20**	**10**	**10**	**10**	**60**	**100 %**

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

****The best out of two will be taken into account***

COURSE OUTCOMES

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
CO 1	Understand the basic programming style in python .	K2	PSO1& PSO2
CO 2	Apply various types of control flow statements in python programs	K2, K3	PSO3,PSO4
CO 3	Identify the structure and components of a python program.	K3 ,K4	PSO5, PSO6
CO 4	Analyze Object oriented programming concepts and techniques in python	K2, K3 & K5	PSO2, PSO3, PSO7

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 5	Implementing the GUI concepts in Python	K4, K5	PSO8, PSO9

Mapping of C0s with PSOs

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO 1	3	3	1	2	2	1	2	1	1
CO 2	1	1	3	3	1	2	1	1	2
CO 3	2	2	2	2	3	3	1	2	1
CO 4	1	3	3	2	2	1	3	1	2
CO 5	2	2	1	2	2	2	2	3	3

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: Mrs. T. Charanya nagammal

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT15A	SOFTWARE TESTING	Lecture	4	4

COURSE DESCRIPTION

To study fundamental concepts in software testing, planning a test project, design test cases and data, conduct testing operations, manage software problems and defects, generate a testing report.

COURSE OBJECTIVES

- To give strong foundation in software quality assurance by teaching standards, models and measurement techniques.
- To enhance the knowledge of the students to provide innovative solutions to various quality assurances related problems.

UNITS

UNIT I:SOFTWARE QUALITY IN GLOBAL BUSINESS CONTEXT (14 Hrs)

Introduction, Quality Attributes, Quality Challenges in Globally Outsources Business, importance of Quality as a Business Driver, Understanding Life cycle Models, Object Oriented Life cycle Models, **Choosing the right type of Life cycle model for software project(Self study)**

UNIT II: SQA ROLE IN AN ORGANIZATION (14 Hrs)

Introduction, Understanding the SQA function. Managing SQA Operations **:**SQA : Organizational Level Initiatives, **Defect Prevention, Quality Assurance – Important Dimensions for the QA Analyst(Self study)**.

UNIT III: TESTING FOR QUALITY VALIDATION (14 Hrs)

Introduction , The Purpose of Testing , Testing is not same as Inspection and Audit, Testing is not the same as Debugging , The Testing Life Cycle,

Roles and Responsibilities in Testing, **Test Artefacts, The Test Plan and Test Techniques(Self study).**

UNIT IV: TESTING MODELS AND TECHNIQUES (14 Hrs)

Testing Phases with the V-Model and W-Model – Testing Techniques – Risk-based Approach to Testing – **Test Process Automation and Test Tool Selection (Self study).**

UNIT V :TESTING TOOLS (14 Hrs)

Load Runner – Overview of LoadRunner – Creating Vuser script using Virtual User Generator – Creating Virtual Users Using Loadrunner Controller – JMeter – JMeter Overview – JDBC Test – **HTTP Test(Self study)**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 Hrs)

Tools used in real time applications and their implementations

REFERENCES:

1. ***Software Quality Assurance : Principles and Practice for the New Paradigm,*** N.S.Godbole, 2nd Edition, Narosa Publishing House, 2017. Chapters: 1, 2.1, 2.5, 4.4 - 4.6, 6.1 - 6.12
2. ***Software Testing Tools,*** Dr.K.V.K.K.Prasad, Published by Dreamtech Press, Edition, 2012. Chapters : 7 , 8
3. ***Software Quality and Testing: A Concise Study,*** S. A. Kelkar, 3rd Edition, PHI Learning, 2012.
4. ***Software Testing - Principles, Techniques and Tools,*** M.G. Limaye, Tata McGraw-Hill Education Private Ltd., 2017.

Digital Open Educational Resources (DOER):

https://www.javatpoint.com/software-testing-tutorial

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 SOFTWARE QUALITY IN GLOBAL BUSINESS CONTEXT				
1.1	Introduction, Quality Attributes, Quality	3	Chalk & Talk	Black Board
1.2	Challenges in Globally Outsources Business	2	Chalk & Talk	LCD
1.3	importance of Quality as a Business Driver, Understanding Life cycle Models	4	Lecture	PPT & White board
1.4	Object Oriented Life cycle Models	2	Lecture	Smart Board
1.5	Choosing the right type of Life cycle model for software project(Self study)	3	Discussion	Google classroom
UNIT -2 SQA ROLE IN AN ORGANIZATION				
2.1	Introduction, Understanding the SQA function	3	Chalk & Talk	Black Board
2.2	Managing SQA Operations **:** SQA : Organizational Level Initiatives	7	Chalk & Talk	LCD
2.3	Defect Prevention, Quality Assurance – Important Dimensions for the QA Analyst (Self study)	4	Discussion	Google classroom
UNIT -3 TESTING FOR QUALITY VALIDATION				
3.1	Introduction , The Purpose of Testing , Testing is not same as Inspection and Audit	5	Lecture	Green Board
3.2	Testing is not the same as Debugging	2	Chalk & Talk	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.3	The Testing Life Cycle, Roles and Responsibilities in Testing,.	4	Chalk &Talk	Black Board
3.4	Test Artefacts, The Test Plan and Test Techniques (Self study)	3	Discussion	Google classroom
UNIT -4 TESTING MODELS AND TECHNIQUES				
4.1	Testing Phases with the V-Model and W-Model	7	Chalk & Talk	Black Board
4.2	Testing Techniques – Risk-based Approach to Testing –	4	Chalk & Talk	LCD
4.3	Test Process Automation and Test Tool Selection. (Self study)	3	Discussion	Google classroom
UNIT -5 TESTING TOOLS				
5.1	Load Runner – Overview of LoadRunner	1	Chalk & Talk	Black Board
5.2	Creating Vuser script using Virtual User Generator – Creating Virtual Users Using Loadrunner Controller	6	Chalk & Talk	Black Board
5.3	JMeter – JMeter Overview – JDBC Test.	5	Chalk & Talk	LCD
5.4	HTTP Test(Self study)	2	Discussion	Google classroom
UNIT -6 DYNAMISM				
6.1	Tools used in real time applications and their implementations	5	Group discussion	Black board

INTERNAL - PG

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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

****The best out of two will be taken into account***

COURSE OUTCOMES

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
CO 1	Discuss various software application domains and different process model used in software development.	K2	PSO1,PSO2
CO 2	Demonstrate the basics of software quality assurance and defect prevention.	K2, K3	PSO4,PSO5
CO 3	Compare different testing strategies and tactics.	K3,K4	PSO5,PSO6
CO 4	Apply the software testing techniques in commercial environment.	K3, K4	PSO3,PSO6
CO 5	Explain high performance testing using Jmeter.	K4, K5	PSO6,PSO8

Mapping of C0s with PSOs

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO 1	**3**	**3**	**1**	**2**	**2**	**1**	**2**	**1**	**1**
CO 2	**1**	**1**	**2**	**3**	**3**	**2**	**1**	**1**	**2**
CO 3	**2**	**2**	**2**	**2**	**3**	**3**	**1**	**2**	**1**
CO 4	**1**	**2**	**3**	**2**	**2**	**3**	**2**	**1**	**2**

CO 5	**2**	**2**	**1**	**2**	**2**	**3**	**2**	**3**	**2**

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: Mrs. T. Charanya Nagammal

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT15B	DIGITAL IMAGE PROCESSING	Lecture	4	4

COURSE DESCRIPTION

The course helps to create interest in image processing techniques and infuse research thirst in this area

COURSE OBJECTIVES

- To inculcate ideas and create interest in processing images techniques.
- To provide a research orientation inducing them to pursue research.

UNITS

UNIT I : INTRODUCTION (14 Hrs)

Introduction- What is Digital Image Processing- The Origins of Digital Image Processing – Examples of Fields that Use Digital Image Processing – Fundamental Steps in Digital Image Processing – **Components of an Image Processing System(Self Study).**

UNIT II : DIGITAL IMAGE FUNDAMENTALS (14 Hrs)

Elements of Visual Perception – Light and the Electromagnetic Spectrum – Image Sensing and Acquisition – Image Sampling and Quantization – image interpolation - Some Basic Relationships between Pixels – **An Introduction to the Mathematical Tools Used in Digital Image Processing. (Self Study)**

UNIT III: INTENSITY TRANSFORMATIONS AND SPATIAL FILTERING

(14 Hrs)

Background-Some Basic Intensity Transformation Functions - Histogram Processing – Fundamentals of Spatial Filtering – Smoothing Spatial Filters – Sharpening Spatial Filters – **Combining Spatial Enhancement Methods.(Self Study)**

UNIT IV: IMAGE RESTORATION AND RECONSTRUCTION (14 Hrs)

A Model of the Image Degradation/Restoration Process-Noise Models - Restoration in the Presence of Noise Only-Spatial Filtering.**Color Image Processing:** Color Fundamentals – **Color Models(Self Study)**

UNIT V: IMAGE COMPRESSION AND SEGMENTATION (14 Hrs)

Fundamentals – Huffman coding – Golomb coding- Arithmetic coding – LZW coding- Runlength coding - **Segmentation Fundamentals - Point, Line and Edge Detection(Self Study)**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 Hrs)

Image processing tools in current real time problems

REFERENCES:

1. Digital Image Processing, Rafael.C.Gonzalez and Richard E.Woods, 3rd Edition, Pearson Publications, 2014.
Chapters: 1, 2, 3.1 – 3.7, 5.1 – 5.3, 6.1, 6.2, 8.1 - 8.2.5, 10.1, 10.2

2. Fundamentals of Digital image processing, Anil Jain, PHI Learning Pvt Ltd. 2011.

3.Digital Image Processing & Analysis, B.Chanda, D.Dutta Majumder, 2nd Edition, PHI Learning Pvt Ltd. 2013.

4. Digital Image Processing, Chaturvedi, 1st Edition, Vayu Educaton India Publisher, 2013.

5.Digital Image Processing: Principles and Applications, Wilhelm **Burger and Mark J. Burge,** 2nd Edition, Springer, 2016.

Digital Open Educational Resources (DOER):

https://www.tutorialspoint.com/dip/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Introduction- What is Digital Image Processing- The Origins of Digital Image Processing	4	Chalk & Talk	Black Board
1.2	Examples of Fields that Use Digital Image Processing	4	Chalk & Talk	LCD
1.3	Fundamental Steps in Digital Image Processing	3	Lecture	PPT & White board
1.4	Components of an Image Processing System(Self Study)	3	Discussion	Black Board
UNIT -2 DIGITAL IMAGE FUNDAMENTALS				
2.1	Elements of Visual Perception – Light and the Electromagnetic Spectrum	4	Lecture	Black Board
2.2	Image Sensing and Acquisition – Image Sampling and Quantization	4	Lecture	PPT & White board
2.3	image interpolation - Some Basic Relationships between Pixels	4	Lecture	Black Board
2.4	An Introduction to the Mathematical Tools Used in Digital Image Processing(Self Study)	2	Discussion	Black Board
UNIT -3 INTENSITY TRANSFORMATIONS AND SPATIAL FILTERING				
3.1	Background-Some Basic Intensity Transformation Functions	4	Lecture	Green Board Charts

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.2	Histogram Processing – Fundamentals of Spatial Filtering	4	Chalk &Talk	Green Board
3.3	Smoothing Spatial Filters Sharpening Spatial Filters	4	Chalk & Talk	Green Board
3.4	Combining Spatial Enhancement Methods(Self Study)	2	Discussion	Black Board
UNIT -4 IMAGE RESTORATION AND RECONSTRUCTION				
4.1	A Model of the Image Degradation/Restoration Process	2	Chalk & Talk	Green Board
4.2	Noise Models - Restoration in the Presence of Noise Only	3	Chalk & Talk	Black Board
4.3	Spatial Filtering.	5	Chalk & Talk	Black Board
4.4	Color Fundamentals	2	Chalk & Talk	Black Board
4.5	Color Models(Self Study)	2	Discussion	Black Board
UNIT -5 IMAGE COMPRESSION AND SEGMENTATION				
5.1	Fundamentals – Huffman coding – Golomb coding	4	Chalk & Talk	Black Board
5.2	Arithmetic coding – LZW coding-	4	Chalk & Talk	Green Board
5.3	Runlength coding	4	Chalk & Talk	Green Board
5.4	Segmentation Fundamentals -Point, Line and Edge Detection(Self Study)	2	Discussion	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -6DYNAMISM				
6.1	Image processing tools in current real time problems	5	Group Discussion	Black Board

INTERNAL - PG

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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks

C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	Understand the representation of digital image and its manipulations	K2	PSO1,PSO2
CO 2	Analyze image sampling and quantization requirements and implications	K2, K3	PSO4,PSO5
CO 3	Describe various Transformation and Filtering Techniques	K2, K3	PSO4,PSO5
CO 4	Demonstrate Restoration And Reconstruction models	K3, K4	PSO5,PSO6
CO 5	Utilize Image Compression And Segmentation for efficient storage	K3, K5	PSO5,PSO8

Mapping of COs with PSOs

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO 1	**3**	**3**	**1**	**2**	**2**	**1**	**2**	**1**	**1**

CO 2	**1**	**1**	**2**	**3**	**3**	**2**	**1**	**1**	**2**
CO 3	**2**	**2**	**2**	**3**	**3**	**2**	**1**	**2**	**1**
CO 4	**1**	**2**	**2**	**2**	**3**	**3**	**2**	**1**	**2**
CO 5	**2**	**2**	**1**	**2**	**3**	**2**	**2**	**3**	**2**

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: T. Leena Prema Kumari

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT15C	LINUX SHELL PROGRAMMING	Lecture	4	4

COURSE DESCRIPTION

Linux shell programming describes about the commands used to develop the concept of shell programming.

COURSE OBJECTIVES

To learn basics of shell programming and to develop programs that access files, to use signals, processes and threads

UNITS

UNIT I :SHELL PROGRAMMING: (14 Hrs)

In Introduction to Unix, Linux and GNU - Programming Linux - Shell – Pipes and Redirection – **The Shell as a Programming Language – Shell Syntax(Self Study)**

UNIT II WORKING WITH FILES: (14 Hrs)

Linux File Structure-System calls and Device Drivers-Library Functions-Low Level File Access-Standard I/O Library-Formatted Input and Output-File and Directory Maintenance-scanning Directories-Errors-**The /proc File System (Self Study)**

UNIT III :LINUX ENVIRONMENT & PROCESS AND SIGNALS (14 Hrs)
Program Arguments-Environment Variables-Time and Date-Temporary Files-User Information-Host Information-Logging-Resources and Limits-Process- Process Structure-**Starting New Processes – Signals(Self Study)**

UNIT IV: TERMINALS AND POSIX THREADS : (14 Hrs)
Reading from and Writing to the Terminal-Talking to the Terminal-The Terminal Driver and the General Terminal Interface-The Termios Structure-Terminal Output-Detecting Keystrokes- Thread - Advantages and Drawbacks of Thread- A First Threads Program-Simultaneous Execution-Synchronization -Thread Attributes-**Canceling a Thread-Threads in Abundance (Self Study)**

UNIT V : MANAGING TEXT-BASED SCREENS WITH CURSES: (14 Hrs)
Compiling with curses-Curses Terminology and Concepts - The Screen - The Keyboard-Windows - Sub windows - The Keypad - Using Color – Pads - **The CD Collection Application (Self Study)**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 Hrs.)

Case study in latest Commands in Linux

REFERENCES:

1. Beginning Linux Programming, IV Edition– Neil Mathew, Richard Stones- Wiley India Pvt.Ltd-2008.
2. Professional Linux Programming, IV Edition - Richard Stones and Neil Matthew-Wiley India Pvt.Ltd-2008
3. Linux Complete, I Indian Edition - Grant Taylor- BPB publication-2000
4. Linux Application Development, II Edition - Michael K. Johnson and W.Troan- Pearson Education-2005.
5. Linux the Complete Reference, VI Edition–Richard Peterson-Tata McGraw Hill Edition-2008

Digital Open Educational Resources (DOER):

https://www.javatpoint.com/linux-tutorial

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 SHELL PROGRAMMING				
1.1	In Introduction to Unix, Linux and GNU	3	Chalk & Talk	Black Board
1.2	Programming Linux - Shell – Pipes and Redirection	4	Chalk & Talk	LCD
1.3	The Shell as a Programming Language – Shell Syntax(Self Study)	7	Discussion	Google classroom
UNIT -2 WORKING WITH FILES				
2.1	Linux File Structure-System calls and Device Drivers-Library Functions	3	Lecture	Smart Board
2.2	Low Level File Access-Standard I/O Library-	3	Lecture	Black Board
2.3	Formatted Input and Output-File and Directory Maintenance-	4	Chalk & Talk	Black Board
2.4	scanning Directories-Errors-	3	Lecture	Smart Board
2.5	The /proc File System (Self Study)	1	Discussion	Google classroom
UNIT -3 LINUX ENVIRONMENT & PROCESS AND SIGNALS				
3.1	Program Arguments-Environment	4	Chalk & Talk	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Variables-Time and Date-Temporary Files			
3.2	User Information-Host Information-Logging-Resources and Limits-	4	Discussion	Black Board
3.3	Process- Process Structure	3	Lecture	Green Board Charts
3.4	Starting New Processes – Signals (Self Study)	3	Discussion	Google classroom
UNIT -4 TERMINALS AND POSIX THREADS				
4.1	Reading from and Writing to the Terminal-Talking to the Terminal	4	Chalk & Talk	Green Board
4.2	The Terminal Driver and the General Terminal Interface-The Termios Structure-Terminal Output	3	Chalk & Talk	Green Board
4.3	Detecting Keystrokes- Thread - Advantages and Drawbacks of Thread- A First Threads Program	3	Lecture	Smart Board
4.4	Simultaneous Execution-Synchronization -Thread Attributes	3	Chalk & Talk	Green Board
4.5	Canceling a Thread-Threads in Abundance(Self Study)	1	Discussion	Google classroom
UNIT -5 MANAGING TEXT-BASED SCREENS WITH CURSES				
5.1	Compiling with curses-Curses Terminology and Concepts	3	Lecture	Smart Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.2	The Screen - The Keyboard-Windows	4	Chalk & Talk	Green Board
5.3	Sub windows - The Keypad - Using Color – Pads	4	Chalk & Talk	Green Board
5.4	The CD Collection Application(Self Study)	3	Discussion	Google classroom
UNIT -6 DYNAMISM				
6.1	Case study in latest Commands in Linux	5	Discussion	Google classroom

INTERNAL - PG

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 %**

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks

C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	Understand the fundamental concept of Shell Programming	K2	PSO1,PSO2
CO 2	Analyze the concepts of file management in Linux	K2, K3	PSO2,SPO3
CO 3	To learn the linux environment, process and signal	K2, K3	PSO4,PSO5
CO 4	Identify the types of POSIX threads and terminals	K3, K4	PSO3, PSO9
CO 5	Utilize the facilities provided in the concept of text based screens	K3, K5	PSO8, PSO9

Mapping of C0s with PSOs

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO 1	**3**	**3**	**1**	**2**	**2**	**1**	**2**	**1**	**1**

CO 2	**1**	**3**	**3**	**2**	**1**	**2**	**1**	**1**	**2**
CO 3	**2**	**2**	**2**	**3**	**3**	**2**	**1**	**2**	**1**
CO 4	**1**	**2**	**3**	**2**	**2**	**1**	**2**	**1**	**3**
CO 5	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**3**	**3**

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: T. Charanya Nagammal

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	9PG3IT16A	BIG DATA ANALYTICS	Lecture	5	5

COURSE DESCRIPTION

Big Data Analytics includes Introduction to Big Data, Big Data Analytics, The Big Data Technology, Introduction to MAPREDUCE Programming: and Introduction to Recommendation Engines.

COURSE OBJECTIVES

- To understand Characteristics and challenges of Big Data
- To interpret Big Data Analytics and Big Data Technologies
- To demonstrate MAPREDUCE Programming and Recommendation Systems

UNITS

UNIT I: INTRODUCTION (14 Hrs)

Introduction to Big Data: Characteristics of Data – Evolution of Big Data – Definition of Big Data – Challenges with Big Data – What is Big Data – Other Characteristics of Data Which are not Definitional Traits of Big Data – Why Big Data – Are we just an Information Consumer or Do we also Produce Information – Traditional Business Intelligence(BI) versus Big Data – A Typical Data warehouse Environment – **A Typical Hadoop Environment – What is New Today – What is Changing in the Realms of Big Data(Self study).**

UNIT II :BIG DATA ANALYTICS (14 Hrs)

Big Data Analytics: Classification of Analytics – Greatest Challenges that Prevent Businesses from Capitalizing on Big Data – Top Challenges Facing Big Data – Why is Big Data Analytics Important – What kind of Technologies are we Looking Toward to Help Meet the Challenges Posed by Big Data – Data Science – Data Scientist Your New Best Friend - **Terminologies Used in Big Data Environments – Basically Available Soft State Eventual Consistency – Few Top Analytics Tools(Self study).**

UNIT III: **THE BIG DATA TECHNOLOGY** **(14 Hrs)**

The Big Data Technology Landscape:– Hadoop. Features of Hadoop. Key advantages of Hadoop, Version of Hadoop- Overview of hadoop Ecosystems- Hadoop distributios- Hadoop verus SQL – Integrated Hadoop System Offered by Leading Markers Vendors- Cloud – based Hadoop Solutions. Introduction to Hadoop**:** Introducing Hadoop – Why Hadoop – Why not RDBMS – RDBMS versus Hadoop – Distributed Computing Challenges – History of Hadoop – Hadoop Overview – Use Case of Hadoop – Hadoop Distributors – HDFS (Hadoop Distributed File System) – **Processing Data with Hadoop – Managing Resources and Applications with Hadoop YARN (Yet Another Resource Negotiator) – Interacting with Hadoop Ecosystem(Self study).**

UNIT IV :**INTRODUCTION TO MAP REDUCE PROGRAMMING** **(14 Hrs)**

Introduction to MAP REDUCE Programming: Introduction – Mapper – Reducer – Combiner – Partitioner – Searching – Sorting – Compression.Introduction to Machine Learning: Introduction to Machine Learning – Machine Learning Algorithm-Regression Model- Linear Regression- Clustering- Collaboration filtering- Association Rule Mining- **Decision Tree(Self study).**

UNIT V: RECOMMENDATION ENGINES (14 Hrs)

Introduction to Recommendation Engines: Recommendation engine definition – Need for Recommender Systems – Big Data Driving the Recommender Systems – Types of Recommender Systems –Evolution of Recommender Systems with Technology. Evolution of Recommendation Engines Explained: Evolution of Recommendation Engines – Nearest Neighborhood-based **Recommendation Engines – Content-based Recommender Systems – Hybrid Recommender Systems – Model-based Recommender Systems.(Self study)**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Current scenario in Big Data Analytical technologies

REFERENCES:

1. Big Data and Analytics, Seema Acharya and Subhashini Chellappan, 2nd edition ,Wiley India Private Limited, 2017. Chapters : 2,3, 4.2 - 5, 8,12.

2**. Building Recommendation Engines. -Suresh Kumar Gorakala,** 1st edition, Packt Publishing Limited, United Kingdom, 2016. Chapters: 1, 3

3.Big Data Strategies , Pam Baker ,1st edition , Cengage Learning India Private Limited, 2016.

4.Big Data, Dr. Anil Maheshwari, 1st edition , Published by McGraw Hill Education (India) Private Limited, 2017.

5. Big Data Fundamentals Concepts, Driver & Techniques, Thomas Erl,Wajid Khattak and Paul Buhler, 3rd Edition, Pearson publication, 2018.

Digital Open Educational Resources (DOER):

https://www.tutorialspoint.com/big_data_analytics/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Introduction to Big Data: Characteristics of Data – Evolution of Big Data – Definition of Big Data – Challenges with Big Data – What is Big Data	4	Chalk & Talk	Black Board
1.2	Other Characteristics of Data Which are not Definitional Traits of Big Data – Why Big Data – Are we just an Information Consumer or Do we also Produce Information	4	Chalk & Talk	LCD
1.3	Traditional Business Intelligence(BI) versus Big Data – A Typical Data warehouse Environment	4	Lecture	PPT & White board
1.4	A Typical Hadoop Environment – What is New Today – What is Changing in the Realms of Big Data(Self study)	4	Discussion	Google classroom
UNIT -2 BIG DATA ANALYTICS				
2.1	Big Data Analytics: Classification of Analytics – Greatest Challenges that Prevent Businesses from Capitalizing on Big Data – Top Challenges Facing Big Data	5	Lecture	Green Board
2.2	Why is Big Data Analytics Important – What kind of Technologies are we Looking Toward to Help Meet the challenges posed by Big Data	4	Chalk & Talk	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.3	Data Science – Data Scientist Your New Best Friend	3	Chalk & Talk	Green Board
2.4	Terminologies Used in Big Data Environments – Basically Available Soft State Eventual Consistency – Few Top Analytics Tools(Self study).	4	Discussion	Google classroom
UNIT –3 THE BIG DATA TECHNOLOGY				
3.1	The Big Data Technology Landscape:– Hadoop. Features of Hadoop. Key advantages of Hadoop, Version of Hadoop Overview of hadoop Ecosystems	3	Chalk & Talk	Black Board
3.2	Hadoop distributios- Hadoop verus SQL – Integrated Hadoop System Offered by Leading Markers Vendors- Cloud – based Hadoop Solutions.	3	Chalk & Talk	Black Board
3.3	Introduction to Hadoop**:** Introducing Hadoop – Why Hadoop – Why not RDBMS – RDBMS versus Hadoop	3	Chalk & Talk	Black Board
3.4	Distributed Computing Challenges – History of Hadoop – Hadoop Overview – Use Case of Hadoop – Hadoop Distributors – HDFS (Hadoop Distributed File System)	3	Chalk & Talk	Green Board
3.5	Processing Data with Hadoop – Managing Resources and Applications with Hadoop YARN (Yet Another Resource Negotiator) – Interacting with Hadoop Ecosystem(Self study)	2	Discussion	Google classroom
UNIT -4 INTRODUCTION TO MAP REDUCE PROGRAMMING				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
4.1	Introduction to MAP REDUCE Programming: Introduction – Mapper – Reducer – Combiner – Partitioner – Searching – Sorting – Compression.	4	Chalk & Talk	Green Board
4.2	Introduction to Machine Learning: Introduction to Machine Learning – Machine Learning Algorithm-	4	Chalk & Talk	Green Board
4.3	Regression Model- Linear Regression- Clustering-	4	Chalk & Talk	Black Board
4.4	Collaboration filtering- Association Rule Mining-	3	Chalk & Talk	Black Board
4.5	Decision Tree(Self study)	1	Discussion	Google classroom
UNIT -5 RECOMMENDATION ENGINES				
5.1	Introduction to Recommendation Engines: Recommendation engine definition – Need for Recommender Systems –	5	Chalk & Talk	Black Board
5.2	Big Data Driving the Recommender Systems – Types of Recommender Systems –Evolution of Recommender Systems with Technology.	4	Chalk & Talk	Green Board
5.3	Evolution of Recommendation Engines Explained: Evolution of Recommendation Engines – Nearest Neighborhood-based	3	Chalk & Talk	Green Board
5.4	Recommendation Engines – Content-based Recommender Systems – Hybrid Recommender Systems –	2	Discussion	Google classroom

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Model-based Recommender Systems(Self study)			
UNIT -6 DYNAMISM				
6.1	Current scenario in Big Data Analytical technologies	5	Assignments	Google classroom

INTERNAL - PG

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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks

C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	Understand the Characteristics and challenges of Big Data	K2	PSO1& PSO2
CO 2	Describe the concepts of Big Data Analytics	K2	PSO4
CO 3	Utilize Hadoop for Big Data Technologies	K3, K4	PSO5, PSO6
CO 4	Demonstrate MAPREDUCE Programming	K3, K4	PSO3, PSO9
CO 5	Describe types of Recommendation Systems using Big Data Analytics.	K4, K5	PSO6, PSO8

Mapping of COs with PSOs

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO 1	**3**	**3**	**1**	**2**	**2**	**1**	**2**	**1**	**1**

CO 2	**1**	**1**	**2**	**3**	**1**	**2**	**1**	**1**	**2**
CO 3	**2**	**2**	**2**	**2**	**3**	**3**	**1**	**2**	**1**
CO 4	**1**	**2**	**3**	**2**	**2**	**1**	**2**	**1**	**3**
CO 5	**2**	**2**	**1**	**2**	**2**	**3**	**2**	**3**	**2**

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: V. Jane Varamani Sulekha**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT16B	INTERNET OF THINGS	Lecture	5	5

COURSE DESCRIPTION

This Course provides knowledge of development cycle of IoT systems with sample systems. And explains the different sources needed with the integration process to build IoT systems

COURSE OBJECTIVES

- To understand the fundamentals of Internet of Things.
- To apply the concept of Internet of Things in the real world scenario.

UNITS

UNIT I : INTRODUCTION TO INTERNET OF THINGS (14 Hrs)

Introduction – Physical Design of IoT –Logical Design of IoT – IoT Enabling Technologies – **IoT Levels & Deployment Templates(Self Study)**

UNIT II :DOMAIN SPECIFIC IOTS (14 Hrs)

Introduction – Home Automation – Cities – Environment – Energy – Retail – Logistics – Agriculture – Industry – **Health & Lifestyle (Self Study)**

UNIT III IOT AND M2M (14 Hrs)

Introduction – M2M- Difference between IoT and M2M – SDN and NFV for IoT .IoT System Management with NETCONF-YANG :Need for IoT Systems

Management – **Simple Network Management Protocol(SNMP) – Network Operator Requirements(Self Study)**

UNIT IV: IOT PLATFORMS DESIGN METHODOLOGY (14 Hrs)

Introduction –IoT Design Methodology .IoT Physical Devices &Endpoints**:**

What is an IoT Device – Exemplary Device : Raspberry Pi- About the Board – **Linux on Raspberry Pi – Raspberry Pi Interfaces(Self Study)**

UNIT V CASE STUDIES ILLUSTRATING IOT DESIGN (14 Hrs)

Introduction – Home Automation – Cities – Environment – Agriculture – **Productivity Applications.(Self Study)**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Current scenario in IOT technologies

REFERENCES:

1. Adrian McEwen & Hakim Cassimally,"Designing the Internet of Things",WILEY, 2017
2. Raj Kamal ,"INTERNET OF THINGS ARCHITECTURE AND DESIGN PRINCIPLES",McGraw Hill Education , 2017
3. OLIVIER HERSENT ,DAVID BOSWARTHICK , OMAR ELLOUMI, "The Internet of Things", WILEY ,2015

Digital Open Educational Resources (DOER) :

https://www.javatpoint.com/iot-internet-of-things

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION TO INTERNET OF THINGS				
1.1	Introduction – Physical Design of IoT	4	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.2	Logical Design of IoT – IoT Enabling Technologies	6	Chalk & Talk	LCD
1.3	IoT Levels & Deployment Templates(Self Study)	4	Lecture	PPT & White board
UNIT -2 DOMAIN SPECIFIC IOTS				
2.1	Introduction – Home Automation	6	Lecture	Smart Board
2.2	Cities – Environment – Energy – Retail	3	Lecture	Black Board
2.3	Logistics – Agriculture – Industry	3	Chalk & Talk	Black Board
2.4	Health & Lifestyle(Self Study)	2	Chalk & Talk	Black Board
UNIT -3 IOT AND M2M				
3.1	Introduction – M2M- Difference between IoT and M2M	4	Chalk & Talk	Black Board
3.2	SDN and NFV for IoT .IoT System Management with NETCONF-YANG : Need for IoT Systems Management	6	Chalk & Talk	Green Board
3.3	Simple Network Management Protocol(SNMP) – Network Operator Requirements(Self Study)	4	Lecture	Smart Board
UNIT -4 IOT PLATFORMS DESIGN METHODOLOGY				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
4.1	Introduction –IoT Design Methodology .IoT Physical Devices & Endpoints	4	Lecture	Smart Board
4.2	What is an IoT Device – Exemplary Device : Raspberry Pi- About the Board	6	Chalk & Talk	Green Board
4.3	Linux on Raspberry Pi – Raspberry Pi Interfaces(Self Study)	4	Assignments	Google class room
UNIT -5 CASE STUDIES ILLUSTRATING IOT DESIGN				
5.1	Introduction – Home Automation	6	Lecture	Smart Board
5.2	Cities – Environment – Agriculture	5	Chalk & Talk	Green Board
5.3	Productivity Applications(Self Study)	3	Assignments	Google class room
UNIT -6 DYNAMISM				
6.1	Current scenario in IOT technologies	5	Assignments	Google class room

INTERNAL - PG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1	T2 10 Mks.	Seminar 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	

	10 Mks.								
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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

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

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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
CO 1	Understand the basic concepts of IoT	K2	PSO1, PSO2
CO 2	Discuss physical and logical design of IoT enabled technologies	K2,K3	PSO2,PSO3
CO 3	Analyze how and where IoT can be applied	K3,K4	PSO5, PSO9

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 4	Compare M2M and IoT	K2,K3,K4	PSO1, PSO3 PSO9
CO 5	Analyse the features of Python used for IoT implementation	K4,K5	PSO6, PSO8

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	3	3	1	1	1	1	1	1
CO3	2	1	1	1	3	2	1	1	3
CO4	3	1	3	2	1	1	1	1	3
CO5	1	1	2	1	2	3	1	3	2

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: T. Leena Prema kumari **Forwarded By**

V. Mageshwari

HOD'S Signature & Name

Employability 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT16C	MOBILE COMMUNICATION	Lecture	5	5

COURSE DESCRIPTION

Mobile communication deals with the protocol and system to perform the data transfer through mobile devices.

COURSE OBJECTIVES

- To understand the fundamentals of Mobile communication
- To apply various protocols and algorithms for the real world scenario

UNITS

UNIT I :INTRODUCTION (14 Hrs)

Applications-A Short History of Wireless Communication-A Market For Mobile Communication-A Simplified Reference Model.

WIRELESS TRANSMISSION**:** Frequencies for Radio Transmission-Signals-Antenna-Signal Propagation-Multiplexing-Modulation-**Spread Spectrum-Cellular System(Self Study).**

UNIT II: MEDIUM ACCESS CONTROL: (14 Hrs)

Motivation for Specialized MAC-SDMA-FDMA-TDMA-CDMA.**Telecommunication System:** GSM**(Self Study).**.

UNIT III :SATELLITE SYSTEM: (14 Hrs)

Application-Basics-Routing-Localization-Handover.

Broadcast System:Digital Audio Broadcasting-Digital Video Broadcasting-**Convergence of Broadcasting and Mobile Communication(Self Study).**

UNIT IV :WIRELESS LAN: (14 Hrs)

InfraredVs Radio Transmission- Infrastructure and ad-Hoc-Network-HIPERLAN-**Bluetooth**.**(Self Study).**

UNIT V: SUPPORT FOR MOBILITY (14 Hrs)

World wide web: Hypertext Transfer protocol – System Architecture

Wireless Application Protocol: - Architecture- Wireless datagram protocol- Wireless Transport layer security- Wireless transaction protocol – Wireless session protocol – **Wireless Markup language- WML Script(Self Study).**Wireless telephony application.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Current scenario in mobile communication technologies

REFERENCES:

1. Mobile communication , Second edition, Jochen Schiller
2. Wireless Networks by Clint Smith and Daniel Collins ,2014
3. Fundamentals for Wireless communication by David Tse, Pramod Viswanath

Digital Open Educational Resources (DOER) :

https://www.javatpoint.com/mobile-communication-tutorial

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1INTRODUCTION				
1.1	Applications-A Short History of Wireless Communication-A Market For Mobile Communication-A Simplified Reference Model	4	Chalk & Talk	Black Board
1.2	WIRELESS TRANSMISSION: Frequencies for Radio Transmission-Signals-	4	Chalk & Talk	LCD
1.3	Antenna-Signal Propagation-Multiplexing-Modulation-	4	Lecture	PPT & White board
1.4	Spread Spectrum-Cellular System (Self Study)	2	Group discussion & Assignments	Black board& Google classroom
UNIT -2 MEDIUM ACCESS CONTROL				
2.1	Motivation for Specialized MAC-SDMA-FDMA	4	Chalk & Talk	Black Board
2.2	TDMA-CDMA	7	Chalk & Talk	Black Board
2.3	Telecommunication System:GSM(Self Study)	3	Group discussion & Assignments	Black board& Google classroom

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT –3 SATELLITE SYSTEM				
3.1	Application-Basics-Routing-Localization-Handover.	4	Lecture	Green Board Charts
3.2	Broadcast System:Digital Audio Broadcasting-	4	Chalk & Talk	Green Board
3.3	Digital Video Broadcasting-	3	Lecture	Green Board Charts
3.4	Convergence of Broadcasting and Mobile Communication(Self Study)	3	Group discussion &Assignments	Black board& Google classroom
UNIT -4 WIRELESS LAN				
4.1	InfraredVs Radio Transmission	4	Chalk & Talk	Black Board
4.2	Infrastructure and ad-Hoc Network	4	Chalk & Talk	Black Board
4.3	HIPERLAN	3	Chalk & Talk	Black Board
4.4	Bluetooth(Self Study)	3	Group discussion & Assignments	Black board& Google classroom
UNIT -5 SUPPORT FOR MOBILITY				
5.1	World wide web : Hypertext Transfer protocol – System Architecture	4	Chalk & Talk	Black Board
5.2	Wireless Application Protocol: Architecture- Wireless	6	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	datagram protocol- Wireless Transport layer security- Wireless transaction protocol – Wireless session protocol			
5.3	Wireless Markup language- WML Script (Self Study)	2	Group discussion & Assignments	Black board& Google classroom
5.4	Wireless telephony application.	2	Chalk & Talk	Black Board
UNIT -6 DYNAMISM				
6.1	Current scenario in mobile communication technologies	5	Group discussion &Assignments	Black board& Google classroom

INTERNAL - PG

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 %

End Semester - PG

Levels	Section A 10 Mks	Section B 20 Mks.	Section C 10 Mks	Section D 10 Mks.	Section E 10 Mks.	Total 60Mks.	
K2	10	5	-	-	-	15	25 %
K3	-	5	10	-	-	15	25 %
K4	-	5	-	-	10	15	25 %
K5	-	5	-	10	-	15	25 %
Total	10	20	10	10	10	60	100 %

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**C4**	**C5**	**C6**	**CIA**	**ESE**	**Total**

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
10	10	5	5	5	5	40	60	100

- **PG CIA Components**

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	2 *	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Seminar	1	-	5 Mks
C6	-	Attendance		-	5 Mks

****The best out of two will be taken into account***

COURSE OUTCOMES

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
CO 1	To understand the basic concepts in Mobile communication	K2	PSO1, PSO4
CO 2	Analyze the concept of Medium Access control	K3, K5	PSO5, PSO8
CO 3	Discuss concept of Satellite system	K2, K3	PSO1, PSO3
CO 4	Explain the concepts of Wireless LAN	K2, K3, K4	PSO1, PSO5, PSO6

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 5	Apply the various support required for Mobility	K4,K5	PSO8, PSO9

Mapping of C0s with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2	1	3	1	1	1	1	1
CO2	1	1	2	1	3	1	1	3	1
CO3	3	1	3	1	2	2	1	2	1
CO4	3	1	1	2	3	3	1	2	2
CO5	1	1	2	1	2	1	1	3	3

Mapping of C0s with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: T. Charanya Nagammal

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT17	LAB V: DATA MINING AND DATA WAREHOUSING	Practical	5	3

COURSE DESCRIPTION

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

COURSE OBJECTIVES

- To assess data preprocessing steps involved in different datasets
- To evaluate classification algorithms using Weka tool with sample data.
- To evaluate clusters algorithms using Weka tool with sample data .

DATA MINING AND DATA WAREHOUSE PROGRAM - WEKA TOOL

1. Rules for identifying attributes.
2. Listing of categorical attributes and the real-valued attributes separately.
3. Demonstration of preprocessing on dataset student.arff
4. Demonstration of Association rule process on dataset test.arff using apriori algorithm
5. Training a decision tree algorithm.
6. Test on classification of decision tree.
7. Demonstration of classification rule process on dataset employee.arff using j48 algorithm.

8. Demonstration of classification rule process on dataset employee.arff using id3 algorithm
9. Demonstration of classification rule process on dataset employee.arff using naïve bayes algorithm
10. Demonstration of clustering rule process on dataset student.arff using simple k-m

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
LAB PROGRAMS				
1	Rules for identifying attributes.	8	Demonstration	Desktop
2	Listing of categorical attributes and the real-valued attributes separately.	8	Demonstration	Desktop
3	Demonstration of preprocessing on dataset student.arff	8	Demonstration	Desktop
4	Demonstration of Association rule process on dataset test.arff using apriori algorithm	10	Demonstration	Desktop
5	Training a decision tree algorithm	10	Demonstration	Desktop
6	Demonstration of classification rule process on dataset employee.arff using j48 algorithm	10	Demonstration	Desktop
7	Test on classification of decision tree.	10	Demonstration	Desktop
8	Demonstration of classification rule process	10	Demonstration	Desktop

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	on dataset employee.arff using id3 algorithm			
9	Demonstration of classification rule process on dataset employee.arff using naïve bayes algorithm	8	Demonstration	Desktop
10	Demonstration of clustering rule process on dataset student.arff using simple k-m	8	Demonstration	Desktop

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	C2	C3	CIA	ESE	Total
20	15	5	40	60	100

- **PG CIA Components**

C1 – Average of Two Model test Marks

C 2- Program Completion and Record Work

C 3 – Non - Scholastic

COURSE OUTCOMES

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
CO 1	Utilize Weka tool to evaluate Data Mining algorithms.	K4 & K5	PSO1, PSO2
CO 2	Demonstrate preprocessing steps involved in different datasets.	K4 & K5	PSO5, PSO6
CO 3	Develop the decision tree algorithm using different datasets	K4 & K5	PSO3, PSO9
CO 4	Demonstrate the classification and clusters algorithms using large datasets.	K4 & K5	PSO4, PSO7
CO 5	Analyze Data Mining techniques for realistic data.	K4 & K5	PSO8, PSO9

Mapping of COs with PSOs

CO / PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO 1	3	3	1	2	2	1	2	1	1
CO 2	1	1	2	2	3	3	1	1	2
CO 3	2	2	3	2	1	2	1	2	3

CO 4	**1**	**2**	**2**	**3**	**2**	**1**	**3**	**1**	**2**
CO 5	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**3**	**3**

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: V. Jane varamani sulekha

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT18	LAB VI PYTHON PROGRAMMING	Practical	5	3

COURSE DESCRIPTION

This course content plays a vital role in building the basic programming skill in Python.

COURSE OBJECTIVES

The focus of the lab is to provide students with an introduction to visualizethe real time problems using the Python programming language as a practical session. The goal of this course is to train the students to face the industrial requirements.

PROGRAM LIST

1. Program using String
2. Program using List
3. Program using Dictionary
4. Program using Tuple
5. Program using Sets
6. Program using Array
7. Program using Condition Statements and Loops
8. Program using Functions

9. Program using Date Time
10. Program using Class
11. Program using Data Structure
12. Program using Search and Sorting
13. Program using Recursion
14. Program using Math
15. Program using File I/O

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1	Program usingString	6	Demonstration	Desktop PC
2	Program usingList	6	Demonstration	Desktop PC
3	Program usingDictionary	6	Demonstration	Desktop PC
4	Program usingTuple	6	Demonstration	Desktop PC
5	Program usingSets	6	Demonstration	Desktop PC
6	Program usingArray	6	Demonstration	Desktop PC
7	Program usingConditionStatements and Loops	6	Demonstration	Desktop PC
8	Program usingFunctions	6	Demonstration	Desktop PC
9	Program usingDate Time	6	Demonstration	Desktop PC
10	Program usingClass	6	Demonstration	Desktop PC
11	Program usingRecursion	6	Demonstration	Desktop PC

12	Program usingSearch and Sorting	6	Demonstration	Desktop PC
13	Program usingMath	6	Demonstration	Desktop PC
14	Program using Loops	6	Demonstration	Desktop PC
15	Program usingFile I/O	6	Demonstration	Desktop PC

CIA

Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC		NON - SCHOLASTIC	MARKS		
C1	**C2**	**C3**	**CIA**	**ESE**	**Total**
20	**15**	**5**	**40**	**60**	**100**

- **PG CIA Components**

C1 – Average of Two Model test Marks

C 2- Program Completion and Record Work

C 3 – Non - Scholastic

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED	PSOs ADDRESSED

		BLOOM'S TAXONOMY)	
CO 1	Demonstrate the basic concepts of variables expressions.	K4 & K5	PSO1, PSO2
CO 2	Develop basic python programs with I/O operations.	K4 & K5	PSO4, PSO6
CO 3	Develop programs with function control structure.	K4 & K5	PSO3, PSO6
CO 4	Apply strings and lists in python.	K4 & K5	PSO7, PSO9
CO 5	Develop python programs with files.	K4 & K5	PSO8, PSO9

Mapping of COs with PSOs

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO 1	3	3	1	2	2	1	2	1	1
CO 2	1	1	2	3	1	3	1	1	2
CO 3	2	2	3	2	1	3	1	2	1
CO 4	1	2	2	2	2	1	3	1	3
CO 5	2	2	1	2	2	3	2	3	3

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: Mrs. T. Charanya Nagammal

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Entrepreneurship 100%

II M.Sc.IT

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3ITSI	SUMMER INTERNSHIP	PG Core	-	3

COURSE DESCRIPTION :

It is a summer training programme undertaken by the students in a company of their choice. This is aimed to help them have an experience of the real time environment. It will act as a platform for the future placement.

The students are mandated to complete one online course in the area of their interest.

The students have to submit a report after the internship. This report will be assessed through a viva-voce internal exam.

COURSE OUTCOMES

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
CO 1	Identify employment contacts leading directly to a full-time job following course completion	K4 & K5	PSO1, PSO2
CO 2	Create communication, interpersonal and other soft	K4 & K5	PSO4, PSO5

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
	skills essential for the job interview process		
CO 3	Analyse the project requirements and engages in continuing professional development	K4 & K5	PSO7, PSO8
CO 4	Analyze a problem and identify the computing requirements appropriate to its solution.	K4 & K5	PSO3, PSO5&PSO8
CO 5	Utilizing a new software tool.	K4 & K5	PSO7,PSO8 & PSO9

Mapping of C0s with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	1	2	3	3	1	1	1	1
CO3	2	1	1	1	2	2	3	3	1
CO4	1	1	3	2	3	1	1	3	1
CO5	1	1	2	1	2	1	3	3	3

Mapping of C0s with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: T. Charanya Nagammal

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Entrepreneurship 100%

II M.Sc.IT

SEMESTER –IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG4ITPR	PROJECT	PG Core	-	6

COURSE DESCRIPTION

The project will be of one semester duration. The students will be sent to different organizations involved in IT as per the interest and specialization of students, mostly located in the place of the study. They will have to carry out a project related to the area of interest and submit a project report at the end of the semester. The students shall defend their dissertation in front of a panel of experts during the Viva-Voce examination.

PROJECT PLAN

- ❖ Facilitates experiential learning
- ❖ Students are offered career training as part of the curriculum through this Project.
- ❖ This project work motivates them and also gives insights about Software Development.
- ❖ Encouraged to do Real time projects.
- ❖ At the end of the semester the project is evaluated by conducting viva-voce with presentation of the report.

Phase – I

- Students get acceptance letter to do project in any IT company in and around Madurai
- Problem identification in various IT, Academical, Societal, Commercial and Environmental applications
- Requirements gathering and analysis for selecting tool
- Separate modules individually

Phase – II

- Design UI
- Develop programs module level, test and debug individually

Phase – III

- Integrate the modules and show individual DEMO
- Test the app with the users, improve accordingly and conclude the results
- Document the above process as a report

EVALUATION PATTERN

MARKS				
Review 1	**Review 2**	**CIA**	**ESE**	**Total**
20	**20**	**40**	**60**	**100**

COURSE OUTCOMES

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
CO 1	Discuss project development and the associated business processes	K4 & K5	PSO1, PSO3
CO 2	Plan as an individual or in a team in development of technical projects.	K4 & K5	PSO3, PSO5
CO 3	Communicate with engineers and the community at large in written and oral forms.	K4 & K5	PSO2, PSO9
CO 4	Create effective communication skills for presentation	K4 & K5	PSO7, PSO9
CO 5	Analyse problems and formulate solutions	K4 & K5	PSO8, PSO9

Mapping of COs with PSOs

CO/ PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2	3	1	1	1	1	1	1
CO2	1	1	3	1	3	1	1	1	1
CO3	2	3	1	1	2	2	1	1	3
CO4	1	1	1	3	1	1	3	1	3
CO5	1	1	2	1	2	1	1	3	3

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER:

V. Mageshwari

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Skill Development 100%

II M.Sc.IT

SEMESTER –IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG4IT19	R-PROGRAMMING	Theory	-	4

COURSE DESCRIPTION

This Course provides knowledge of R- Programming and explains the different statements and functions used in R- Programming.

COURSE OBJECTIVES

- To understand the fundamentals of R-Programming
- To apply the concept of R- Programming in the real world scenario.

UNITS

UNIT –I :INTRODUCTION

R Data Types, Arithmetic & Logical Operators - R Matrix Tutorial: Create, Print, add Column, Slice - Factor in R: Categorical & Continuous Variables

UNIT –II : STATEMENTS

IF, ELSE, ELSE IF Statement - For Loop - While Loop

UNIT –III FUNCTIONS

apply(), lapply(), sapply(), tapply() Function

UNIT –IV IMPORTING& EXPORTING

Import Data into R: Read CSV, Excel, SPSS, Stata, SAS Files - R Exporting Data to Excel, CSV, SAS, STATA, Text File

UNIT –V AGGREGATE FUNCTIONS

Summarise & Group_by() - R Select(), Filter(), Arrange(), Pipeline

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only)

R Data Frame: Create, Append, Select, Subset - R Vs Python - SAS Vs R

Digital Open Educational Resources (DOER) :

https://www.atnyla.com/syllabus/r-programming-language/7

COURSE OUTCOMES

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
CO 1	To understand the basic concepts in R- Programming.	K2	PSO1,PSO2
CO 2	Illustrate various statements used in R-Programming	K2, K3	PSO3, PSO5
CO 3	Analyze various techniques to import and export the data set.	K3,K4	PSO5, PSO6
CO 4	To know about the aggregate functions.	K4, K5	PSO6, PSO7
CO 5	Implementation of R-Progamming in current scenario	K4,K5	PSO8, PSO9

Mapping of C0s with PSOs

CO/ PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1	3	3	1	1	1	1	1	1	1
CO2	1	1	3	1	3	1	1	1	1

CO3	2	1	1	1	3	3	1	1	1
CO4	1	1	1	2	1	3	3	1	1
CO5	1	1	2	1	2	1	1	3	3

Mapping of COs with POs

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

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

♦ Weakly Correlated -**1**

COURSE DESIGNER: V. Mageshwari

Forwarded By

V. Mageshwari

HOD'S Signature & Name

INTER DEPARTMENTAL SELF LEARNING COURSE

DEPARTMENT OF IT AND Commerce with CA

I M.ComCA

SEMESTER –I

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSCC	21PGCASLIT1	SUPPLY CHAIN MANAGEMENT	Lecture		2

COURSE OBJECTIVES

To create awareness about the supply chain activities taken in order to deliver the goods

UNIT -I

Supply Chain Management – Global Optimization – importance – key issues – Inventory management – economic lot size model. Supply contracts – centralized vs. decentralized system

UNIT -II

Supply chain Integrates- Push, Pull strategies – Demand driven strategies – Impact on grocery industry – retail industry – distribution strategies

UNIT -III

Strategic Alliances: Frame work for strategic alliances – 3PL – merits and demerits – retailer – supplier partnership – advantages and disadvantages of RSP – distributor Integration

UNIT -IV

Procurement and Outsourcing: Outsourcing – benefits and risks – framework for make/buy decision – e-procurement – frame work of e-procurement

UNIT -V

Dimension of customer Value – conformance of requirement – product selection – price and brand – value added services – strategic pricing – smart pricing – customer value measures

TEXT BOOK:

1. Rushton, A., Oxley, J &Croucher, P, "Handbook of Logistics and Distribution Management", Kogan Page, 2nd Edition , 2007.

REFERENCE BOOKS:

1. Simchi-Levi, David, Kamisnsky, Philip, and Simchi-Levi, Edith, " Designing and Managing the supply chain concepts, strategies and case studies", 3rd Edition, 2008.
2. Irwin, "Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies", McGraw Hill.2006.
3. R.B. Handfield and E.L. Nochols, "Introduction to Supply Chain Management", Prentice Hall, 2006.

COURSE OUTCOMES

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
CO 1	Explain the recent developments in the Indian financial system.	K2	PSO1,PSO2 & PSO 3
CO 2	Understand the fundamental concepts and working of financial service institutions.	K2, K3	PSO1,PSO2 , PSO3 & PSO 4
CO 3	Illustrate valuation of companies by venture capitalist.	K2, K4	PSO1,PSO2 , PSO 3 & PSO 6
CO 4	provide knowledge about the management of *mutual funds*	K2, K3 & K4	PSO1,PSO2 , & PSO 6
CO 5	Learn about stock market with Basics of Financial Markets	K3& K5	PSO1,PSO3 , & PSO5

Mapping COs Consistency with PSOs

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

Mapping COs Consistency with POs

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

COURSE DESIGNER:

1. **Mrs. Charanya Nagammai**
2. **Mrs. N. Jenifer Sharon Sumathi**

Forwarded By

V. Mageshwari

Head, B.Sc IT Department

Dr. M. Arasammal

Head, B.Com CA Department