FATIMA COLLEGE (AUTONOMOUS)

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

NAME OF THE DEPARTMENT : INFORMATION TECHNOLOGY

NAME OF THE PROGRAMME : M.Sc

PROGRAMME CODE : PSIT

ACADEMIC YEAR : 2022-2023

VISION OF THE DEPARTMENT

The vision is to be the center of excellence in training the students in Information Technology to excel both as a professional and as a responsible woman 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)

A graduate of M.Sc. Information Technology programme after two years will be

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 on their strengths and

	improving 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 entrepreuners and become 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 be disciplined 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

PROGRAMME CODE: PSIT

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
SEMESTER - I						
21PG1IT1	Java & J2ME	4	4	40	60	100
21PG1IT2	Soft computing	4	4	40	60	100
22PG1IT3	Data Science using R-Programming	4	4	40	60	100
21PG1IT4	Distributed Operating System	4	4	40	60	100
21PG1IT5	Lab in Java & J2ME	5	3	40	60	100
22PG1IT6	Lab in Data Science using R-Programming	5	3	40	60	100
	Library	1	-	-	-	-
Total		**27**	**22**			
SEMESTER - II						
21PG2IT7	Cyber Security	4	4	40	60	100
21PG2IT8	Digital Image Processing	4	4	40	60	100
21PG2IT9	Android Programming	4	4	40	60	100
21PG2IT10	Lab in Image Processing	5	3	40	60	100
21PG2IT11	Lab in Android Programming	5	3	40	60	100
	Library	1		-	-	-

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
Total		**23**	**18**			
SEMESTER - III						
21PG3IT12	Data Mining and Data Warehousing	5	5	40	60	100
21PG3IT13	Advanced Python Programming	5	5	40	60	100
21PG3IT14	Lab 5 Data Mining and Data Warehousing	5	3	40	60	100
21PG3IT15	Lab 6 Advanced Python Programming	5	3	40	60	100
Total		**20**	**16**			
SEMESTER - IV						
21PG4IT16	Biometrics	-	4	40	60	100
Total		**-**	**4**			
	Total	**120**	**60**			

MAJOR ELECTIVE / EXTRA DEPARTMENTAL COURSE / INTERNSHIP/ PROJECT

S. No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDITS	CIA Mks	ESE Mks	TOT. Mks
1.	I	19PGIT1EDC	EDC 1 Animation Software	3	3	40	60	100
2.	II	22PGIT2EDC	EDC 2 Advanced Excel VBA	3	3	40	60	100
3.			Elective - I					
		21PG2ITE1	Adhoc Network	4	5	40	60	100
		21PG2ITE2	Machine Learning					
		21PG2ITE3	Ethical Hacking					
4.	III		Elective - II					
		21PG3ITE4	Software Testing	5	5	40	60	100
		22PG3ITE5	System Software & Compiler Design					
		21PG3ITE6	Computer Forensics					
5.			Elective - III					
		21PG3ITE7	Big Data Analytics	5	5	40	60	100
		21PG3ITE8	Internet of Things					
		22PG3ITE9	Algorithm Design and Analysis					
6.		19PG3SIL1	Summer Internship	-	3	40	60	100
7.	IV	19PG4L17	Project & Viva Voce	-	6	40	60	100
			TOTAL	**20**	**30**			

OFF-CLASS PROGRAMME

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
	MOOC COURSES (Department Specific Courses/any other courses) * Students can opt other than the listed course from UGC-SWAYAM /UGC /CEC	-	Minimum 2 Credits	-	-	-	
	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		13 +				

EXTRA CREDIT COURSE

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** **SUPPLY CHAIN MANAGEMENT**	-	2	I	40	60	100
21PG3ITSL3	**SELF LEARNING COURSES for ADVANCED LEARNERS** **RESEARCH METHODOLOGY**	-	2	III	40	60	100
	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-50) + External marks 50

- **EDC:**

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

I M.Sc.

SEMESTER –I

Employability 100%

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)**

UNIT IV : 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 9th Edition, 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

OPEN EDUCATIONAL RESOURCE:

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

Levels	C1	C2	C3	C4	Total Scholastic Marks	Non Scholastic Marks C5	CIA Total	% of Assessment
	Session - wise Average 5 Mks.	Better of W1, W2 5+5=10 Mks.	M1+M2 15 Mks	MID-SEM TEST 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	5	-	-	2 ½	-		-	-
K2	-	5	4	2 ½	5		5	12.5 %
K3	-	-	3	5	12		12	30 %
K4	-	-	3	5	9		9	22.5%
Non Scholastic	-	-	-	-	9		9	22.5 %

Total	**5**	**5**	**10**	**15**	**35**	**5**	**40**	**100 %**

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

EVALUATION PATTERN

SCHOLASTIC				**NON - SCHOLASTIC**	**MARKS**		
C1	**C2**	**C3**	**C4**	**C5**	**CIA**	**ESE**	**Total**
5	**10**	**15**	**5**	**5**	**40**	**60**	**100**

C1 – Average of Two Session Wise Tests

C2 – Average of Two Monthly Tests

C3 - Mid Sem Test

C4 – Best of Two Weekly Tests

C5 – 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 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

COURSE DESIGNER:

Staff Name: V. MAGESHWARI

Forwarded By

HOD'S Signature

& Name

I M.Sc.

SEMESTER –I

Skill Development

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 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

COURSE DESIGNER:

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

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I M.Sc.

SEMESTER –II

Employability 100%

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG1IT3	DATA SCIENCE USING R PROGRAMMING	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 TO DATA SCIENCE AND R (11 Hrs)

The roles and stages of Data Science Project - Setting Expectation - Starting with R and data - Starting with R - **Working with datafiles(Self Study)** and relational databases.

UNIT II: EXPLORING & MANAGING DATA (11 Hrs)

Exploring Data - Using Summary Statistics to spot problems - Spotting problems using graphics and visualization -**Managing Data(Self Study)** - Cleaning Data, Data Transformations, Sampling for modeling and validation.

UNIT III: DATA ENGINEERING AND DATA SHAPING and EVALUATING MODELS (11 Hrs)

Data Selection - Basic data transforms - Aggregating transforms - Multiple data transforms - Reshaping Transforms - Choosing and Evaluating Models - Mapping Problems to machine learning tasks - **Evaluating models(Self Study)** - LIME

UNIT IV: LINEAR AND LOGISTIC REGRESSION, UNSUPERVISED & ADVANCED METHODS (11 Hrs)

Using Linear Regression - Using Logistic Regression – Regularization - Unsupervised Methods - Cluster Analysis - Association Rules - Advanced Methods - Tree-based methods -**generalized additive models(Self Study)** - Support Vector Machines.

UNIT V: **DOCUMETATION AND EFFECTIVE PRESENTATIONS(11 Hrs)**

Predicting Buzz - R Markdown to produce milestone documentation - Comments and version control for running documentation - Deploying models - Producing effective Presentations - Results to the project sponsor - Model to end users -**Work to other data scientists(Self Study).**

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

Recent Concepts in Data Science

REFERENCES:

1. Mount, John, and Nina Zumel. *Practical data science with R*. Simon and Schuster, 2019.
2. "Mailund, Thomas. *Beginning Data Science in R*. California: Apress, 2017.

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 -1INTRODUCTION TO DATA SCIENCE AND R				
1.1	The roles and stages of Data Science Project	2	Discussion	Black Board
1.2	Setting Expectation - Starting with R and data	3	Chalk & Talk	Black Board
1.3	Starting with R	2	Lecture	LCD
1.4	Working with datafiles	2	Discussion	Google classroom
1.5	Relational databases.	2	Chalk & Talk	Black Board
UNIT -2EXPLORING & MANAGING DATA				
2.1	Exploring Data - Using Summary Statistics to spot problems	2	Lecture	PPT & White board
2.2	Spotting problems using graphics and visualization	2	Chalk & Talk	Green Board
2.3	Managing Data	2	Chalk & Talk	Black Board
2.4	Cleaning Data, Data Transformations	3	Chalk & Talk	Black Board
2.5	Sampling for modeling and validation	2	Chalk & Talk	Black Board
UNIT – 3 DATA ENGINEERING AND DATA SHAPING AND EVALUATING MODELS				
3.1	Data Selection - Basic data transforms	2	Discussion	PPT & White board
3.2	Aggregating transforms - Multiple data transforms	2	Chalk &Talk	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.3	Reshaping Transforms - Choosing and Evaluating Models	2	Chalk & Talk	Black Board
3.4	Mapping Problems to machine learning tasks	2	Chalk & Talk	Black Board
3.5	Evaluating models	2	Discussion	Black Board
3.6	LIME	1	Lecture	PPT & White board
UNIT – 4 LINEAR AND LOGISTIC REGRESSION, UNSUPERVISED & ADVANCED METHODS				
4.1	Using Linear Regression - Using Logistic Regression	1	Discussion	PPT &White board
4.2	Regularization -Unsupervised Methods	2	Chalk & Talk	Green Board
4.3	Cluster Analysis - Association Rules	2	Chalk & Talk	Black Board
4.4	Advanced Methods - Tree-based methods	2	Chalk & Talk	Black Board
4.5	Generalized additive models	2	Discussion	Black Board
4.6	Support Vector Machines.	2	Lecture	Green Board
UNIT – 5 DOCUMETATION AND EFFECTIVE PRESENTATIONS				
5.1	Predicting Buzz - R Markdown to produce milestone documentation	3	Lecture	PPT & White board
5.2	Comments and version control for running documentation	2	Chalk & Talk	Black Board
5.3	Deploying models - Producing effective Presentations	2	Lecture	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.4	Results to the project sponsor - Model to end users	2	Chalk &Talk	Black Board
5.5	Work to other data scientists	2	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Recent Concepts in Data Science	5	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	Section B	Section C	Section D	Section E	Total	

	10 Mks	20 Mks.	10 Mks	10 Mks.	10 Mks.	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, PSO3& PSO8
CO 2	Evaluate the data analysis techniques for applications handling large data	K2, K4	PSO1, PSO2, PSO3 & PSO4
CO 3	Demonstrate the various evaluation models.	K2	PSO1, PSO2, PSO4 & PSO5
CO 4	Understand regression and advanced models in data science.	K4, K6	PSO1, PSO2, PSO7 & PSO8
CO 5	Demonstrate various presentation models.	K4	PSO1, PSO2, PSO 6 & 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**	**3**	**1**
CO2	**3**	**3**	**3**	**3**	**1**	**1**	**1**	**1**	**1**
CO3	**3**	**3**	**1**	**3**	**3**	**2**	**1**	**1**	**1**
CO4	**3**	**3**	**1**	**2**	**1**	**1**	**3**	**3**	**1**
CO5	**3**	**3**	**2**	**1**	**2**	**3**	**1**	**2**	**3**

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	1
CO2	2	3	1	1
CO3	3	2	3	1
CO4	3	2	3	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**
2. **Staff Name: Dr. N. Kalaichelvi**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

I M.Sc.

SEMESTER –I

Skill Development 100%

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 – Multi datagram messages – Remote Procedure Calls

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.

1. ***Operating Systems,*** Stuart Madnick, John Donovan, McGraw Hill Education, 2012.
2. ***Distributed Operating Systems***, Andrew S. Tanenbaum, Pearson Education, New Delhi, 2013.
3. ***Beginning Linux Programming*****,** Neil Matthew, Richard Stones, Wiley India Pvt. Ltd, 2014

OPEN EDUCATIONAL RESOURCES :

1. https://www.tutorialspoint.com/operating_system/index.htm

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	4	Lecture	Green Board Charts
2.2	Issues in IPC by message passing – Synchronization – Buffering	3	Chalk & Talk	Green Board
2.3	Multidatagram messages – Remote Procedure Calls	3	Chalk & Talk	Black Board
UNIT -3 DISTRIBUTED SHARED MEMORY				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
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
UNIT - 5 LINUX				
5.1	The Shell – The Command Line – History – Filename Expansion	3	Chalk &Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
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 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 core concepts of distributed systems.	K2	PSO1, PSO2
CO 2	Analyze various message passing mechanisms with its model.	K2, K4	PSO4,PSO6
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 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	2	2	1	2	1	1
CO2	1	1	2	3	1	3	1	1	2
CO3	2	2	3	2	1	3	1	2	1
CO4	1	3	2	2	3	1	2	1	2
CO5	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. **Mrs.T.Leena Prema Kumari**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

I M.Sc.,

SEMESTER –I

Employability 100%

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG1IT5	LAB IN - 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 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	PSO8,PSO9
CO 2	To practice the concepts of operators, classes, objects, inheritance, packages ,Enumeration and various keywords.	K4 & K5	PSO8,PSO9
CO 3	To apply exception handling mechanisms.	K4 & K5	PSO8,PSO9
CO 4	To design the applications of Java & Java applet, Swings and JDBC	K4 & K5	PSO8,PSO9
CO 5	To Analyze and implement J2ME	K4 & K5	PSO8,PSO9

COURSE DESIGNER:

Staff Name: V. Mageshwari

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HOD'S Signature

I M.Sc.,

SEMESTER –I

Employability 100%

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG1IT6	LAB IN DATA SCIENCE USING R PROGRAMMING	Practical	5	3

COURSE DESCRIPTION

This course provides to understand the Data .

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

UNITS

PROGRAM LIST

1. Creating and displaying Data.
2. Matrix manipulations
3. Creating and manipulating a List and an Array
4. Creating a Data Frame and Matrix-like Operations on a Data Frame
5. Merging two Data Frames

6. Applying functions to Data Frames
7. Using Functions with Factors
8. Accessing the Internet
9. String Manipulations
10. Visualization Effects
11. Plotting with Layers
12. Overriding Aesthetics
13. Histograms and Density Charts
14. Simple Linear Regression – Fitting, Evaluation and Visualization
15. Multiple Linear Regression, Lasso and Ridge Regression

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1	**TITLE**			
1	Creating and displaying Data, Matrix manipulations	10	Demonstration	Desktop
2	Creating and manipulating a List and an Array, Creating a Data Frame and Matrix-like Operations on a Data Frame	5	Demonstration	Desktop
3	Merging two Data Frames, Applying functions to Data Frames	5	Demonstration	Desktop
4	Using Functions with Factors, Accessing the Internet	5	Demonstration	Desktop
5	String Manipulations, Visualization Effects	5	Demonstration	Desktop
6	Plotting with Layers	5	Demonstration	Desktop

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
7	Overriding Aesthetics	10	Demonstration	Desktop
8	Histograms and Density Charts	10	Demonstration	Desktop
9	Simple Linear Regression – Fitting, Evaluation and Visualization	10	Demonstration	Desktop
10	Multiple Linear Regression, Lasso and Ridge Regression	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	Understand the basic concepts of Linear algebra and statistics	K4 & K5	PSO1 & PSO2
CO 2	Implement the algebraic and statistical problems using R	K4 & K5	PSO5 & PSO7
CO 3	Apply the concepts of Linear algebra and statistics in real time problems	K4 & K5	PSO7 & PSO9
CO 4	Analyse real time data using various statistical measures	K4 & K5	PSO7, PSO8 & PSO9
CO 5	Construct models using various statistical methods	K4 & K5	PSO2, PSO4, PSO5, PSO6 & PSO7

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

Mapping of COs with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	2	1	1
CO2	2	2	3	1
CO3	2	2	3	1
CO4	3	2	1	3
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**
2. **Staff Name: Dr. N. Kalaichelvi**

Forwarded By

V. Mageshwari

HOD'S Signature& Name

Employability 100%

I M.Sc.,

SEMESTER II

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19IT1EDC	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

WEB REFERNCES :

http://www.alice.org/3.1/materials_videos.php

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	PSO5, PSO8 & PSO9
CO 2	Construct a scene.	K3,K4 &K5	PSO5, PSO8 & PSO9
CO 3	Build program in Alice using looping and branching.	K3,K4 &K5	PSO5, PSO8 & PSO9
CO 4	Apply event handlers in alice.	K3,K4 &K5	PSO5, PSO8 & PSO9
CO 5	Develop 3D animations.	K3,K4 &K5	PSO5, PSO8 & PSO9

COURSE DESIGNER:

Staff Name: T. Charanya Nagammal

Forwarded By

HOD'S Signature

& Name

I M.Sc., Skill Development 100%

SEMESTER –II

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG2IT7	CYBER SECURITY	Lecture	4	4

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.

UNIT I : INTRODUCTION TO CYBER CRIME [12 Hrs]

Introduction to Cyber Crime: Role of ECD & ICTs in Cybercrime- Types of Cybercrime- Classification of Cybercriminals - Execution of Cybercrime - Tools and Factors influencing Cybercrime - Challenges and Strategies to prevent Cybercrime - Classification of Cybercrime: Cybercrime against Individual -Property and Nation.

UNIT II : CYBERCRIME: MOBILE AND WIRELESS DEVICES [12 Hrs]

Proliferation of Mobile and Wireless Devices - Trends in Mobility- Credit Card Frauds in Mobile and Wireless Computing- Security Challenges by Mobile Devices- Authentication Service Security- Attacks on Mobile/ Cell Phones-Organizational Measures of Handling Mobile.

UNIT III :TOOLS AND METHODS USED IN CYBERCRIME [12 Hrs]

Proxy Servers and Anonymizers-Phishing- Password Cracking- Key loggers and Spywares- Virus and Worms-Trojan Horses and Backdoors-Steganography- DoS and DDoS attacks- SQL injection- Buffer Overflow-Attacks on Wireless Networks.

UNIT IV : Cybercrimes and Cyber security: The Legal Perspectives and Organizational Implications [12 Hrs]

Cybercrime and the Legal Landscape around the World-Objectives of Cyber security- Cost of Cybercrimes and IPR Issues- Web threats for Organizations- Security and Privacy implications- Social Media Marketing-Social Computing and the Associated Challenges for Organizations-Incident Handling- Forensics Best Practices for Organizations

UNIT V : CYBER LAW [12 Hrs]

Introduction to Cyber Laws: Need for Cyber Laws- Cyber Laws and Cyber Security-Strategies involved in Cyber security- Minimizing Risk with Cyber Laws- Terms and Terminologies Associated with Cyber Laws- Cyber Laws in India and International Cyber Laws and case studies.

TEXT BOOK

1. “Cyber Forensics” by Dejey Murugan, Oxford University Press, ISBN-13:978-0-19-948944-2, ISBN-10: 0-19-948944-0.

2. “Cyber Security: Understanding Cyber crimes, Computer Forensics and Legal Perspectives” by Nina Godbole, Sunit BelaPure, Wiley India, ISBN: 978-81-265-2179-1

REFERENCE BOOKS

1. “Cyber Security and Cyber Laws” by Alfred Basta,Nadine Basta,Mary Brown, Ravinder Kumar, Cengage Learning India Private Limited Publisher (2018)

Open Educational Resources:

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

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

COURSE DESIGNER:

Staff Name : Dr. N. Kalaichelvi

Forwarded By

HOD'S Signature

& Name

II M.Sc. Skill Development 100%

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG2IT8	DIGITAL IMAGE PROCESSING	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 : 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 (Self Study)-** Point, Line and Edge Detection –Thresholding -Region –Based Segmentation.

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.

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	4	Lecture	Green

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Intensity Transformation Functions			Board Charts
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-	3	Chalk & Talk	Green Board
5.3	Runlength coding	3	Chalk & Talk	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.4	Point, Line	2	Discussion	Black Board
5.5	Edge Detection Thresholding-Region –Based Segmentation.	2	Chalk & Talk	Black Board
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
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:

Mrs. T.Leena Prema Kumari

Forwarded By

V. Mageshwari

HOD'S Signature & Name

I M.Sc., Skill Development 100%

SEMESTER –II

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG2IT9	ANDROID PROGRAMMING	Lecture	4	4

COURSE DESCRIPTION

The primary goals will be to 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

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

UNITS

UNIT I: INTRODUCTION (10Hrs)

Introduction to Android Programming: Android- Versions- Features- Architecture- Android Developer Community- Android SDK- Android Development Tools- Android Virtual Devices.

UNIT II: ACTIVITIES, FRAGMENTS, INTENTS& USER INTERFACE (12 Hrs)

Understanding Activities- Linking Activities using Intents- Fragments- Calling built-in applications- Notifications- Components of Screen-Display Orientation- User Interface.

UNIT III: VIEWS (12 Hrs)

User Interface Views: Basic Views- Picker Views- Lists- Fragments- Image views- Menus Views.

UNIT IV: PERSISTENT DATA STORAGE, EMAILING AND NETWORKING (10 HRS)

Data Storage Options- Internal and external storage- SQLite Database- Content Providers- Emailing in Android- Networking in Android.

UNIT V: GRAPHICS AND ANIMATION (12 HRS)

Working with Graphics-Drawing Graphics to Canvas- Drawable object- Understanding the Concept of Hardware Acceleration-Working with Animations

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

Creation of Android App that uses GPS and Graphics

TEXT BOOK:

1. "Android Application Development – Black Book" by Pradeep Kothari, Dreamtech Press, ISBN: 978-93-5119-409-5.
2. "Beginning Android 4 Application Development" by Wei-Meng Lee, Wiley, ISBN: 978-81-265-3557-6.

REFERENCES:

3. "Android" by Prasanna Kumar Dixit, Vikas Publishing House Pvt Ltd, ISBN: 9789325977884

Open Educational Resources:

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

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
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

COURSE DESIGNER:Dr. N. Kalaichelvi

Forwarded By

HOD'S Signature

& Name

I M.Sc. IT

SEMESTER –II

Employability 100%

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 :

1. Converting an image into Grey Image
2. Filter RGB colours using three Buttons
3. Filter RGB colour using Single Button
4. Negative Image and Grey Image
5. Colour Negative
6. Display Grey Image and Increase the intensity Value using ij, jar file
7. Image Rotation
8. Zoom in and Zoom out
9. Union and Intersection
10. Addition and Subtraction
11. Bilinear Interpolation

12. Log and Gamma Intensity Transformation'
13. Piecewise Linear Transformation Intensity Level Slicing
14. Bit plane Slicing
15. Image Contrast Stretching
16. Histogram
17. Quantization
18. Histogram Matching
19. Image Border
20. Image Smoothening.
21. Image Sharpening.
22. Noise Filtering
23. Line Detection
24. Edge Detection
25. Point Detection

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	Demonstrate Fundamental Steps involved in Digital Image Processing	K1	PSO1& PSO2
CO 2	Analyze and use Mathematical Tools for Digital Image Processing	K1, K2,	PSO3
CO 3	Apply Intensity Transformation functions and Spatial filtering methods	K1 & K3	PSO5
CO 4	Utilise Color Image Processing with different Color Models	K1, K2, K3 &	PSO8, PSO9
CO 5	Implement Image Segmentation Techniques and Image Compression Techniques using Huffman , Golomb and Arithmetic coding algorithms	K2 & K4	PSO6,PSO8

COURSE DESIGNER:

1. **T.Leena Prema Kumari**

Forwarded By

HOD'S Signature

& Name

I M.Sc

SEMESTER –II

Employability 100%

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG2IT11	LAB IN ANDROID PROGRAMMING	PG Core	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 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	PSO8,PSO9
CO 2	Install and configure Android application development tools	K4 & K5	PSO8,PSO9
CO 3	Demonstrate Save State information across important operating system events	K4 & K5	PSO8,PSO9
CO 4	Develop advanced application programs using Android	K4 & K5	PSO8,PSO9
CO 5	Design and develop mobile applications.	K4 & K5	PSO8,PSO9

COURSE DESIGNER:

1.Staff Name

Forwarded By

HOD'S Signature

& Name

I M.Sc.,

SEMESTER II

Employability 100%

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22IT2EDC	ADVANCED EXCEL VBA	Practical	3	3

COURSE DESCRIPTION

This course is designed to learn the best practices followed in industries to develop simple projects.

COURSE OBJECTIVES

To facilitate the student to understand excel with VBA concepts and make them to automate the backend processing.

UNITS

UNIT –I VBA BASICS : (6HRS.)

Getting started with Excel VBA – Working with cells, rows, and columns to copy/paste, count, find the last used row or column, assigning formulas, working with sheets- Communicate with the end-user with message boxes and take user input with input boxes.

UNIT –II CONDITIONAL LOGIC & LOOPS : (6HRS.)

Comparing values and conditions, if statements and select cases - Repeat processes with For loops and Do While or Do Until Loops

UNIT –III ARRAYS (6HRS.)

Dynamic arrays- populating arrays-Array declaration and resizing-Jagged arrays.

UNIT –IV EVENTS & SETTINGS : (6HRS.)

Trigger procedures to run when certain events happen like activating a worksheet, or changing cell values- Speed up your code and improve the user experience

UNIT –V FUNCTIONS & PROCEDURES : (6HRS.)

Public variables, functions, and passing variables to other procedures- Programmatically work with series of values without needing to interact with Excel objects.

LAB PROGRAMS :

1. Working with cells
2. Naming Ranges
3. Working with Input box and Message box
4. Decision making and Looping
5. Work with arrays
6. Using Named Range in VBA
7. Conditional Formatting using VBA
8. Functions and Procedures.
9. Working with Events
10. Error handlers

TEXT BOOKS:

"Excel 2019 Power Programming with VBA", by Micheal Alexander, Dick Kusleika, Wiley Publishers Pvt., Ltd.,

REFERENCES :

"Excel VBA Programming for Dummies", by John Walkenbach, Wiley Publisher, ISBN : 9781118490389,

"Excel 2016 Power Programming with VBA", by Micheal Alexander, Richard Kusleika, Wiley Publishers, ISBN : 9781119067726.

OPEN EDUCATIONAL RESOURCE:

https://goalkicker.com/ExcelVBABook

https://www.automateexcel.com/learn-vba-tutorial/

https://www.tutorialspoint.com/vba/vba_excel_macros.htm

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 fundamentals of VBA	K1	PSO1
CO 2	Apply different conditional logics and loops	K1 & K3	PSO1,PSO4
CO 3	Build forms with interactivity	K2 & K3	PSO2,PSO4
CO 4	Apply Events and Setting in Excel sheets.	K2 & K3	PSO2,PSO4
CO 5	Develop Procedures and Array concepts.	K3	PSO4

COURSE DESIGNER:

1. **Staff Name: MRS. V. MAGESHWARI**

Forwarded By

HOD'S Signature

I M.Sc.,

SEMESTER –II

Skill Development 100%

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**

[12 Hrs]

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 [12 Hrs]

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

TEXT BOOK

" 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.

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	PSO5, PSO8 & PSO9
CO 2	Learn the different types of MAC protocols	K2,K4	PSO5, PSO8 & PSO9
CO 3	Be familiar with different types of adhoc routing protocols.	K3	PSO5, PSO8 & PSO9
CO 4	Be expose to the TCP issues in adhoc networks	K3	PSO5, PSO8 & PSO9
CO 5	Learn the architecture and protocols of wireless sensor networks	K4	PSO5, PSO8 & PSO9

COURSE DESIGNER:

1. **Staff Name V. Mageshwari**

Forwarded By

HOD'S Signature

& Name

I M.Sc.,

SEMESTER –II

Employability 100%

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(Self Study)**.

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(Self Study)**.

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(Self Study)**.

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

K- Nearest Neighbour Learning – Locally weighted Regression – Radial Basis Functions – **Case Based Learning(Self Study)**.

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(Self Study).**

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

Recent advancement in Machine Learning.

REFERENCE BOOK:

1. Tom M. Mitchell, ―Machine Learning, McGraw-Hill Education (India) Private Limited, 2013.
2. EthemAlpaydin, ―Introduction to Machine Learning (Adaptive Computation and Machine Learning), The MIT Press 2004.
3. Stephen Marsland, ―Machine Learning: An Algorithmic Perspective, CRC Press, 2009.
4. Michael Affenzeller, Stephan Winkler, Stefan Wagner, Andreas Beham,
5. 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				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.1	Bayes Theorem –Concept Learning – Maximum Likelihood	3	Discussion	PPT & White board
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	2	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	– Inverting Resolution			
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 Scholas	-	-	-	-	-		5	5	

tic									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	PSO1, PSO3& PSO4
CO 3	Aware about the underlying mathematical relationships across Machine Learning algorithms and the paradigms of supervised and un-supervised learning.	K2	PSO3, PSO5 & PSO6
CO 4	Ability to design and implement various machine learning algorithms in a range of real-world applications.	K4, K6	PSO3, PSO4, PSO7 & PSO8
CO 5	Perform evaluation of machine learning algorithms and model	K4	PSO1, PSO4, PSO7 &

	selection.		PSO9

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

Mapping of COs with Pos

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

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

I M.Sc.,

SEMESTER –II

Employability 100%

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG2ITE3	EHICAL HACKING	Lecture	4	5

COURSE DESCRIPTION

This course includes finding and attempting to exploit any vulnerabilities to determine whether unauthorized access or other malicious activities are possible.

COURSE OBJECTIVES

The purpose of ethical hacking is to evaluate the security of and identify vulnerabilities in systems, networks or system infrastructure

UNITS

UNIT I:COMPUTER HACKING & COMPUTER CRIME (15 Hrs.)

Introduction – Definition of hacking- Destructive programs – Hacker ethics – Legal constraints – Computer Crime – Computer Security measures – Computer Misuse Act,1990 – Professional duties and obligations.

UNIT-II : IPR & PERSONAL PRIVACY (15Hrs.)

Introduction – Nature of Intellectual property- Intellectual property legislation- Ethical and professional issues.

Valuing privacy – Internet technologies and privacy – Privacy legislation – The Data Protection Act,1998 – Professional and ethical issues

UNIT-III :NETWORK AND COMPUTER ATTACKS (15 Hrs.)

Malware – Intruder attacks on Network an computers : Denial of service attacks- Distributed Denial of service attacks – Buffer overflow attacks – Ping of Death attacks – Session Hijacking – Addressing Physical security : Key loggers – Behind locked doors

UNIT IV: HACKING WEB SERVERS AND WIRELESS NETWORKS (15 Hrs)

Understanding Web Application– Understanding Web application Vulnerabilities – Tools for Web attackers and security testers – Web tools.

Understanding wireless technology – Understanding Wireless network standards – Understanding Authentication – Understanding War driving – Understanding Wireless Hacking.

UNIT V: NETWORK PROTECTION SYSTEM (15 Hrs)

Understanding routers – Understanding firewalls – Understanding Intrusion detection and Prevention systems – Understanding Honeypots.

TEXT BOOKS :

1. Duquenoy, Penny, Simon Jones, and Barry G. Blundell. Ethical, legal and professional issues in computing. Cengage Learning EMEA (formerly Thomson Learning), 2008.

2. Simpson, Michael T., Kent Backman, and James Corley. *Hands-on ethical hacking and network defense*. Cengage Learning, 2010.

REFERENCES:

1. 'Hacking – the art of Exploitation", by Zenk , second edition,

WEB REFERNCES :

1. http://repo.zenk-security.com

2. https://nptel.ac.in/courses/106/105/106105217/

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 fundamental concepts in ethical hacking	K2	PSO1, PSO2
CO 2	Analyze different types of protocols	K3,K4	PSO3, PSO6
CO 3	Discuss the authentication requirements.	K2,K3	PSO4, PSO5
CO 4	Explains various types of attacks	K3, K4	PSO3, PSO9
CO 5	Analyze the Security issues	K4 ,K5	PSO6, PSO8

COURSE DESIGNER:

1. **Staff Name V. Mageshwari**

Forwarded By

HOD'S Signature

& Name

II M.Sc.,

Skill Development 100%

SEMESTER –III

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG3IT12	DATA MINING AND DATA WAREHOUSING	Lecture	5	5

COURSE DESCRIPTION

This course introduces the basic concepts, principles, methods, implementation techniques, and applications of data mining.

COURSE OBJECTIVES

To facilitate the student to understand the concepts of data mining and to understand various techniques involved in data mining.

UNITS

UNIT I: INTRODUCTION
(14Hrs)

Data mining concepts – Database & Data Warehouse - Data Mining functionalities - Technologies used - Data Mining Applications - Integration of Data Mining System with a Database or Data Warehouse System **– Major Issues in Data Mining (Self study).**

UNIT II: DATA PREPROCESSING & DATA WAREHOUSING
(14Hrs)

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 (14 Hrs)

Mining Frequent Patterns - Association Rule Mining – The Apriori Algorithm – FP Growth - Correlation Analysis.Mining Frequent Itemsets Using Vertical Data Format – **Mining Closed Frequent Itemsets (Self study)..**Classification – Decision Tree induction - Constructing decision tree – ID3 algorithm – Pruning – Bayesian Classification – Rule Based Classification - Classification by Back propagation – Support Vector Machines.

UNIT IV: CLUSTERING AND OUTLIERS (14Hrs)

Cluster Analysis – Clustering Methods – Partitioning Methods - Hierarchical Methods – Density Based Methods – Grid-Based Methods – Model-Based Clustering Methods. Outlier and **Outlier Analysis (Self Study) -** Outlier Detection Methods

UNIT V: APPLICATIONS AND TRENDS IN DATA MINING (14Hrs)

Mining Complex Data Types - Other Methodologies of Data Mining - Data Mining Applications – Data Mining and Society -**Data mining Trends (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 MichelineKamber, 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, CengageLmg Business Press, 2010.
3. ***Data Warehousing: Concepts, Techniques, Products and Applications***, 3rd Edition, PHI Learning, Delhi, 2012.
4. ***Data Mining & Data Warehousing***, UditAgarwal, 1st Edition, S.K.Kataria& sons Publication, 2016.
5. ***Data Mining: Concepts and Techniques***, Jiawei Han, MichelineKamber, 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				
2.1	Need to Preprocess the Data - Descriptive Data Summarization – Data Cleaning – Data Integration	6	Lecture	Green Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation			
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
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	3	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	Analysis			
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				
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,PSO2
CO 2	Design multidimensional data using Data Warehouse architecture.	K2, K3	PSO1, PSO2, PSO3 & PSO5
CO 3	Analyze and evaluate Classification algorithms	K3, K4	PSO3,PSO4,PSO6& PSO7
CO 4	Identify the types of data in Cluster Analysis and categorize the Cluster Methods	K3 ,K4	PSO1, PSO2, PSO7 & PSO8
CO 5	Utilize the Data Mining techniques in various real applications and in major issues.	K4 ,K5	PSO1, PSO2, PSO3& PSO9

Mapping of COs with PSOs

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

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

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

II M.Sc.,

SEMESTER –III

Skill Development 100%

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG3IT13	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)

Features of Python-History of Python-The Future of Python-Writing and Executing First Python Program-Literal Constants-Variables and Identifiers-Data Types- Input Operation-Comments-Reserved Words-Indentation- Operation and Expressions-Expression in Python –Operations on Strings-Other Data Types-Type Conversion.

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.

Database connectivity using MYSQL Connector

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.

WEB REFERENCES:

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 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
CO 5	Implementing the GUI concepts in Python	K4, K5	PSO8, PSO9

COURSE DESIGNER:

1.Staff Name : V. Mageshwari

Forwarded By

HOD'S Signature & Name

Employability 100%

II M.Sc.

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG3IT14	LAB IN 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 on dataset employee.arff	10	Demonstration	Desktop

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	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& PSO4
CO 2	Demonstrate preprocessing steps involved in different datasets.	K4 & K5	PSO4, PSO5, PSO6&PSO7
CO 3	Develop the decision tree algorithm using different datasets	K4 & K5	PSO3, PSO7, PSO8 &PSO9
CO 4	Demonstrate the classification and clusters algorithms using large datasets.	K4 & K5	PSO4, PSO6 &PSO7
CO 5	Analyze Data Mining techniques for realistic data.	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**	**3**	**2**	**1**	**2**	**1**	**1**
CO2	**1**	**1**	**2**	**3**	**3**	**3**	**3**	**1**	**2**
CO3	**2**	**2**	**3**	**2**	**1**	**2**	**3**	**3**	**3**
CO4	**1**	**2**	**2**	**3**	**2**	**3**	**3**	**1**	**2**
CO5	**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:

1. **Dr. V. Jane varamanisulekha**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

Employability 100%

II M.Sc.,

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT15	LAB IN ADVANCED 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 visualize the 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 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	Demonstrate the basic concepts of variables expressions.	K4 & K5	PSO8, PSO9
CO 2	Develop basic python programs with I/O operations.	K4 & K5	PSO8, PSO9
CO 3	Develop programs with function control structure.	K4 & K5	PSO8, PSO9
CO 4	Apply strings and lists in python.	K4 & K5	PSO8, PSO9
CO 5	Develop python programs with files.	K4 & K5	PSO8, PSO9

COURSE DESIGNER:

1.Staff Name

Forwarded By

HOD'S Signature & Name

II M.Sc. Skill Development 100%

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG3ITE4	SOFTWARE TESTING	PG Core	5 Hrs.	5

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: QUALITY ASSURANCE (14 Hrs)

Introduction to Quality:Introduction,What is quality, Definition of quality,Quality view. **Software Quality:**Introduction, Characteristics of software,Software development process, Software Quality Management, Important quality management

Basic Concepts of Software Testing: Introduction,Definition of testing,Approaches to testing,Popular definition of testing,Testing during development life cycle,Principles of software testing,salient feature of good testing,Test Planning,Catageries of defect,Defect,Error,Mistake in software,

Developing testing methodologies(test plan),Testing process(Self Study),Test methodologies/Approcahes**.**

UNIT II: SOFTWARE VERIFICATION AND VALIDATION (14 Hrs)

Verification:Verification work bench,Methods of verification,Types of Review on the Basis of Stage/Phase,Coverage in Verification. **Validation:** Validation Work Bench,Levels of Work Bench,Management of verification and validation,Software Development Verification and Validation Activities.

V Test Model: Introduction,V Model for software,**Testing During Proposal Stage,Testing during Requirement Stage,Testing During Test-Planning Phase,(Self Study)**Testing During Coding Phase,**Defect Management**:Defect Classification,Defect Management Process(fixing and Root Cause of Defect),Techniques for Finding Defects

UNIT III: TESTING TECHNIQUES (14Hrs)

Levels of Testing: Introduction,Proposal Testing,Design Testing,Unit Testing,Module Testing,Integration Testing,System Testing,Testing Stages.

Acceptance Testing: Alpha Testing,Beta Testing,Gamma Testing

Special Tests:Complexity Testing,Graphical User Interface Testing,Compatability Testing,Performance Testing,Volume Testing and Stress Testing,**Ad-Hoc Testing Monkey Testing, Exploratory Testing,Random Testing(Self-Study)**

UNIT IV: TESTING PROCESS (14Hrs)

Test Planning:Introduction,Test Planning,Test Plan,Quality plan and Test Plan,Quality plan template,Test Estimation,Building test data and test cases,Test Scenario,Test Cases,Essential Activities in Testing,Template for test cases,Building Test Data,Roles and Responsibilities in Testing Life Cycle,Test Progress Monitoring,**Test Metrics ,Testing Related Data, Effectiveness of Testing,Defect Density,Defect Leakage Ration(Self-Study)**

UNIT V : TESTING TOOLS (14 Hrs)

Software Testing Tool:An Overview:Need for Automation Testing Tools,Taxonomy of Testing Tool,Functional Regression Testing Tools,Performance Testing Tool,Testing Management Tool,Source Code Testing Tool,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

TEXT BOOK:

1. ***Software Testing - Principles, Techniques and Tools,*** M.G. Limaye, Tata McGraw-Hill Education Private Ltd., 2017.
2. ***Software Testing Tools,*** Dr.K.V.K.K.Prasad, Published by Dreamtech Press, Edition, 2012. Chapters :3, 7 , 8

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 Quality and Testing: A Concise Study, S. A. Kelkar, 3rd Edition, PHI Learning, 2012.

3. ***Software Testing - Principles, Techniques and Tools,*** M.G. Limaye, Tata McGraw-Hill Education Private Ltd., 2017.
4. ***Software Testing Tools,*** Dr.K.V.K.K.Prasad, Published by Dreamtech Press, Edition, 2012. Chapters :3, 7 , 8

REFERENCES:

Software Quality and Testing: A Concise Study, S. A. Kelkar, 3rd Edition, PHI Learning, 2012.

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

COURSE DESIGNER: Mrs. I. Razul Beevi

Forwarded By

HOD'S Signature

& Name

II M.Sc.

SEMESTER –III

Employability 100%

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG3ITE5	SYSTEM SOFTWARE AND COMPILER DESIGN	Lecture	5	5

COURSE DESCRIPTION

The primary goals will be to make the students obtain in depth knowledge on system software and working principles of compiler.

COURSE OBJECTIVES

- Develop a grasp of the system software and compiler analyses.
- Understand the concepts of Assembler, Linker, Loader and Compilers.

UNITS

UNIT I: INTRODUCTION TO SYSTEM SOFTWAREAND ASSEMBLERS **(10 Hrs)**

Introduction to system software and machine architecture-simplified instructional computer-CISC Machines-RISC Machines-Basic Assembler Functions-Machine Dependent Assembler Features-Machine Independent Assembler Features-Assembler Design Options.

UNIT II: LOADERS AND LINKERS **(12 Hrs)**

Basic Loader Functions- Machine Dependent Loader Features- Machine Independent Loader Features- Loader Design Options.

UNIT III: COMPILERS (10 Hrs)

Basic Compiler Functions - Machine-Dependent Compiler features – Machine-Independent Complier Features -Compiler Design Options

UNIT IV: LEXICAL ANALYZER (12 Hrs)

Need and Role of Lexical Analyzer-Simple Approach to the Design of Lexical Analyser-Regular Expressions-Finite Automata-Language for specifying Lexical Analyzer –Implementation of Lexical Analyser- Design of Lexical Analyzer for a sample language.

UNIT V: SYNTAX ANALYZER (12 Hrs)

Syntax Analyzer (Parser): The Role of Parser-Context free Grammars-Shift reduce Parsing -Operator-Precedence Parsing-Top-Down Parsing-Predictive Parsers

UNIT V: DYNAMISM

Analyze the concepts of Various types of Compilers

TEXT BOOK:

3. “System Software – An Introduction to Systems Programming” by Leland L. Beck, D. Manjula, Pearson, ISBN: 978-81-317-6281-3.
4. “Principles of Compiler Design” by Alfred V. Aho Jeffrey D. Ullman, Narosa Publishing House, ISBN: 81-85015-61-9

REFERENCES:

1. “Compiler Design” by Dr.S.Malathi, K.Kiruthika, Jackulin C, Ane Books Pvt Ltd, ISBN: 978-93-8546-259-7.

Open Educational Resources:

1. https://www.javatpoint.com/system-software
2. https://www.guru99.com/compiler-design-tutorial.html

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	Interpret the concepts of system software and machine architecture	K2	PSO1, PSO4
CO 2	Identify the concepts of loader and linkers	K2, K3	PSO2, PSO5
CO 3	Analyse the concepts of working principles of compilers	K3, K4	PSO5, PSO6
CO 4	Experiment Finite Automata for regular expressions.	K3, K4	PSO3, PSO6
CO 5	Simplify the expressions using Parser	K4, K5	PSO6, PSO8

COURSE DESIGNER: Dr. N. Kalaichelvi

Forwarded By

HOD'S Signature

& Name

II M.Sc IT Skill Development 100%

SEMESTER –III

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG3ITE6	COMPUTER FORENSICS	Lecture	4	5

COURSE DESCRIPTION

The course content plays a vital role in making the students to understand the basic concepts in Computer Forensics.

COURSE OBJECTIVES

To facilitate the student to understand, the basics in digital forensics and techniques for conducting the forensic examination on different digital devices.

UNITS

UNIT –I INTRODUCTION (12 HRS.)

Computer forensics fundamentals - Benefits of forensics - Computer crimes - computer forensics evidence and courts, **legal concerns(Self Study)** and private issues.

UNIT –II INVESTIGATIONS (12 HRS.)

Understanding Computing Investigations – Procedure for corporate High-Tech investigations - understanding data recovery work station and software - conducting and **investigations(Self Study)**.

UNIT –III DATA ACQUISITION (12 HRS.)

Understanding storage formats and digital evidence - determining the best acquisition method - acquisition tools - validating data acquisitions -

performing RAID data acquisitions - remote network acquisition tools - other forensics **acquisitions tools(Self Study)**.

UNIT –IV PROCESSING CRIMES AND INCIDENT SCENES (12 HRS.)

Securing a computer incident or crime - seizing digital evidence at scene - storing digital evidence - obtaining digital hash -**reviewing case(Self Study)**.

UNIT –V TOOLS (11 HRS.)

Current computer forensics tools- software, hardware tools - validating and testing forensic software - addressing data-hiding techniques - performing remote acquisitions - E-Mail investigations- investigating email crime and violations - understanding E-Mail servers -**specialized E-Mail forensics tool(Self Study)**.

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

Reviewing cases

REFERENCE BOOKS:

1) Warren G. Kruse II and Jay G. Heiser, "Computer Forensics: Incident Response Essentials", Addison Wesley, 2002.
2) Nelson, B, Phillips, A, Enfinger, F, Stuart, C., "Guide to Computer Forensics and Investigations, 2nd ed., Thomson Course Technology, 2006, ISBN: 0-619-21706-5.
3) Vacca, J, Computer Forensics, Computer Crime Scene Investigation, 2nd Ed, Charles River Media, 2005, ISBN: 1-58450-389.

Digital Open Educational Resources (DOER) :.

1) https://www.geeksforgeeks.org/introduction-of-computer-forensics/

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1INTRODUCTION				
1.1	Computer forensics fundamentals	3	Discussion	Black Board
1.2	Benefits of forensics	3	Chalk & Talk	Black Board
1.3	Computer crimes	3	Lecture	LCD
1.4	Computer forensics evidence and courts, legal concerns and private issues.	3	Discussion	Google classroom
UNIT -2INVESTIGATIONS				
2.1	Understanding Computing Investigations	3	Lecture	PPT & White board
2.2	Procedure for corporate High-Tech investigations	3	Chalk & Talk	Green Board
2.3	Understanding data recovery work station and software	3	Chalk & Talk	Black Board
2.4	Conducting and investigations.	3	Chalk & Talk	Black Board
UNIT – 3 DATAACQUISITION				
3.1	Understanding storage formats and digital evidence	3	Discussion	PPT & White board
3.2	Determining the best	3	Chalk	Green

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
	acquisition method - acquisition tools		&Talk	Board
3.3	Validating data acquisitions - performing RAID data acquisitions	3	Chalk & Talk	Black Board
3.4	Remote network acquisition tools - other forensics acquisitions tools.	3	Chalk & Talk	Black Board
UNIT – 4 PROCESSING CRIMES AND INCIDENT SCENES				
4.1	Securing a computer incident or crime	3	Discussion	PPT & White board
4.2	Seizing digital evidence at scene	3	Chalk & Talk	Green Board
4.3	Storing digital evidence	3	Chalk & Talk	Black Board
4.4	Obtaining digital hash - reviewing case.	3	Chalk & Talk	Black Board
UNIT – 5 TOOLS				
5.1	Current computer forensics tools- software, hardware tools	3	Lecture	PPT & White board
5.2	Validating and testing forensic software - addressing data	2	Chalk & Talk	Black Board
5.3	Hiding techniques - performing remote acquisitions - E-Mail investigations- investigating	3	Lecture	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.4	Email crime and violations - understanding E-Mail servers - specialized E-Mail forensics tool.	3	Chalk & Talk	Black Board
UNIT –6 DYNAMISM				
6.1	Reviewing Cases	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	Section B	Section C	Section D	Section E	Total	

	10 Mks	20 Mks.	10 Mks	10 Mks.	10 Mks.	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 concepts in Computer forensics.	K1	PSO1, PSO2 &PSO3
CO 2	Explain different investigation procedures.	K1, K2	PSO1, PSO3 & PSO4
CO 3	Understand different Data acquisition mode.	K1 & K3	PSO1, PSO3 & PSO8
CO 4	Understand investigation process using computer forensics.	K1, K2, K3	PSO2, PSO3, PSO5, PSO7 & PSO8
CO 5	Know how to apply forensic analysis tools to recover important evidence for identifying computer crime.	K1 & K3	PSO2, PSO4, PSO7, 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	3	1	3	3	1	1	1	1	1
CO3	3	3	1	1	2	2	1	3	1
CO4	1	3	3	1	3	1	3	3	1
CO5	1	3	2	3	2	1	3	3	3

Mapping of COs with Pos

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

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.,

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG3ITE7	BIG DATA ANALYTICS-	PG Core	5Hrs.	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.

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	K3, K4	PSO5, PSO6

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
	Technologies		
CO 4	Demonstrate MAPREDUCE Programming	K3, K4	PSO3, PSO9
CO 5	Describe types of Recommendation Systems using Big Data Analytics.	K4, K5	PSO6, PSO8

COURSE DESIGNER:

1. **Staff Name V. Mageshwari**

Forwarded By

HOD'S Signature

& Name

Skill Development 100%

II M.Sc.

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG3ITE8	INTERNET OF THINGS	PG Core	5Hrs.	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 IOT: [14 HRS]

Introduction to Internet of Things: Introduction – Physical Design of IoT – Logical Design of IoT – IoT Enabling Technologies – IoT & Deployment Templates. Domain Specific IoTs: Introduction – Home Automation – Cities – Environment – Energy – Retail – Logistics – Agriculture – Industry – Health & Life style.

UNIT II: 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 – NETCONF- YANG – IoT Systems Management with NETCONF_YANG.

UNIT III: IOT PLATFORMS DESIGN METHODOLOGY: [14 HRS]

Introduction – IoT Design Methodology – Case Study on IoT System for Weather Monitoring – Motivation for using Python. **IoT Systems –Logical Design using Python:** Introduction – Installing Python – Python Data types & Data Structures – Control Flow – Functions – Modules – Packages – File Handling – Date/Time Operations – Classes – Python packages of Interest for IoT.

UNIT IV: IOT PHYSICAL DEVICES & ENDPOINTS: [14 HRS]

What is an IoT Device – Exemplary Device: Raspberry Pi – About the Board – Linux on Raspberry Pi – Raspberry Pi Interfaces – Programming Raspberry Pi with Python – Other IoT devices.

IoT Physical Servers & Cloud Offerings : Introduction to Cloud Storage Models & Communication APIs – WAMP - AutoBahn for IoT– Xively Cloud for IoT – Python Web application Framework-Django – Designing a REST ful 631

Web API – Amazon Web Services for IoT – SkynetIoT messaging platform.

UNIT V: ADVANCED IOT: [14 HRS]

Data Analytics for IoT : Introduction – Apache Hadoop – Using Hadoop Map Reduce for Batch Data Analysis – Apache Oozier – Apache Spark – Apache Storm – Using Apache Storm for Real-time Data Analysis.

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

Current scenario in IOT technologies

TEXT BOOK:

1. Internet of Things, Arshdeep Bahga, Vijay Madisetti, Universities Press (INDIA) Private Ltd., 2015.

Unit I : Chapters 1 and2

Unit II : Chapters 3 and 4

Unit III : Chapters 5 and 6

Unit IV : Chapters 7 and 8

Unit V : Chapters 9 and 10

REFERENCE BOOKS:

1. Getting Started with the Internet of Things, CunoPfister, O'Relly, 2011.

2. Designing the Internet of Things, AdrianMcewen, HakinCassimally, Willey,2015.

3. The Internet of Things in the Cloud: A Middleware Perspective,Honbo Zhou, CRC Press, 2012.

4. Architecting the Internet of Things, Dieter Uckelmann; Mark Harrison; Florian Michahelles, (Eds.) Springer, 2011.

5. The Internet of Things , Key Applications and Protocols, Oliver Hersent, David Boswarthick, Omar Elloumi, Wiley , 2017

WEB REFERNCES :

1. https://www.iotforall.com/what–is–iot–simple–explanation/
2. https://internetofthingsagenda.techtarget.com/definition/Internet–of–Things–IoT
3. https://www.ibm.com/blogs/internet–of–things/what–is–the–iot/

DOER REFERNCE :

https://nptel.ac.in/courses/106/105/106105166/

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	K2,K3	PSO2,PSO3

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
	technologies		
CO 3	Analyze how and where IoT can be applied	K3,K4	PSO5, PSO9
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

COURSE DESIGNER:

1. **Staff Name T. Charanya Nagammal**

Forwarded By

HOD'S Signature

& Name

Employability 100%

II M.Sc.,

SEMESTER –III

For those who joined in 2022 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	22PG3ITE9	ALGORITHM DESIGN AND ANALYSIS	Lecture	4	5

COURSE DESCRIPTION

This course introduces basic methods for the design and analysis of efficient algorithms emphasizing methods useful in practice.

COURSE OBJECTIVES

To facilitate the student to analyze performance of algorithms and to choose the appropriate data structure and algorithm design method for a specified application.

UNITS

UNIT I: INTRODUCTION (11 HRS.)

Algorithm -Psuedo code for expressing algorithms - Performance Analysis- Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, Probabilistic analysis, Amortized analysis. **Divide and conquer:** General method, applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

UNIT II: SEARCHING AND TRAVERSAL TECHNIQUES (11 HRS.)

Efficient non - recursive binary tree traversal algorithm - Disjoint set operations, union and find algorithms - Spanning trees - Graph traversals - Breadth first search and Depth first search - Connected Components, Bi -

connected components - Disjoint Sets- disjoint set operations, union and find algorithms - Spanning trees, connected components and biconnected components.

UNIT III: GREEDY METHOD AND DYNAMIC PROGRAMMING (11 HRS.)

Greedy Method: General method, applications - Job sequencing with deadlines, 0/1 knapsack problem - Minimum cost spanning trees - Single source shortest path problem.

Dynamic Programming: General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem - All pairs shortest path problem - Travelling sales person problem - Reliability design.

UNIT IV: BACKTRACKING AND BRANCH AND BOUND (11 HRS.)

Backtracking: General method - applications-n-queen problem - sum of subsets problem - graph coloring - Hamiltonian cycles.

Branch and Bound: General method - applications - Travelling sales person problem,0/1 knapsack problem- LC Branch and Bound solution - FIFO Branch and Bound solution.

UNIT V: NP-HARD AND NP-COMPLETE PROBLEMS (11 HRS.)

NP-Hard and NP-Complete problems: Basic concepts - non deterministic algorithms, NP - Hard and NPComplete classes - Cook's theorem.

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

Recent advancement in algorithm analysis.

TEXT BOOKS:

1. Fundamentals of Computer Algorithms, Ellis Horowitz,SatrajSahni and Rajasekharam,Galgotia publications pvt. Ltd.

REFERENCES:

1. Foundations of Algorithm, 4th edition, R. Neapolitan and K. Naimipour, Jones and Bartlett Learning.
2. Design and Analysis of Algorithms, P. H. Dave, H. B. Dave, Pearson Education, 2008.

Open Educational Resources:

1. https://www.tutorialspoint.com/design_and_analysis_of_algorithms/analysis_of_algorithms.htm

COURSE DESIGNER:

1. **Staff Name: Dr. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

II M.Sc.,

SEMESTER –III

Entrepreneurship 100%

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3ITSI	SUMMER INTERNSHIP	Practical	-	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	PSO8, PSO9

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 2	Create communication, interpersonal and other soft skills essential for the job interview process	K4 & K5	PSO8, PSO9
CO 3	Analyse the project requirements and engages in continuing professional development	K4 & K5	PSO8, PSO9
CO 4	Analyze a problem and identify the computing requirements appropriate to its solution.	K4 & K5	PSO8, PSO9
CO 5	Utilizing a new software tool.	K4 & K5	PSO8, PSO9

COURSE DESIGNER:

Forwarded By

HOD'S Signature

& Name

II M.Sc.IT Skill Development 100%

SELF STUDY PAPER

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG4IT16	BIOMETRICS	Lecture	-	4

COURSE DESCRIPTION

Biometrics plays a vital role in Data protection in current scenario.This course facilitates the students to know the basic principles of biometric technology.

COURSE OBJECTIVES

To understand the basic concepts of Biometrics and its applications.

UNITS

UNIT I : INTRODUCTION

How Authentication Technologies Work – How Biometrics Work.

UNIT II: TYPES

Fingerprint and Hand Geometry – Facial and Voice Recognition

UNIT III: EYE BIOMETICS

Eye Biometrics: Iris and Retina Scanning – Signature Recognition and Keystroke Dynamics.

UNIT IV: ESOTERIC BIOMETRICS

Esoteric Biometrics – Features - characteristics

UNIT V: EVALUATION

Biometrics in Large Scale Systems – Biometric Testing and Evaluation.

TEXT BOOK:

1. John D.Woodward, Jr, Nicholas M.Orlans, Peter T. Higgins, **Biometrics – The Ultimate Reference**, Dream Tech Publishers, New Delhi, 2003.

Unit I Chapters - 1, 2

Unit II Chapters - 3, 4

Unit III Chapters - 5, 6

Unit IV Chapters - 7

Unit V Chapters - 9, 11

REFERENCE BOOK:

1. Paul Reid, **Biometrics for Network Security**, Prentice Hall Series in Computer

Networking and Distributed, New Delhi, 2004.

2. James L. Wayman (Editor), Anil Jain (Editor), DavideMaltoni , Dario Maio,

Biometric Systems: Technology, Design and Performance Evaluation, Springer Publications, London, 2005.

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 enhance the security infrastructure in the industry and generally in information sensitive environments.	K2	PSO1, PSO4
CO 2	To enrich the knowledge about behavioural and physical Biometrics.	K3, K5	PSO5, PSO8
CO 3	To understand how to implement Biometrics in large scale system. .	K2, K3	PSO1, PSO3

COURSE DESIGNER:

Staff Name: V. Mageshwari

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HOD'S Signature

& Name

II M.Sc.

SEMESTER IV

Entrepreneurship

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

COURSE DESIGNER:

1. **Staff Name**

Forwarded By

HOD'S Signature

& Name

II M.Sc.

SEMESTER –III

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	21PG3ITSL3	RESEARCH METHODOLOGY	SELF STUDY	-	2

COURSE DESCRIPTION:

Research Methodology is a hands-on **course** designed to impart education in the foundational **methods** and techniques of academic **research** in social sciences and business management context.

COURSE OBJECTIVES :

Understand some basic concepts of research and its methodologies.

UNITS

UNIT I : INTRODUCTION TO RESEARCH METHODOLOGY

Definition – History – Evolution of Scientific Inquiry, Scientific Research: Definition,Characteristics, types, need of research.

UNIT II : SCIENCE AND RESEARCH:

Identification of the problem, assessing the status of the problem, formulating the objectives, preparing design.

UNIT III: TYPES OF RESEARCH

Meaning and importance of Research – Types of Research – Selection and formulation of Research Problem Research Design.

UNIT IV: DATA COLLECTION AND ANALYSIS

Sources of Data – Primary, Secondary and Teritary – Types of Data – Categorical nominal & Ordinal.

UNIT V: SCIENTIFIC WRITING

Types of Report – Technical-Reports and Thesis – Significance – Different steps in the preparation – Illustrations and tables – Bibliography.

TEXT BOOK:

Research Methodology, Dr P M Bulakh,Dr P. S. Patki and Dr A S Chodhary 2010 Published by Expert Trading Corporation Dahisar West, Mumbai 400068.

REFERENCE BOOKS:

1. Kothari, C.R.(2008). Research Methodology: Methods and Techniques. Second Edition. New Age International Publishers, New Delhi.
2. Sinha, S.C. and Dhiman, A.K., 2002. Research Methodology, Ess Ess Publications. 2 volumes.
3. Gupta S.P. (2008). Statistical Methods. 37 th ed. (Rev)Sultan Chand and Sons. New Delhi. 1470 p.

OPEN EDUCATIONAL RESOURCES:

1.http://www2.ift.ulaval.ca/~chaib/IFT-6001/articles/RMethodology_Marzuki_1.pdf

2.https://gradcoach.com/what-is-research-methodology/

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 appropriate research topics	K2	PSO3& PSO4

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 2	Select and define appropriate research problem and parameters	K2, K3	PSO6
CO 3	Prepare a project proposal	K2,K4	PSO3,PSO9
CO 4	Organize and conduct research in a more appropriate manner	K2,K3	PSO3,PSO4
CO 5	Write a research report and thesis and research proposal	K4,K5	PSO7

COURSE DESIGNER:

1.T.Leena Prema Kumari

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& 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	SELF STUDY		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

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