FATIMA COLLEGE (AUTONOMOUS)

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

NAME OF THE DEPARTMENT : INFORMATION TECHNOLOGY

NAME OF THE PROGRAMME : M.Sc. INFORMATION TECHNOLOGY

PROGRAMME CODE : PSIT

ACADEMIC YEAR : 2020 - 2021

M.Sc INFORMATION TECHNOLOGY

Minutes of the Meeting of the Board of Studies for M.Sc IT held at Department of Information Technology, on 28.2.2020.

Members present:

1. Dr. B. Indrani, Head
   Dept. of Computer Science,
   DDE, Madurai kamaraj university,
   Madurai.
   28/2/2020

2. Mr. J. John Jeyakamaraj, Head
   Department of computer science,
   American college, Madurai
   28/2/2020.

3. Mrs. A. Komathi, Head,
   Dept. of CS & IT,
   Nadar Saraswathi college of Arts & Science,
   Theni.
   28/2/2020

4. Mrs. M. Thilagavathi Mathavan,
   Senior Developer,
   Aparajitha corp. Service pvt. Ltd.,
   Madurai
   M.T. Thilagavathi
   28/2/2020

5. Ms. K. Sindhuja,
   Maxrall IP Services,
   Coimbatore
   28/2/2020

A. Mable Jasmine Shobha

V. Mageshwari - [signature]

T. Leena prema kumari - [signature]

V. Janevaramani Sulekha - V.J.V. Sulekha

The following suggestions were made by the Board members during discussion, before which the suggestions and action taken for the previous board meeting was discussed.

Suggestions	Action taken
* Introduction of R-programming	R-programming was introduced as Self-Study paper in IV Semester.

The following changes were suggested for the academic year 2020-2021

19PG/IT3 - In 'Data Storage and Management' the Dynamism unit can be included with 'non-Relational Database' concepts.

19PG3IT/4 - In 'python programming', the concepts like python scrapping, API has to be included.

General suggestions:

1) List of External Examiners was updated.
2) List of Mooc course was updated.

Commendations:

1) Self-Learning Course for advanced Learners is suggested as 'Ethical Hacking' and Syllabus was appreciated.

SEMESTER 1:

19PG1IT1 - Data Structure and Algorithm Analysis
19PG1IT2 - Object-Oriented Software Engineering
19PG1IT3 - Data storage and Management
19PG1IT4 - Distributed operating System.
19PG1IT5 - Lab I: Data Structure using C++
19PG1IT6 - Lab II: RDBMS
19PGITEDC1 - Business Information System.

SEMESTER II:

19PG2IT7 - JAVA & J2EE
19PG2IT8 - Network Security
19PG2IT9 - Mobile Application Development using Android Studio
19PG2IT10A/B/C-Cloud computing / Multimedia System / Managmt Info. System
19PG2IT11 - Lab III: Java & J2EE
19PG2IT12 - Lab IV: Mobile Application Development using Android Studio
19PGIT2EDC - Animation Software.

SEMESTER III:

19PG3IT13 - Data Mining and Data warehousing
19PG3IT14 - python programming.
19PG3IT15 A/B/C - Software Testing / Digital Image processing
Linux - Shell programming.

19PG3IT16A/ 19PG3IT16B/ Big-Data Analytics / Internet of Things /
19PG3IT16C Cloud computing
19PG3I1[illegible] Lab V : ~~[illegible]~~ python programming
19PG3I1[illegible] Lab VI : Data Mining and Data warehousing
19PG3SII1 Summer Internship.

SEMESTER IV :
19PG4I16 : project work & viva voce
19PG4I17 : SSP : R-Programming

1. [signature] 28/2/2020

2. [signature] 28/2/2020

3. [signature] 28/2/2020

4. M. J. [signature] 28/02/2020

1. Mable Jasmine Shobha.

5. K. [signature] 28/2/2020

6. [signature] 28/2

7. [signature]

8. V. J. V. [signature] 28/2/20

[signature] 28/02/2020

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF INFORMATION TECHNOLOGY

For those who joined in June 2019 onwards

PROGRAMME CODE : PSIT

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
SEMESTER - I						
19PG1IT1	Data Structures and Algorithm Analysis	4	4	40	60	100
19PG1IT2	Object Oriented Software Engineering	4	4	40	60	100
19PG1IT3	Data Storage and Management	4	4	40	60	100
19PG1IT4	Distributed Operating System	4	4	40	60	100
19PG1IT5	Lab 1 : C++ and Data Structure	5	3	40	60	100
19PG1IT6	Lab 2 : RDBMS	5	3	40	60	100
19IT1EDC	EDC : Business Information System	3	3	40	60	100
	Library	1	-	-	-	-
Total		**30**	**25**			
SEMESTER - II						
19PG2IT7	Java & J2EE	4	4	40	60	100
19PG2IT8	Network Security	4	4	40	60	100
19PG2IT9	Mobile Application Development using Android Studio	4	4	40	60	100
19PG2IT10	Elective - I	4	5	40	60	100

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
19PG2IT11	Lab 3 Java & J2EE	5	3	40	60	100
19PG2IT12	Lab -4 - Mobile Application Development using Android Studio	5	3	40	60	100
19IT2EDC	EDC Animation Software	3	3	40	60	100
	Library	1		-	-	-
19PG2IT10A 19PG2IT10B 19PG2IT10C	Elective - I Cloud Computing Multimedia Systems Management Information System					
Total		**30**	**26**			
SEMESTER – III						
19PG3IT13	Data Mining and Data Warehousing	5	5	40	60	100
19PG3IT14	Python Programming	5	5	40	60	100
19PG3IT15	Major Elective II	5	5	40	60	100
19PG3IT16	Major Elective III	5	5	40	60	100
19PG3IT17	Lab 5 Data Mining and Data Warehousing	5	3	40	60	100
19PG3IT18	Lab 6 Python Programming	5	3	40	60	100
19PG3ITSI1	Internship/Summer Project*	-	3	50	50	100
	Elective - II					

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
19PG3IT15A 19PG3IT15B 19PG3IT15C	Software Testing Digital Image Processing Linux Shell Programming					
19PG3IT16A 19PG3IT16B 19PG3IT16C	Elective - III Big Data Analytics Internet of Things Mobile Communication					
Total		**30**	**29**			
SEMESTER - IV						
19PG4IT19	Project & Viva Voce	-	6	50	50	100
19PG4IT20	SSP : R- Programming	-	4	40	60	100
Total		**-**	**10**			
	Total	**120**	**90**			

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.,

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT13	DATA MINING AND DATA WAREHOUSING	PG Core	5 Hrs.	5

COURSE DESCRIPTION

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

COURSE OBJECTIVES

- To interpret the contribution of data mining and data warehousing to the decision support level of organizations
- To understand different models used for OLAP and data pre-processing

UNITS

UNIT I: INTRODUCTION (14 Hrs)

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

UNIT II: DATA PREPROCESSING (14 Hrs)

Need to Preprocess the Data - Descriptive Data Summarization – Data Cleaning – Data Integration and Transformation – Data Reduction – Data

Discretization and Concept Hierarchy Generation. Data Warehouse and OLAP Technology : An Overview - What is a Data Warehouse – A Multidimensional Data Model – Data Warehouse Architecture – **Data Warehouse Implementation – From Data Warehousing to a Data Mining(Self study).**

UNIT III: MINING FREQUENT PATTERNS AND CLASSIFICATION (18 Hrs)

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

UNIT IV: CLUSTER ANALYSIS (14 Hrs)

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

UNIT V: APPLICATIONS AND TRENDS IN DATA MINING (10 Hrs)

Data Mining Applications – Data Mining System Products and Research Prototypes – **Additional Themes on Data Mining – Social Impacts of Data Mining – Trends in Data Mining(Self study).**

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

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

REFERENCES:

1. ***Data Mining Concepts and Techniques***, Jiawei Han and Micheline Kamber, 2nd Edition, Morgan Kaufmann Publishers An Imprint of Elsevier, 2009. Chapters: 1, 2, 3, 6.1 - 6.10, 7.1 – 7.8, 11
2. ***Data Mining Techniques and Applications: An Introduction,*** Hongbo DLL, Cengage Lmg Business Press, 2010.

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

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.,

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT14	PYTHON PROGRAMMING	PG Core	5 Hrs.	5

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

UNITS

UNIT I: OVERVIEW (12 Hrs)

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

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

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

UNIT II CONDITIONAL STATEMENT AND ITERATION (15 Hrs)

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

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

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

UNIT III : LISTS & FUNCTIONS (15 Hrs)

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

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

UNIT IV: OBJECT ORIENTED PROGRAMMING PRINCIPLES (15 Hrs)

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

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

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

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

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

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

Application development based on case study

REFERENCES:

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

WEB REFERENCES:

1. www.universitiespress.com/chsatyanarayana/pythonprogramming

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT15A	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: SOFTWARE QUALITY IN GLOBAL BUSINESS CONTEXT (14 Hrs)

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

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

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

UNIT III: TESTING FOR QUALITY VALIDATION (14 Hrs)

Introduction , The Purpose of Testing , Testing is not same as Inspection and Audit, Testing is not the same as Debugging , The Testing Life Cycle, Roles and Responsibilities in Testing, **Test Artefacts, The Test Plan and Test Techniques(Self study).**

UNIT IV: TESTING MODELS AND TECHNIQUES (14 Hrs)

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

UNIT V : TESTING TOOLS (14 Hrs)

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

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

Tools used in real time applications and their implementations

REFERENCES:

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

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT15B	DIGITAL IMAGE PROCESSING	PG Core	5 Hrs.	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 - Point, Line and Edge Detection(Self Study)**

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

Image processing tools in current real time problems

REFERENCES:

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

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT15C	LINUX SHELL PROGRAMMING	PG Core	5 Hrs.	5

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

UNITS

UNIT I : SHELL PROGRAMMING: (14 Hrs)

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

UNIT II WORKING WITH FILES: (14 Hrs)

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

UNIT III :LINUX ENVIRONMENT & PROCESS AND SIGNALS (14 Hrs)

Program Arguments-Environment Variables-Time and Date-Temporary Files-User Information-Host Information-Logging-Resources and Limits-Process- Process Structure-**Starting New Processes – Signals(Self Study)**

UNIT IV: TERMINALS AND POSIX THREADS : (14 Hrs)

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

UNIT V : MANAGING TEXT-BASED SCREENS WITH CURSES: (14 Hrs)

Compiling with curses-Curses Terminology and Concepts - The Screen - The Keyboard-Windows - Sub windows - The Keypad - Using Color – Pads - **The CD Collection Application (Self Study)**

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

Case study in latest Commands in Linux

REFERENCES:

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

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.,

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT16A	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.

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT16B	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 INTERNET OF THINGS (14 Hrs)

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

UNIT II : DOMAIN SPECIFIC IOTS (14 Hrs)

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

UNIT III IOT AND M2M (14 Hrs)

Introduction – M2M- Difference between IoT and M2M – SDN and NFV for IoT . IoT System Management with NETCONF-YANG : Need for IoT Systems Management – **Simple Network Management Protocol(SNMP) – Network Operator Requirements(Self Study)**

UNIT IV: IOT PLATFORMS DESIGN METHODOLOGY (14 Hrs)

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

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

UNIT V CASE STUDIES ILLUSTRATING IOT DESIGN (14 Hrs)

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

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

Current scenario in IOT technologies

REFERENCES:

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

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.,

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT16C	MOBILE COMMUNICATION	PG Core	5 Hrs.	5

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

UNITS

UNIT I : INTRODUCTION (14 Hrs)

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

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

UNIT II: MEDIUM ACCESS CONTROL: (14 Hrs)

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

UNIT III : SATELLITE SYSTEM: (14 Hrs)

Application-Basics-Routing-Localization-Handover.

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

UNIT IV : WIRELESS LAN: (14 Hrs)

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

UNIT V: SUPPORT FOR MOBILITY (14 Hrs)

World wide web: Hypertext Transfer protocol – System Architecture

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

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

Current scenario in mobile communication technologies

REFERENCES:

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

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT17	LAB V-DATA MINING AND DATA WAREHOUSING	PG Core	5 Hrs.	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

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.,

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG3IT18	LAB VI : PYTHON PROGRAMMING	PG Core	5Hrs.	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

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.,

SEMESTER –III

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PGIT3SI1	SUMMER INTERNSHIP	PG Core	-	3

COURSE DESCRIPTION :

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

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

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

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.

SEMESTER –IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG4IT19	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

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DEPARTMENT OF INFORMATION TECHNOLOGY

II M.Sc.,

SEMESTER –IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSIT	19PG4IT20	R-PROGRAMMMING	PG Core	-	4

COURSE DESCRIPTION

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

COURSE OBJECTIVES

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

UNITS

UNIT –I : INTRODUCTION

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

UNIT –II : STATEMENTS

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

UNIT –III FUNCTIONS

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

UNIT –IV IMPORTING & EXPORTING

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

UNIT –V AGGREGATE FUNCTIONS

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

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only)

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

WEB REFERNCES

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

Signature of the HOD
Head of the Department
Department of Information Technology,
Fatima College (Autonomous), Madurai.