E.M.G. YADAVA WOMEN'S COLLEGE, MADURAI – 625 014.

(*An Autonomous Institution – Affiliated to Madurai Kamaraj University*)

Re-accredited (**3rd Cycle**) with Grade **A+** & **CGPA 3.51** by NAAC

DEPARTMENT OF COMPUTER APPLICATIONS

TANSCHE-CBCS with OBE

MASTER OF COMPUTER APPLICATIONS

PROGRAMME CODE - MC

COURSE STRUCTURE

(w.e.f. 2023 – 2024 Batch onwards)

Annexure - 3

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(An Autonomous Institution – Affiliated to Madurai Kamaraj University)

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DEPARTMENT OF COMPUTER APPLICATIONS - PG

TANSCHE – CBCS with OBE

(w.e.f. 2023-2024 Batch Onwards)

COURSE STRUCTURE - SEMESTER WISE

Sem.	Part	Course Code	Course Title	Teaching Hours / Week	Duration of Exam (hrs)	Marks Allotted			Credits
						CIA	SE	Total	
I	III	23OPCA11	**Core - I :** Discrete Mathematics	6	3	25	75	100	6
		23OPCA12	**Core – II :** Linux and Shell Programming	6	3	25	75	100	6
		23OPCA13	**Core - III :** Python Programming	6	3	25	75	100	4
			Elective –I : DSEC - 1	6	3	40	60	100	3
			Elective– II : DSEC - 2	6	3	40	60	100	3
II	III	23OPCA21	**Core – IV :** Data Structures and Algorithms	6	3	25	75	100	5
		23OPCA22	**Core – V :** Big Data Analytics	6	3	25	75	100	5
		23OPCA21P	**Core - VI :** Data Structures and Algorithms Lab	6	3	40	60	100	4
			Elective–III : DSEC - 3	5	3	40	60	100	3
			Elective – IV : DSEC - 4	5	3	40	60	100	3
	IV	23OPCASEC21	**SEC-1 :** Block Chain Technologies	2	3	25	75	100	2
III	III	23OPCA31	**Core – VII :** Advanced Java Programming	6	3	25	75	100	5
		23OPCA32	**Core – VIII** : Web Technology	6	3	25	75	100	5
		23OPCA33	**Core – IX :** Advanced Machine Learning	5	3	25	75	100	3
		23OPCA3P	**Core - X :** Advanced Java Programming lab	6	3	40	60	100	4
		23OPCADSE3P	**Elective –V : DSEC- 5** Web Technology Lab	5	3	40	60	100	3
	IV	23OPCASEC3P	**SEC-2 :** Advanced Machine Learning Lab	2	3	40	60	100	2
		23OPCAIN3	Internship Industrial Activity	-	-	-	-	-	2
IV	III	23OPCA41	**Core – XI :** Data Visualization	6	3	25	75	100	5
		23OPCA42	**Core – XII :** Software Project Management	6	3	25	75	100	5
		23OPCAPR4	**Project :** Project with Viva Voce	10		20	80	100	7
			Elective –VI : DSEC – 6	5	3	40	60	100	3
	IV	23OPCASEC4P	**SEC-3 :** Data Visualization Lab	3	3	40	60	100	2
	V	23OP5EA4	**Extension Activity**	-	-	-	-	-	1
Total									**91**

DSEC: Discipline Specific Elective Courses:

Semester I (Elective – I)

DSEC – 1 (Choose any One)

1. Data Engineering and Management Lab - 23OPCADSE1AP
2. Architecture and Frameworks Lab - 23OPCADSE1BP

Elective - II

DSEC –2 (Choose any One)

1. Software Development Technologies Lab - 23OPCADSE1CP
2. Soft Computing Lab - 23OPCADSE1DP

Semester II

Elective - III

DSEC – 3 (Choose any One)

1. Internet of Things Lab - 23OPCADSE2AP
2. Computer Vision Lab - 23OPCADSE2BP

Elective - IV

DSEC – 4 (Choose any One)

1. Cryptography and Network Security Lab - 23OPCADSE2CP
2. Block Chain Technologies Lab - 23OPCADSE2DP

Semester III (Elective – V)

DSEC – 5

1. Web Technology Lab - 23OPCADSE3P

Semester IV (Elective – VI)

DSEC – 6 (Choose any One)

1. Social Networks Lab _ 23OPCADSE4AP
2. High Performance Computing Lab _ 23OPCADSE4BP

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**Course Code**	**Course Title**	**Credits**	**Hrs**	**CIA**	**External Exam**	**Total**
III	III	23OPCA31	**Core – VII :** Advanced Java Programming	5	6	25	75	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	√

Course Objectives:

- To gain knowledge of Object Oriented Programming Concept in Java.
- To understand usages of String functions in Java.
- To familiarize with the applet and swing.
- To grasp the concepts on Java Beans.
- To comprehend the connection between Relational Database and Java.

Course Content :

Unit	Course Content	Hours	K-Level	CLO
I	**An Overview of Java:-** Object Oriented Programming. **Data Types, Variables, and Arrays:** The Primitive Types – Variables . Type Conversion and Casting- Arrays. **Operators:** Arithmetic Operators - The Bitwise Operators – Relational Operators – Boolean Logical Operators – The Assignment Operator – The ? Operator –Operator Precedence – Using Parentheses. **Control Statements** – Java's Selection Statements – Iteration Statements – Jump Statements.	18	Up to K5	CLO1

II	**A Closer Look at Methods and Classes :** Overloading Methods **–** Using Objects as Parameters – A Closer Look at Argument Passing – Returning Objects – Recursion – Introducing Access Control. **Inheritance :** Inheritance Basics- Using Super – Creating Multilevel Hierarchy – Method Overriding – Using Abstract Classes – Using final with Inheritance – The Object Class . **Exception Handling -** Exception Handling Fundamentals – Exception Types – Uncaught Exceptions – Using try and catch – Multiple catch Clauses – Nested try statements – throw – throws – finally – Java's Built-in Exceptions – Creating own Exception – Chained Exceptions – Recently added Exceptions – Using Exceptions .	18	Up to K5	CLO2
III	**String Handling:** The String Constructors – String Length – Special String Operations – Character Extraction – String Comparison – Searching Strings – Modifying a String. **Input/Output: Exploring java.io :** The I/O Classes and Interfaces – File – I/O Exceptions – The Stream Classes – The Byte Streams(upto ByteArrayOutputStream) – The Character Streams.**The Applet Class:** Two Types Applets – Applet Basics – Applet Architecture – An Applet Skeleton – Simple Applet Display methods – Using the Status Window – The HTML APPLET Tag – Passing Parameters to Applets.	18	Up to K5	CLO3
IV	**Introducing GUI Programming with Swing:** Introducing Swing – Swing Is Built on the AWT- Two Key Swing Features – The MVC Connection – Components and Containers – The Swing Packages – A Simple Swing Application – Event Handling – Create a Swing Applet – Painting in Swing **Exploring Swing**. Jlabel and ImageIcon – JtextField – The Swing Buttons – JtabbedPane – JscrollPane – Jlist – JcomboBox – Trees _ Jtable **Java Beans:** Introduction – Advantages of Beans – Introspection – The JavaBeans API – A Bean Example.	18	Up to K5	CLO4
V	**Introducing Servlets:** The Life Cycle of a Servlet – Using Tomcat – A Simple Servlet – The Servlet API – The javax.servlet Package – Reading Servlet Parameters – The javax.servlet.http Package - Handling HTTP Requests and Responses – Using Cookies – Session Tracking. **Networking** : Networking Basics – The Networking Classes and Interfaces – InetAddress – Inet4Address and Inet6Address – TCP/IP Client Sockets – URL – URL Connection – HttpURLConnection – The URL Class – Cookies – TCP/IP Server Sockets – Datagrams.	18	Up to K5	CLO5

Books for Study:

1. Herbert Schildt, "Java the Complete Reference", 10th edition, McGraw Hill Publishing Company Ltd, New Delhi, 2017.
2. Tony Goddis, "Starting out with Java from Control Structures Through Objects" 6th Edition, Pearson Education Limited, 2016

Chapters :

Unit –I : 2 , 3 , 4 , 5
Unit-II : 7 , 8, 10
Unit-III : 16 , 20 , 23
Unit-IV : 31 , 32 , 37
Unit-V : 38 , 22

Books for Reference:

1. Herbert Schildt, Dale Skrien, "Java Fundamentals – A Comprehensive Introduction", TMGH Publishing Company Ltd, New Delhi, 2013
2. John Dean, Raymond Dean, "Introduction to Programming with JAVA – A Problem Solving Approach", TMGH Publishing Company Ltd, New Delhi,2012.
3. Barry Burd, Java for Dummies, Wiley Publications , Seventh Edition, 2017
4. D.T.Editorial Services, Java 8 Programming Black Book, Dreamtech Press, 2015.
5. Som Prakash Raj, Core Java Made Simple, BPB , First Edition, 2018

Web Resources :

4. https://www.docdroid.net/mY1yTPu/advancedjavaprogrammingbyuttamkumarroy-pdf
2 https://www.rcsdk12.org/cms/lib/NY01001156/Centricity/Domain/4951/Head_First_Java_Second_Edition.pdf
5. https://www.pdfdrive.com/swing-java-se-5-awt-swing-java-3d-java-web-start-swt-jface-junit-abbot-eclipse-cvs-uml-mvc-xp-d161372975.html

e-books :

6. https://riptutorial.com/Download/java-language.pdf
7. https://book.huihoo.com/goalkicker.com/JavaBook/JavaNotesForProfessionals.pdf
8. https://www.startertutorials.com/ajwt/res/notes/AJWTnotes.pdf

Pedagogy :

Chalk and Talk, Group Discussion, Student Seminar, Spot Test, Assignments, Quiz.

Rationale for Nature of the Course :

Advanced Java provides libraries to understand the concept of Client-Server architecture for web- based applications.

Activities to be Given :

- Group Discussion
- Seminar

Course Learning Outcomes(CLOs):

On the successful Completion of the course Students will be able to

CLO	Course Learning Outcomes	Knowledge Level(According toBloom's Taxonomy)
CLO1	Understand the Object Oriented Program including classes and methods; inheritance and exception handling	Up to K5
CLO2	Complete comprehension of String functions and I/O Streams	Up to K5
CLO3	Creation of graphical representation using Applet	Up to K5
CLO4	Application of Servlets for designing Web based applications	Up to K5
CLO5	Usage of JDBC connectivity and implementation of the concept to get desired results from database	Up to K5

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3 – Application oriented – Solving Problems

K4 –Examining, analyzing, presentation and make inferences with evidences

K5 – Evaluate, making Judgments based on criteria.

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(Pos)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	3	3	2	2	3
CLO2	3	3	3	2	2	3
CLO3	3	3	2	2	1	3
CLO4	2	3	2	2	3	3
CLO5	3	2	2	2	2	1

1 – Basic Level 2 – Intermediate Level 3- Advanced Level

LESSON PLAN :

Unit	Description	Hours		Mode of Teaching
I	**An Overview of Java:-** Object Oriented Programming. **Data Types, Variables, and Arrays:** The Primitive Types - Variables – Type Conversion and Casting- Arrays	6	18	Chalk & Talk
	Operators: Arithmetic Operators - The Bitwise Operators – Relational Operators – Boolean Logical Operators –	6		Chalk & Talk Spot Test
	The Assignment Operator – The ? Operator –Operator Precedence – Using Parentheses. **Control Statements** – Java's Selection Statements – Iteration Statements – Jump Statements	6		Chalk & Talk
II	**A Closer Look at Methods and Classes :** Overloading Methods **–** Using Objects as Parameters – A Closer Look at Argument Passing – Returning Objects – Recursion – Introducing Access Control.	6	18	Chalk & Talk
	Inheritance : Inheritance Basics- Using Super – Creating Multilevel Hierarchy – Method Overriding – Using Abstract Classes – Using final with Inheritance – The Object Class .	6		Chalk & Talk, Spot Test
	Exception Handling - Exception Handling Fundamentals – Exception Types – Uncaught Exceptions – Using try and catch – Multiple catch Clauses – Nested try statements – throw – throws – finally – Java's Built-in Exceptions – Creating own Exception – Chained Exceptions – Recently added Exceptions – Using Exceptions	6		Chalk & Talk
III	**String Handling:** The String Constructors – String Length – Special String Operations – Character Extraction – String Comparison – Searching Strings – Modifying a String.	6	18	Chalk & Talk
	Input/Output: Exploring java.io : The I/O Classes and Interfaces – File – I/O Exceptions – The Stream Classes – The Byte Streams(upto ByteArrayOutputStream) – The Character Streams.	6		Chalk & Talk
	The Applet Class: Two Types Applets – Applet Basics – Applet Architecture – An Applet Skeleton – Simple Applet Display methods – Using the Status Window – The HTML APPLET Tag – Passing Parameters to Applets.	6		PPT
IV	**Introducing GUI Programming with Swing:** Introducing Swing – Swing Is Built on the AWT- Two Key Swing Features – The MVC Connection – Components and Containers – The Swing Packages – A Simple Swing Application –	6	18	PPT
	Event Handling – Create a Swing Applet – Painting in Swing **Exploring Swing**. Jlabel and ImageIcon – JtextField – The Swing Buttons – JtabbedPane – JscrollPane – Jlist – JcomboBox – Trees _ Jtable	6		PPT
	Java Beans: Introduction – Advantages of Beans – Introspection – The JavaBeans API – A Bean Example.	6		Chalk & Talk, Assignment

V	**Introducing Servlets:** The Life Cycle of a Servlet – Using Tomcat – A Simple Servlet – The Servlet API – The javax.servlet Package – Reading Servlet Parameters – The javax.servlet.http Package –	6	18	Chalk & Talk
	Handling HTTP Requests and Responses – Using Cookies – Session Tracking. **Networking** : Networking Basics – The Networking Classes and Interfaces – InetAddress – Inet4Address and Inet6Address –	6		PowerPoint Presentation
	TCP/IP Client Sockets – URL – URL Connection – HttpURLConnection – The URL Class – Cookies – TCP/IP Server Sockets – Datagrams.	6		Chalk & Talk, Students Seminar

Course Designer
Mrs.M.Murugeswari

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**Course Code**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
III	III	23OPCA32	**Core-VIII :** Web Technology	5	6	25	75	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	-

Course Objectives :

1. To understand the concepts of HTML
2. To understand the theoretical and practical aspects of CSS AND XHTML
3. To instruct and get familiarized with JavaScript and their applications
4. To clarify and get familiarized with the concepts and algorithms of XML
5. To escalate the concepts of PHP, ANGULAR JS AND JQUERY:

Course Content :

Unit	Course Content	Hours	K-Level	CLO
I	**WEB FUNDAMENTALS AND HTML:** A Brief Introduction to the Internet - The World Wide Web - Web Browsers - Web Servers -URLs, MIME, HTTP, Security- **Introduction to HTML**- Origins and Evolution of HTML and HTML - Basic Syntax - Standard HTML Document Structure - Basic Text Markup - Images- Hypertext Links - Lists, Tables, Forms	18	Up to K5	CLO1
II	**INTRODUCTION TO CSS:** Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The box model, Background images, The and tags, Conflict resolution.	18	Up to K5	CLO2
III	**THE BASICS OF JAVASCRIPT:** Overview of JavaScript, Object orientation and JavaScript, general Syntactic characteristics, Primitives, operations, and expressions, Screen output and keyboard input, Control statements, Object creation and modification, Arrays, Functions, Constructors, Pattern matching using regular expressions, Errors in scripts. **JAVASCRIPT AND XHTML DOCUMENTS**: The JavaScript Execution Environment, The Document Object Model, Elements Access in Java Script, Events and Event Handling.	18	Up to K5	CLO3

IV	**DYNAMIC DOCUMENTS WITH JAVASCRIPT AND XML:** Introduction, Positioning Elements, Moving Elements, Element Visibility, Changing Color and Fonts, Dynamic Content, Stacking Elements. **Introduction to XML**, Syntax of XML, XML Document Structure, Document type definitions, Namespaces, XML schemas.	18	Up to K5	CLO4
V	**PHP, ANGULAR JS** Introduction to PHP: Overview of PHP -General Syntactic Characteristics -Primitives, Operations, and expressions - Output - Control Statements - Arrays - Functions - Pattern Matching -Form Handling - Cookies - Session Tracking - I**ntroduction to Angular JS** - Templates, Expressions, Creating Custom Filters, understanding Directives ,built – in Directives,	18	Up to K5	CLO5

Books for Study :

1. Robert W. Sebesta: Programming the World Wide Web, 8th Edition, Pearson Education, 2015. **UNITS:** 1,2,3,4,5(Chapter 9)
2. Dayley Brad, Dayley Brendan ,"AngularJS, JavaScript, and jQuery All in One", Sams Teach Yourself , 1st Edition, Kindle Edition, 2015. **UNIT**:5(lesson 23,24)

Chapters:

Unit - I : Chapter 1(Pages 1- 21), Chapter 2 (Pages 33 -82)
Unit - II : Chapter 3 (Pages 97- 134)
Unit - III : Chapter 4 (Pages 139 – 188), Chapter 5 (Pages 195 – 207)
Unit - IV : Chapter 6 (Pages 237- 258) , Chapter 7 (Pages 275 - 300)
Unit - V : Book1 - chapter (Pages 365 – 405), Book2 – (Lesson 23,24)

Books for Reference :

1. M. Srinivasan: Web Programming Building Internet Applications, 3rd Edition, Wiley India, 2009.
2. Jeffrey C. Jackson: Web Technologies-A Computer Science Perspective, Pearson Education, 7thImpression,2012.
3. Chris Bates: Web Technology Theory and Practice, Pearson Education, 2012.
4. Raj Kamal: Internet and Web Technologies, McGraw Hill Education.2019
5. S. Saranya,, P.Calista Bebe, "Web Technology: Fundamentals of Programming", 2020

Web Resources :

1. https://www.geeksforgeeks.org/web-technology/
2. https://www.w3schools.com/
3. https://www.halvorsen.blog/documents/programming/web/web.php

e-books :

. 1.https://www.lpude.in/SLMs/Master%20of%20Computer%20Applications/Sem_2/DECAP472_WEB_TECHNOLOGIES.pdf

2. https://genuinenotes.com/wp-content/uploads/2020/02/Web-Technology-Notes-all.pdf

3. https://www.dcpehvpm.org/E-Content/BCA/BCA-II/Web%20Technology/the-complete-reference-html- css-fifth-edition.pdf

Pedagogy :

Chalk and Talk , Group Discussion , Student Seminar ,Spot Test , Practical Labs , Assignments , Quiz.

Rationale for Nature of the Course :

To Provide in- depth knowledge about HTML, JavaScript and enhance knowledge in XML documents with presentations using CSS and XSLT.

Activities on Knowledge and Skill

- Practice to code programs
- Group Discussion
- Seminar

Course Learning Outcomes(CLO):
On successful Completion of the course Students will be able to

CLOs	Course Learning Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CLO1	To understand, impart and analyze the concepts of HTML	Up to K5
CLO2	To comprehend, apply and evaluate the theoretical and practical aspects of CSS AND XHTML	Up to K5
CLO3	To understand, use and perform evaluation of JavaScript and their applications	Up to K5
CLO4	To recognize, implement and analyse the concepts and algorithms of XML	Up to K5
CLO5	To evaluate concepts of PHP, ANGULAR JS	Up to K5

K1- Remembering and recalling facts with specific answers.

K2- Basic understanding of facts and stating main ideas with general answers.

K3 – Application oriented – Solving Problems.

K4 –Examining, analyzing, presentation and make inferences with evidences.

K5 – Evaluate , making Judgments based on criteria.

Annexure - 3

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	3	3	1	3	1
CLO2	3	3	2	1	3	1
CLO3	3	3	2	1	3	1
CLO4	3	3	2	2	3	1
CLO5	3	3	2	1	3	1

1 – Basic Level 2 – Intermediate Level 3- Advanced Level

Annexure - 3

LESSON PLAN :

Units	Description	Hours		Mode of Teaching
I	• **WEB FUNDAMENTALS AND HTML:** A Brief Introduction to the Internet - The World Wide Web • Web Browsers - Web Servers -URLs, MIME, HTTP, Security. • **Introduction to HTML-** Origins and Evolution of HTML and HTML - Basic Syntax - Standard HTML Document Structure - Basic Text Markup - Images- Hypertext Links - Lists, Tables, Forms.	6 6 6	18	Chalk & Talk Chalk & Talk , Spot test Chalk and Talk
II	• **INTRODUCTION TO CSS:** Introduction, Levels of style sheets, Style specification formats. • Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The box model, • Background images, The and tags, Conflict resolution..	6 6 6	18	Chalk & Talk Chalk & Talk, SpotTest , Chalk & Talk
III	• **THE BASICS OF JAVASCRIPT:** Overview of JavaScript, Object orientation and JavaScript, general Syntactic characteristics, Primitives, operations, and expressions, Screen output and keyboard input. • Control statements, Object creation and modification, Arrays, Functions, Constructors, Pattern matching using regular expressions, Errors in scripts. • **JAVASCRIPT AND XHTML DOCUMENTS**: The JavaScript Execution Environment, The Document Object Model, Elements Access in Java Script, Events and Event Handling.	6 6 6	18	Chalk & Talk, SpotTest , Chalk & Talk Chalk & Talk , Group Discussion
IV	• **DYNAMIC DOCUMENTS WITH JAVASCRIPT AND XML:** Introduction, Positioning Elements, Moving Elements, Element Visibility, • Changing Color and Fonts, Dynamic Content, Stacking Elements. • **Introduction to XML**, Syntax of XML, XML Document Structure, Document type definitions, Namespaces, XML schemas. Namespaces, XML schemas.	6 6 6	18	Chalk & Talk Chalk & Talk, Chalk & Talk, Assignment

V	• **PHP, ANGULAR JS** Introduction to PHP: Overview of PHP -General Syntactic Characteristics - Primitives, Operations, and expressions - Output - Control Statements - Arrays - Functions - Pattern Matching .	6	18	Chalk & Talk , Spot Test
	• Form Handling - Cookies - Session Tracking	6		Chalk & Talk, PowerPoint Presentation
	• I**ntroduction to Angular JS** - Templates, Expressions, Creating Custom Filters, understanding Directives ,built – in Directives.	6		Chalk & Talk, Students Seminar

Course Designer
Dr.(Mrs.) J. CHINNA

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**Course Code**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
III	III	23OPCA33	**Core - IX :** Advanced Machine Learning	3	5	25	75	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	

Course Objectives:

1. To understand the concepts of Machine Learning and regression methods.
2. To understand the theoretical and practical aspects of types of machine learning.
3. To teach and get familiarized with supervised, unsupervised learning and their applications.
4. To teach and get familiarized with evaluating and improving model performance.
5 .To appreciate the concepts and algorithms of deep learning.

Course Content:

Unit	Course Content	Hours	K-Level	CLO
I	**Introducing Machine Learning**:The Origins of Machine Learning, Uses and Abuses of Machine Learning _ Basics of Machine Learning Algorithm Model Works - Steps to apply Machine Learning - Choosing a Machine Learning Algorithm – Using R for Machine Learning . **Managing and Understanding Data:** R Data Structures, Vectors And Factors: Lists, Data frames, Matrixes and arrays - Managing Data with R. **Forecasting Numeric Data – Regression Methods**: Understanding Regression- Example – Predicting Medical Expenses using Linear Regression- Understanding Regression Trees and Model Trees	15	Up to K5	CLO1
II	**Lazy Learning – Classification Using Nearest Neighbors:** Understanding classification using nearest neighbors-The kNN Algorithm- Diagnosing Breast Cancer with the kNN Algorithm- **Probabilistic Learning – Classification Using Naive Baye**s: Understanding naïve Bayes-Basic concepts of Bayesian Methods- The Naïve Bayes Algorithm- Example – filtering Mobile Phone Spam with the Naive Bayes Algorithm	15	Up to K5	CLO2

III	**Divide and Conquer – Classification Using Decision Trees and Rules:** Understanding Decision Trees- Example – Identifying Risky Bank Loans using C5.0 Decision Trees- Understanding Classification Rules. **Finding Groups of Data –Clustering with K-means:** Understanding Clustering- The k-means Algorithm for clustering- Finding teen market segments using k-means Clustering.	15	Up to K5	CLO3
IV	**Evaluating Model Performance:** Measuring Performance for Classification- Beyond Accuracy – other Measures of Performance, Visualizing Performance Tradeoffs. **Improving Model Performance:** Tuning Stock Models for Better Performance-Using Caret for Automated Parameter Tuning- Creating a simple Tuned Model- Customizing the Tuning Process- Improving Model Performance with meta-learning- Understanding Ensembles- Bagging- Boosting- Random forests.	15	Up to K5	CLO4
V	**Introduction to Deep Learning:** Introduction to Deep Learning, Single Layer Perceptron Model (SLP), Multilayer Perceptron Model (MLP), Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs),Restricted Boltzmann Machines (RBMs). **Convolutional Neural Networks (CNNs):**Structure and Properties of CNNs - Components of CNN Architectures- Convolutional Layer, Pooling Layer, Rectified Linear Units (ReLU) Layer,Fully Connected (FC) Layer, Loss Layer - Tuning Parameters ,Notable CNN Architectures, Regularization- **Recurrent Neural Networks (RNNs):** Fully Recurrent Networks, Training RNNs with Back- Propagation Through Time (BPPT)- Elman Neural Networks, Neural History Compressor, LongShort-Term Memory (LSTM), Traditional and Training LSTMs - Structural Damping Within RNNs, Tuning Parameter Update Algorithm.	15	Up to K5	CLO5

Books for Study:

Brett Lantz, “Machine Learning with R”, Addison-Wesley Packt Publishing, 2013.

Chapters :

Unit-I : 1, 2 (pg 30-42) , 6 (pg 160-190)
Unit-II : 3, 4
Unit-III : 5 (pg 120-149), 9
Unit-IV : 10(pg 294 -312), 11

TawehBeysolow, "Introduction to Deep Learning Using R: A Step-by-Step Guide to Learning and Implementing Deep Learning Models Using R", San Francisco, California, USA, 2017.

Chapters:

Unit-V : 1(pg 1-6),5,6(pg 113-120)

Books for Reference :

1. Daniel T. Larose, Chantal D. Larose, "Data mining and Predictive Analytics", 2nd Edition , Wiley Publication, 2015.
2. Bertt Lantz, "Machine Learning with R: Expert Techniques for Predictive Modeling", 3rd Edition, April 15,2019
3. Jason Bell, "Machine Learning: Hands-On for Developers and Technical Professionals", Wiley Publication, First Edition , 2015
4. Harsh Bhasin , *Machine Learning for Beginners: Learn to Build Machine Learning Systems Using Python* , BPB Publications , 1st Edition , 2020.
5. Oliver Theobald , *Machine Learning For Absolute Beginners*, 2nd Edition ,2018.

Web Resources :

1.https://www.analyticsinsight.net
2.https://towardsdatascience.com
3.https://searchworks.stanford.edu/view/13214186

e-books :

1..https://drive.google.com/file/d/1fe-b4T85xvYqSCMitDTuQhPLs1zlJadL/view?usp=sharing
2..https://drive.google.com/file/d/18biqlbryu66gytkdK6IBqvTJvBbTvAYO/view?usp=sharing
3..https://drive.google.com/file/d/1E_Cjfkq962qfortnbhVhCgww1rsS7UXh/view?usp=sharing

Pedagogy :

Chalk and Talk , Group Discussion , Student Seminar ,Spot Test , Practical Labs , Assignments , Quiz.

Rationale for Nature of the Course :

To learn about origins of machine learning and classification, clustering , Students will gain knowledge about deep learning.

Activities to be Given :

- Practice to code programs
- Group Discussion
- Seminar

Course Learning Outcomes(CLO):

On successful Completion of the course Students will be able to

CLOs	Course Learning Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CLO1	To understand, impart and analyze the concepts and of Machine Learning Techniques and types of data	Up to K5
CLO2	To comprehend, apply and evaluate the classification techniques for real-world applications	Up to K5
CLO3	To understand, use and perform evaluation of Regression methods	Up to K5
CLO4	To recognize, implement and analyse the unsupervised techniques for real-world applications	Up to K5
CLO5	To evaluate and implement the model performance	Up to K5

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3– Application oriented – Solving Problems

K4 –Examining, analyzing, presentation and make inferences with evidences

K5 – Evaluate, making Judgments based on criteria.

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	2	1	1	1	1
CLO2	3	2	3	1	2	2
CLO3	3	3	3	1	1	1
CLO4	3	3	3	2	1	2
CLO5	3	3	2	1	2	2

1 –Basic Level **2 – Intermediate Level** **3- Advance Level**

LESSON PLAN :

Units	Description	Hours		Mode of Teaching
I	▪ **Introducing Machine Learning**: The Origins of Machine Learning, Uses and Abuses of Machine Learning _ Basics of Machine Learning Algorithm Model Works - Steps to apply Machine Learning	5	15	Chalk & Talk
	▪ Choosing a Machine Learning Algorithm - Using R for Machine Learning .**Managing and Understanding Data:** Data Structures, Vectors And Factors: Lists, Data frames, Matrixes and arrays Managing Data with R	5		Chalk & Talk , SpotTest
	▪ .**Forecasting Numeric Data – Regression Methods**: Understanding Regression- Example – Predicting Medical Expenses using Linear Regression- Understanding Regression Trees and Model Trees	5		Chalk & Talk
II	▪ **Lazy Learning – Classification Using Nearest Neighbors:** Understanding Classification using nearest neighbors-The kNN Algorithm- Diagnosing Breast Cancer with the kNN Algorithm	5	15	Chalk & Talk
	▪ **Probabilistic Learning – Classification Using Naive Bayes:**: Understanding naïve Bayes-Basic concepts of Bayesian Methods- The Naïve Bayes Algorithm-	5		Chalk & Talk, Spot Test
	• Example – filtering Mobile Phone Spam with the Naive Bayes Algorithm	5		Chalk & Talk
III	• **Divide and Conquer – Classification Using Decision Trees and Rules:** Understanding Decision Trees- Example – Identifying Risky Bank Loans using C5.0 Decision Trees- Understanding Classification Rules.	8	15	Chalk & Talk, Spot Test
	• **Finding Groups of Data –Clustering with K-Means:** Understanding Clustering- The k-means Algorithm for clustering- Finding teen market segments using k-means Clustering	7		Chalk & Talk
IV	• **Evaluating Model Performance:** Measuring Performance for Classification- Beyond Accuracy – other Measures of Performance, Visualizing Performance Tradeoffs.	5	15	Chalk & Talk
	• **Improving Model Performance:** Tuning Stock Models for Better Performance-Using Caret for Automated Parameter Tuning- Creating a simple Tuned Model-	5		Chalk & Talk, Spot Test,
	• Customizing the Tuning Process- Improving			PowerPoint

	Model Performance with meta-learning- Understanding Ensembles- Bagging- Boosting- Random forests.	5		Presentation
V	• **Introduction to Deep Learning:** Introduction to Deep Learning, Single Layer Perceptron Model (SLP), Multilayer Perceptron Model (MLP), Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs),Restricted Boltzmann Machines (RBMs) • . **Convolutional Neural Networks (CNNs):**Structure and Properties of CNNs - Components of CNN Architectures- Convolutional Layer, Pooling Layer, Rectified Linear Units (ReLU) Layer,Fully Connected (FC) Layer, Loss Layer - Tuning Parameters ,Notable CNN Architectures, Regularization- • **Recurrent Neural Networks (RNNs):** Fully Recurrent Networks, Training RNNs with Back-Propagation Through Time (BPPT)- Elman Neural Networks, Neural History Compressor, LongShort-Term Memory (LSTM), Traditional and Training LSTMs - Structural Damping Within RNNs, Tuning Parameter Update Algorithm.	5 5 5	15	Students Assignment Chalk & Talk , Spot Test Chalk & Talk, Students Seminar

Course Designer
Dr.(Mrs.)S.Vijayasankari

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**CourseCode**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
III	III	23OPCA3P	**CORE X** : Advanced Java Programming Lab	4	6	40	60	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	√

Course Objectives :

1. To implement object oriented concepts in JAVA
2. Develop the program using concepts Network Programme.
3. Learn how to create a program in java beans
4. Learn how to connect relational database to Java
5. Develop the program using concepts Applet

Course Content :.

Unit	Content	Hours	K-Level	CLO
I	1. Implementation of and Exception handling concepts with different type of Exception. 2. Build a Swing application to implement metric conversion.	18	Up to K5	CLO1
II	3. Use Grid Layout to design a calculator and simulate the functions of a simple calculator. 4. Create a Color palette with a matrix of buttons using Applet	18	Up to K5	CLO2
III	5. To invoke a servlet from HTML forms. 6. To invoke servlet from Applets.	18	Up to K5	CLO3
IV	7. To invoke servlet from JSP. 8. Implement message communication using Network Programming	18	Up to K5	CLO4
V	9. Write a program to connect databases using JDBC. 10..Implementation of Java Beans.	18	Up to K5	CLO5

Books for Study :

1. Herbert Schildt, "Java the Complete Reference", 10th edition, McGraw Hill Publishing Company Ltd, New Delhi, 2017.
2.Tony Goddis, "Starting out with Java from Control Structures Through Objects" 6th Edition, Pearson Education Limited, 2016

Books for Reference:

1. Herbert Schildt, Dale Skrien, "Java Fundamentals – A Comprehensive Introduction", TMGH Publishing Company Ltd, New Delhi, 2013
2. John Dean, Raymond Dean, "Introduction to Programming with JAVA – A Problem Solving Approach", TMGH Publishing Company Ltd, New Delhi,2012.
3. Barry Burd, Java for Dummies, Wiley Publications , Seventh Edition, 2017
4. D.T.Editorial Services, Java 8 Programming Black Book, Dreamtech Press, 2015.
5. Som Prakash Raj, Core Java Made Simple, BPB , First Edition, 2018

Web Resources :

1. https://www.docdroid.net/mY1yTPu/advancedjavaprogrammingbyuttamkumarroy-pdf
2 https://www.rcsdk12.org/cms/lib/NY01001156/Centricity/Domain/4951/Head_First_Java_Second_Edition.pdf
3. https://www.pdfdrive.com/swing-java-se-5-awt-swing-java-3d-java-web-start-swt-jface-junit-abbot-eclipse-cvs-uml-mvc-xp-d161372975.html

e-books :

1. https://riptutorial.com/Download/java-language.pdf
2. https://book.huihoo.com/goalkicker.com/JavaBook/JavaNotesForProfessionals.pdf
3. https://www.startertutorials.com/ajwt/res/notes/AJWTnotes.pdf

Pedagogy :

Chalk and Talk, Group Discussion, Student Seminar, Spot Test, Assignments, Quiz.

Rationale for Nature of the Course :

Advanced Java provides libraries to understand the concept of Client-Server Architecture for web- based applications.

Activities to be Given :

- Practice to Code Programs
- Software Development

Course Learning Outcomes(CLO):

On the successful Completion of the course Students will be able to

CLOs	Course Learning Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CLO1	Implement classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem	Up to K5
CLO2	Apply Applets and Swing programs	Up to K5
CLO3	Develop Servlets and JSP for creating Web based applications using JDBC	Up to K5
CLO4	Develop Java Beans , Servlets and SQL	Up to K5
CLO5	Create a Networking and SQL concepts	Up to K5

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3 – Application oriented – Solving Problems

K4 –Examining, analyzing, presentation and make inferences with evidences

K5 – Evaluate , making Judgments based on criteria.

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	3	3	3	3	2
CLO2	3	3	3	3	3	3
CLO3	3	2	3	3	2	3
CLO4	3	3	3	2	3	3
CLO5	3	3	3	3	2	3

1 – Basic Level **2 – Intermediate Level** **3- Advanced Level**

LESSON PLAN :

UNIT	Programs	Hours	Mode of Teaching
I	1. Implementation of and Exception handling concepts with different type of Exception 2. Build a Swing application to implement metric conversion	18	Demo & Practical Session
II	3. Use Grid Layout to design a calculator and simulate the functions of a simple calculator 4. Create a Color palette with a matrix of buttons using Applet	18	Demo & Practical Session
III	5. To invoke a servlet from HTML forms 6. To invoke servlet from Applets	18	Demo & Practical Session
IV	7. To invoke servlet from JSP 8. Implement message communication using Network Programming	18	Demo & Practical Session
V	9. Write a program to connect databases using JDBC. 10..Implementation of Java Beans	18	Demo & Practical Session

Course Designer
Mrs.M.Murugeswari

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**CourseCode**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
III	III	23OPCADSE3P	**Elective –V : (DSEC- 5)** Web Technology Lab	3	5	40	60	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	√

Course Objectives :

1. To formulate web page designing using HTML program.
2. To understand a CSS programs along with their different styles.
3. To apply JavaScript techniques to solve problems of moderate complexity in developing web programming in internet
4. To apply XML to solve sequence of coding in web searching.
5. To apply JSP and JavaScript to solve web server problems.

Course Content :.

Unit	Content	Hours	K-Level	CLO
I	1.Write a SIMPLE HTML TAGS using HTML 2.Write a HTML FRAMES using HTML 3. Write a HTML FORMS using HTML	18	Up to K5	CLO1
II	4.Implementation of INLINE AND EMBEDDED STYLE SHEETS 5. Implement EXTERNAL AND USER-DEFINED STYLE SHEETS 6. Write a program for OBJECT MODEL IN DHTML	18	Up to K5	CLO2
III	7. XML WITH DTD SPECIFICATION 8. Implementation EXTENSIBLE STYLE SHEET LANGUAGE 9. Implement FILTERS AND TRANSITION IN DHTML	18	Up to K5	CLO3

IV	10. Implement XML WITH DTD SPECIFICATION 11. EXTENSIBLE STYLE SHEET LANGUAGE 12. Implement an JAVA SCRIPT- ADAM NUMBER CHECKING	18	Up to K5	CLO4
V	13.Implement a JAVA SCRIPT- LOGIN VALIDATION 14. JSP – ONLINE BANK TRANSACTION 15. JSP – RESPONSE CONTEXT 16. JSP – SESSION MANAGEMENT	18	Up to K5	CLO5

Book for Study :

HTMl, JavaScript , DHTML and PHP By. Ivan Bayross. 2005

Books for Reference:

1. Parminder Kaur, Aseem Khanna, "Web technologies ", Lovely Professional University, 1st Edition
2. Paul Wilton , "*Beginning JavaScript* ", WROX Press Ltd 2nd Edition ,2000
3. Gopalan N.P, Akilandeshwari J, "Web Technology",PHI Learning Pvt.Ltd, 2nd Edition,2014
4. Web Technologies, HTML, JAVASCRIPT, PHP, JAVA, JSP, ASP.NET, XML and Ajax, Black Book: 2 editions 2009
5. S. Saranya,, P.Calista Bebe, "Web Technology: Fundamentals of Programming",2020

Web Resources :

1. https://www.geeksforgeeks.org/web-technology/
2. https://www.w3schools.com/
3. https://www.halvorsen.blog/documents/programming/web/web.php

e-books :

1. https://www.lpude.in/SLMs/Master%20of%20Computer%20Applications/Sem_2/DECAP472_WEB_TECHNOLOGIES.pdf
2. https://genuinenotes.com/wp-content/uploads/2020/02/Web-Technology-Notes-all.pdf
3. https://www.dcpehvpm.org/E-Content/BCA/BCA-II/Web%20Technology/the-complete-reference- html- css-fifth-edition.pdf

Pedagogy :

Projector Demonstration and Practical sessions.

Rationale for Nature of the course:

To create web applications using PHP and MySQL, Create web pages using XML and Cascading Style Sheets, JavaScript

Activities to be Given :

- Practice to Code Programs
- Software Development

Course Learning Outcomes(CLO):

On successful Completion of the course Students will be able to

CLOs	Course Learning Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CLO1	To understand and implement formulate web page designing using HTML program.	Up to K5
CLO2	To recognize and develop the a CSS programs along with their different styles.	Up to K5
CLO3	To understand, impart and develop the JavaScript techniques to solve problems of moderate complexity in developing web programming in internet	Up to K5
CLO4	To comprehend , impart and implement XML to solve sequence of coding in web searching.	Up to K5
CLO5	To identify and evaluate the JSP and JavaScript to solve web server problems	Up to K5

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3 – Application oriented – Solving Problems

K4 –Examining, analyzing, presentation and make inferences with evidences

K5 – Evaluate , making Judgments based on criteria.

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	3	2	1	2	3
CLO2	3	2	3	3	3	2
CLO3	3	2	4	2	4	2
CLO4	3	2	1	3	2	1
CLO5	2	3	2	1	3	1

1 – Basic Level **2 – Intermediate Level** **3- Advanced Level**

Annexure - 3

LESSON PLAN :

UNIT	Programs	Hours	Mode of Teaching
I	1.Write a SIMPLE HTML TAGS using HTML 2.Write a HTML FRAMES using HTML 3.Write a HTML FORMS using HTML	18	Demo & Practical Session
II	4. Implementation of INLINE AND EMBEDDED STYLE SHEETS 5. Implement EXTERNAL AND USER- DEFINED STYLE SHEETS 6. Write a program for OBJECT MODEL IN DHTML	18	Demo & Practical Session
III	7. XML WITH DTD PECIFICATION 8. Implementation EXTENSIBLE STYLE SHEET LANGUAGE 9. Implement FILTERS AND TRANSITION IN HTML.	18	Demo & Practical Session
IV	10. Implement XML WITH DTD SPECIFICATION 11. EXTENSIBLE STYLE SHEET LANGUAGE 12. Implement an JAVA SCRIPT- ADAM NUMBER CHECKING	18	Demo & Practical Session
V	13. Implement a JAVA SCRIPT- LOGIN VALIDATION 14. JSP – ONLINE BANK TRANSACTION 15. JSP – RESPONSE CONTEXT 16. JSP – SESSION MANAGEMENT	18	Demo & Practical Session

Course Designer
Dr.(Mrs.)J.CHINNA

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**CourseCode**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
III	IV	23OPCASEC3P	**SEC- 2 :** Advanced Machine Learning Lab	2	2	40	60	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	√

Course Objectives :

1. To formulate machine learning problems corresponding to different applications.
2. To understand a range of machine learning algorithms along with their strengths and weaknesses.
3. To apply machine learning algorithms to solve problems of moderate complexity.
4. To apply CNN to solve problems of moderate complexity.
5. To apply LSTM and RNN to solve problems.

Course Content :.

Unit	Content	Hours	K-Level	CLO
I	1. Write a python program to compute the Central Tendency Measures: Mean, Median, Mode, Measure Of Dispersion: Variance, Standard Deviation 2. Implement a Linear Regression and Multiple Linear Regression with a Real Dataset	6	Up to K5	CLO1
II	3. Implementation of Logistic Regression using sklearn 4. Implement a binary classification model.	6	Up to K5	CLO2
III	5. Classification with Nearest Neighbours and NavieBaye Algorithm 6. Implementation Decision tree for classification using sklearn and its parameter tuning	6	Up to K5	CLO3

IV	7. Implement the k-means algorithm. 8. Implement an Image Classifier using CNN in TensorFlow /Keras.	6	Up to K5	CLO4
V	9. Implement an Autoencoder in TensorFlow/Keras. 10. Implement a SimpleLSTM using TensorFlow/Keras.	6	Up to K5	CLO5

Book for Study:

Brett Lantz, "Machine Learning with R", Addison-Wesley Packt Publishing, 2013.

Books for Reference :

1. Daniel T. Larose, Chantal D. Larose, "Data mining and Predictive Analytics", 2nd Edition , Wiley Publication, 2015.
2. Bertt Lantz, "Machine Learning with R: Expert Techniques for Predictive Modeling", 3rd Edition, April 15,2019
3. Jason Bell, "Machine Learning: Hands-On for Developers and Technical Professionals", Wiley Publication, First Edition , 2015
4. Harsh Bhasin , *Machine Learning for Beginners: Learn to Build Machine Learning Systems Using Python* , BPB Publications , 1st Edition , 2020.
5. Oliver Theobald , *Machine Learning For Absolute Beginners*, 2nd Edition ,2018.

Web Resources :

1.https://www.analyticsinsight.net
2.https://towardsdatascience.com
3.https://searchworks.stanford.edu/view/13214186

e-books :

1..https://drive.google.com/file/d/1fe-b4T85xvYqSCMitDTuQhPLs1zlJadL/view?usp=sharing
2..https://drive.google.com/file/d/18biqlbryu66gytkdK6IBqvTJvBbTvAYO/view?usp=sharing
3..https://drive.google.com/file/d/1E_Cjfkq962qfortnbhVhCgww1rsS7UXh/view?usp=sharing

Pedagogy :

Projector Demonstration and Practical sessions.

Rationale for Nature of the course

Developing logic and structured program, organizing data in software development.

Activities to be Given :

- Practice to Code Programs
- Software Development

Course Learning Outcomes(CLO):

On successful Completion of the course Students will be able to

CLOs	Course Learning Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CLO1	To understand and implement the mathematical and statistical prospective of machine learning algorithms through python programming	Up to K5
CLO2	To recognize and develop the machine learning models through python in built functions	Up to K5
CLO3	To understand, impart and develop the machine learning models for real-time dataset	Up to K5
CLO4	To comprehend , impart and implement the deep learning models for real-time applications	Up to K5
CLO5	To identify and evaluate the performance machine learning models for real-time dataset	Up to K5

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3 – Application oriented – Solving Problems

K4 –Examining, analyzing, presentation and make inferences with evidences

K5 – Evaluate , making Judgments based on criteria.

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	3	2	-	2	-
CLO2	3	3	2	-	2	-
CLO3	3	3	2	-	2	-
CLO4	3	3	2	-	2	-
CLO5	3	3	2	-	2	-

1 – Basic Level 2 – Intermediate Level 3- Advanced Level

Annexure - 3

LESSON PLAN :

UNIT	Programs	Hours	Mode of Teaching
I	1. Write a python program to compute the Central Tendency Measures: Mean, Median, Mode, Measure of Dispersion: Variance, Standard Deviation 2. Implement a Linear Regression and Multiple Linear Regression with a Real Dataset	18	Demo & Practical Session
II	3. Implementation of Logistic Regression using sklearn 4. Implement a binary classification model.	18	Demo & Practical Session
III	5. Classification with Nearest Neighbours and NavieBaye Algorithm 6. Implementation Decision tree for classification using sklearn and its parameter tuning	18	Demo & Practical Session
IV	7. Implement the k-means algorithm. 8. Implement an Image Classifier using CNN in TensorFlow /Keras.	18	Demo & Practical Session
V	9. Implement an Autoencoder in TensorFlow/Keras. 10. Implement a SimpleLSTM using TensorFlow/Keras.	18	Demo & Practical Session

Course Designer
Dr. (Mrs.)S.Vijayasankari

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**Course Code**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
IV	III	23OPCA41	**Core – XI :** Data Visualization	5	6	25	75	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	

Course Objectives :

1. To Introduce the concept of Visualizing Data and its Color Scales.
2. To Understanding the basic concepts of directory of visualizations and Cumulative Distributions.
3. To Analyze Visualizing Proportions and Nested Proportions.
4. To Evaluate the performance of Visualizing Associations Among Two or More Quantitative Variables
5. To apply The Tools the Graphics of Visualizing Data

Course Content :

Unit	Course Content	Hours	K-Level	CLO
I	**Introduction** –Ugly, Bad, and Wrong Figures. **Visualizing Data:** Mapping onto Aesthetics: Aesthetics and Types of Data – Scales Map Data Values onto Aesthetics - Coordinate Systems Axes: Cartesian Coordinates – Nonlinear Axes – Coordinate Systems with Curved Axes – **Color Scales** : Color as a Tool to Distinguish – color to Represent Data Values – Color as a Tool to Highlight.	18	Up to K5	CLO1
II	**Directory of Visualizations**: Amounts – Distribution Proportions – x-y relationships – Geospatial Data Uncertainty – **Visualizing Amounts**: Bar Plots – Grouped Stacked Bars – Dot Plots and Heatmaps – **Visualiz Distribution** :Histograms and Density Plots: Visualizin single Distribution – Visualizing Multiple Distribution at Same Time – **Visualization Distributions: Empiri**	18	Up to K5	CLO2

	Cumulative Distribution functions and Q - Q Pl Empirical Cumulative Distribution Functions – Hig skewed Distributions – Quantile – Quantile Plots.			
III	**Visualizing Many Distributions at Once. :** Visualizing Distributions Along the Vertical Axis- Visualizing Distributions Along the Horizontal Axis - **Visualizing Proportions:** A Case for Pie Charts – A Case for Side – by – Side Bars - A Case for Stacked Bars and Stacked Densities – Visualizing Proportions Separately as Parts of the Total – **Visualizing Nested Proportions:** Nested Propositions Gone Wrong – Mosaic Plots and Tree maps – Nested Pies – Parallel Sets.	18	Up to K5	CLO3
IV	**Visualizing Associations Among Two or More Quantitative Variables:** Scatterplots - Correlograms - Dimension Reduction - Paired Data - **Visualizing Time Series and Other Functions of an Independent Variable-** Individual Time Series - Multiple Time Series and Dose–Response Curve s - Time Series of Two or More Response Variables - **Visualizing Trends** – Smoothing - Showing Trends with a Defined Functional Form - Detrending and Time-Series Decomposition.	18	Up to K5	CLO4
V	**The Tools :** Basic Productivity Applications - Visualization Software – Business Intelligence Tools – Programming Packages – A criteria for selecting Tools to Build Data Graphics – **The Graphics** – the Graphics - Comparisons of Categories and Time - Distributions – Propositions – Relationships – Locations – Trends showing Comparisons over Time or Composition Over Time – Word Frequency and Sentiment - Connections and Networks – Chart Interface.	18	Up to K5	CLO5

Books for Study:

1. Claus O. Wilke, "Fundamentals of Data Visualization", First Edition, O ' Relly Media Inc., 2019.

Chapters :

Unit - I : Chapters: 1, 2 , 3, 4
Unit - II : Chapters: 5 , 6, 7, 8
Unit - III : Chapters: 9, 10, 11
Unit - IV : Chapters: 12,13,14

2. Kristen Sosulski , " Data Visualization made simple ", First Edition, Routledge Pearson Education, 2019.

Chapters :

Unit - V : Chapters: II, III

Books for Reference :

1. Jack A. Hyman &Luca Massaron, " Data Analytics & Visualization" A –Wiley Brand, First Edition, 2024.
2. Dr. Gaurav Kumar Ameta Dr. Mahipal Singh Deora Prof. Amitava Chakraborty Dr. Pradeep Duraisamy " Data Analytics and Data Visualization", First Edition , Scientific,2020.
3. Kieran Healy "Data Visualization: A Practical Introduction" First Edition , Princeton University Press, 2018.
4. Dr. Stephanie D. H. Evergreen "Effective Data Visualization " 2nd Edition, Sage Publications, 2020.
5. S. Margret Anouncia, Hardik A. Gohel, et al. "Data Visualization: Trends and Challenges Toward Multidisciplinary Perception Hardcover – Import" Kindle Edition, 2020.

Web Resources :

1. https://www.javatpoint.com/mobile-computing
2. https://www.tutorialspoint.com/mobile_computing/mobile_computing_overview.htm
3. https://www.techtarget.com/searchmobilecomputing/definition/nomadic-computing

e-books :

1. https://books.google.co.in/books?id=9GgvSMpvil4C&printsec=copyright#v=onepage&q&f=false

2 https://www.perlego.com/book/1599123/wireless-networks-and-mobile-computing-pdf

3. https://www.studocu.com/row/document/hacettepe-universitesi/computer-vision/fundamentals-of-mobile- computing-e-book/33099857

Pedagogy :

Chalk and Talk , Group Discussion , Student Seminar ,Spot Test , Practical Labs ,Assignments , Quiz.

Annexure - 3

Rationale for Nature of the Course :

To learn about origins of Basic Productivity Applications, Visualization Software, Business Intelligence Tools and Programming Packages

Activities to be Given :

- Practice the Tools of Visualization of Data
- Group Discussion
- Seminar

Course Learning Outcomes(CLO):
On successful Completion of the course Students will be able to

CLOs	Course Learning Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CLO1	Understandingthe basic concepts of Visualizing Data and its Color Scales.	Up to K5
CLO2	Understanding the basic concepts of directory of visualizations and Cumulative Distributions.	Up to K5
CLO3	Analyzing the concepts of Visualizing Proportions and Nested Proportions.	Up to K5
CLO4	Understanding the basic concepts of Visualizing Associations Among Two or More Quantitative Variables	Up to K5
CLO5	Understanding the basic concepts of The Tools the Graphics of Visualizing Data	Up to K5

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3– Application oriented – Solving Problems

K4 –Examining, analyzing, presentation and make inferences with evidences

K5 – Evaluate , making Judgments based on criteria.

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	2	1	1	1	1
CLO2	3	2	3	2	2	1
CLO3	3	3	3	1	1	1
CLO4	3	3	3	1	1	1
CLO5	3	3	3	1	2	2

1 – Basic Level 2 – Intermediate Level 3- Advanced Level

Annexure - 3

Units	Description	Hours		Mode of Teaching
I	• **Introduction** –Ugly, Bad, and Wrong Figures. **Visualizing Data:** Mapping onto Aesthetics: Aesthetics and Types of Data – Scales Map Data Values onto Aesthetics	6	18	Chalk & Talk
	• Coordinate Systems Axes: Cartesian Coordinates – Nonlinear Axes – Coordinate Systems with Curved Axes	6		Chalk & Talk , SpotTest
	• **Color Scales** : Color as a Tool to Distinguish – color to Represent Data Values – Color as a Tool to Highlight.	6		Chalk & Talk
II	• **Directory of Visualizations**: Amounts – Distributions – Proportions – x-y relationships – Geospatial Data – Uncertainty –	6	18	Chalk & Talk
	• **Visualizing Amounts**: Bar Plots – Grouped and Stacked Bars – Dot Plots and Heatmaps – **Visualizing Distribution**: Histograms and Density Plots: Visualizing a single Distribution – Visualizing Multiple Distribution at the Same Time –	6		Chalk & Talk, SpotTest
	• **Visualization Distributions: Empirical Cumulative Distribution functions and Q - Q Plots**: Empirical Cumulative Distribution Functions – Highly skewed Distributions – Quantile – Quantile Plots.	6		Chalk & Talk
III	• **Visualizing Many Distributions at Once:** Visualizing Distributions Along the Vertical Axis- Visualizing Distributions Along the Horizontal Axis	**6**		Chalk & Talk

III	• **Visualizing Proportions:** A Case for Pie Charts – A Case for Side –by – Side Bars - A Case for Stacked Bars and Stacked Densities – Visualizing Proportions Separately as Parts of the Total • **Visualizing Nested Proportions:** Nested Propositions Gone Wrong – Mosaic Plots and Tree maps – Nested Pies – Parallel Sets	6 6	18	Chalk & Talk PowerPoint Presentation
IV	• **Visualizing Associations Among Two or More Quantitative Variables:** Scatterplots - Correlograms - Dimension Reduction - Paired Data • **Visualizing Time Series and Other Functions of an Independent Variable-** Individual Time Series - Multiple Time Series and Dose–Response Curves - Time Series of Two or More Response Variables • **Visualizing Trends** – Smoothing - Showing Trends with a Defined Functional Form - De trending and Time-Series Decomposition.	6 6 6	18	Chalk & Talk Chalk & Talk, Spot Test, PowerPoint Presentation
V	• **The Tools :** Basic Productivity Applications - Visualization Software – Business Intelligence Tools – Programming Packages – A criteria for selecting Tools to Build Data Graphics – • **The Graphics** – the Graphics - Comparisons of Categories and Time - Distributions – Propositions – Relationships – Locations • **Trends showing Comparisons over Time or Composition Over Time** – Word Frequency and Sentiment - Connections and Networks – Chart Interface.	6 6 6	18	Chalk & Talk Chalk & Talk, PowerPoint Presentation

Course Designer
Dr.(Mrs)J.CHINNA

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**Course Code**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
IV	III	23OPCA42	**Core - XII :** Software Project Management	5	6	25	75	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	

Course Objectives :

1. To define and highlight importance of software project management.
2. To formulate and define the software management metrics & strategy in managing projects
3. Understand to apply software testing techniques in commercial environment.
4. To improve the efficacy and efficiency of a project, team members, stakeholders, and other pertinent parties should be encouraged to collaborate and maintain open lines of communication
5. To Promote tradition of non-stop development via the use of best practices,

Course Content :

Unit	Course Content	Hours	K-Level	CLO
I	**Introduction to Software Project Management** : Software Project Versus Other types of Project - Requirement Specification **Step Wise : an overview of Project Planning** –Introduction to Step Wise Project Planning – Select Project –Identify Project Scope and Objectives -Identify Project Infrastructure –Analyse Project Characteristics –Identify Project Products and Activities – Estimate Effort for each Activity –Identify Activity Risks – Allocate Resources -Review / Publicize Plan –Execute Plan and Lower Levels of Planning.	18	Up to K5	CLO1
II	**Project Evaluation** : Introduction –Strategic Assessment – Technical Assessment –Cost Benefit Analysis –Cash Flow Forecasting –Cost Benefit Evaluation Techniques –Risk Evaluation. **Selection of an Appropriate Project Approach :** Choosing Technologies –Choice of Process Models –Structure versus speed of delivery– The Waterfall Model – The V-process Model - The Spiral Model - Software Prototyping –Other Ways of Categorizing Prototypes – Incremental Delivery –Selecting the most appropriate Process Model.	18	Up to K5	CLO2

III	**Software Effort Estimation** : Introduction –Problems with Over and Under Estimates –The Basis for Software Estimating – Software Effort Estimation Techniques –Albrecht Function Point Analysis –Function Points Mark II – Object Points –A Procedural Code Oriented Approach –COCOMO a parametric model .**Activity Planning** : Project Schedules -Projects and activities –Sequencing and Scheduling Activities –Network Planning Models –Formulating a Network Model – Adding the Time Dimension –The Forward Pass – The Backward Pass – Identifying the Critical Path –Activity Float -Shortening the Project Duration –Identifying Critical Activities .	18	Up to K5	CLO3
IV	**Risk Management** : Introduction –The Nature of Risk - Managing Risk –Hazard Analysis –Risk Planning and Control. **Resource Allocation** : The Nature of Resources –Identifying Resource Requirements –Scheduling Resources – Creating Critical Paths – Counting the Cost –Publishing the Resource Schedule –Cost Schedules –The Scheduling Sequence. **Monitoring and Control** : Creating the FrameWork - Collecting the Data –Visualizing Progress –Cost Monitoring –Prioritizing Monitoring –Change Control.	18	Up to K5	CLO4
V	**Managing Contracts** : Introduction –Types of Contract –Stages in Contract Placement –Typical Terms of a Contract –Contract Management –Acceptance .**Managing People and Organizing Teams :** Organizational Behavior : a Background –Selecting the Right Person for the Job –Instruction in the Best Methods – Motivation –Decision Making –Leadership –Organizational Structures. **Software Quality :** The Importance of software quality –Practical software quality Measures –Product versus process quality management	18	Up to K5	CLO5

Book for Study :

Bob Hughes (Author), Mike Cotterell (Author), Rajib Mall (Author)- , Tata McGraw-Hill ,3rd Edition October 2017

Chapters :

Unit - I : Chapter 1 : 1.3 , 1.13 & Chapter 2 : 2.1 to 2.13
Unit - II : Chapter 3 : 3.1 – 3.7 & Chapter 4 : 4.2 , 4.4 to 4.10 , 4.12 , 4.16
Unit - III : Chapter 5 : 5.1 , 5.3 to 5.5 , 5.8 to 5.12 & Chapter 6 : 6.4 to 6.15
Unit - IV : Chapter 7 : 7.1 , 7.2 , 7.4 , 7. 6 , to 7.8 , Chapter – 8 : 8.2 to 8.6 , 8.8 to 8.10 , Chapter : 9 : 9.2 to 9.5, 9.7 , 9.9
Unit - V : Chapter 10 : 10.1 to 10.6 , Chapter 11 : 11.3 to 11.6 , 11.10 to 11.12 , Chapter 12 : 12.3 , 12.6 12.7

Books for Reference:

1. Pankaj Jalote, "Software Project Management in Practice", Addison Wesley 2002
2. Robert K. Wysocki, "Effective Software Project Management", 2010
3. Dutt,Chandramouli, , Software Project Management , Pearson India , 2015.
4. P.Rizwan Ahmed , Software Project Management, Margham Publication.
5. S.A.Kelkar , Software Project Management A Concise Study , PHI , 3rd Edition,2012

Web Resources :

1. https://mrcet.com/downloads/digital_notes/CSE/IV%20Year/SOFTWARE%20PROJECT%20MANAGEMENT.pdf
2. https://www.researchgate.net/publication/353142232_Software_project_management
3. https://onlinelibrary.wiley.com/doi/pdf/10.1002/9781119220015.fmatter

e-books :

1. https://vemu.org/uploads/lecture_notes/20_12_2019_1305961524.pdf
2. http://dhoto.lecturer.pens.ac.id/lecture_notes/internet_of_things/Big%20Data%20Principles%20and%20Paradigms.
3. https://en.wikipedia.org/wiki/Software_project_management

Pedagogy :

Chalk and Talk , Group Discussion , Student Seminar ,Spot Test , Practical Labs ,Assignments , Quiz.

Rationale for Nature of the Course :

Software Project Management used to centralize Task Management It provides a single space for assigning tasks that can also function as the tool the team uses to record when they complete the tasks.

Activities on Knowledge and Skill

- Practice to do Project Evaluation and about Software Quality.
- Group Discussion
- Seminar

Course Learning Outcomes(CLO):
On successful Completion of the course Students will be able to

CLOs	Course Learning Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CLO1	To Understand the principles and concepts of project management	Up to K5
CLO2	Knowledge gained to train software project managers	Up to K5
CLO3	Apply software project management methodologies.	Up to K5
CLO4	Able to create comprehensive project plans	Up to K5
CLO5	Evaluate and mitigate risks associated with software development process	Up to K5

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3 – Application oriented – Solving Problems

K4 –Examining, analyzing, presentation and make inferences with evidences

K5 – Evaluate , making Judgments based on criteria.

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	-	3	3	1
CLO2	2	1	-	3	3	-
CLO3	3	-	1	2	3	3
CLO4	2	3	2	3	2	-
CLO5	2	2	-	3	3	3

1 – Basic Level **2 – Intermediate Level** **3- Advanced Level**

Annexure - 3

LESSON PLAN :

Units	Description	Hours		Mode of Teaching
I	**Introduction to Software Project Management** : Software Project Versus Other types of Project - Requirement Specification	6	18	Chalk & Talk
	Step Wise : an overview of Project Planning –Introduction to Step Wise Project Planning – Select Project –Identify Project Scope and Objectives -Identify Project Infrastructure –Analyse Project Characteristics –Identify Project Products and Activities	6		Chalk & Talk , Spot test
	Estimate Effort for each Activity –Identify Activity Risks – Allocate Resources -Review / Publicize Plan –Execute Plan and Lower Levels of Planning.	6		Chalk & Talk
II	**Project Evaluation** : Introduction –Strategic Assessment – Technical Assessment –Cost Benefit Analysis –Cash Flow Forecasting –Cost Benefit Evaluation Techniques –Risk Evaluation.	6	18	Chalk & Talk
	Selection of an Appropriate Project Approach : Choosing Technologies –Choice of Process Models –Structure versus speed of delivery– The Waterfall Model – The V-process Model - The Spiral Model –	6		Chalk & Talk,
	Software Prototyping –Other Ways of Categorizing Prototypes – Incremental Delivery –Selecting the most appropriate Process Model.	6		Chalk & Talk
III	**Software Effort Estimation** : Introduction –Problems with Over and Under Estimates –The Basis for Software Estimating – Software Effort Estimation Techniques – Albrecht Function Point Analysis –Function Points Mark II	6	18	Chalk & Talk,
	–Object Points –A Procedural Code Oriented Approach – COCOMO a parametric model .**Activity Planning** : Project Schedules -Projects and activities –Sequencing and Scheduling Activities –Network Planning Models – Formulating a Network Model –	6		SpotTest ,GD
	Adding the Time Dimension –The Forward Pass – The Backward Pass –Identifying the Critical Path –Activity Float -Shortening the Project Duration – Identifying Critical Activities.	6		Chalk & Talk
IV	**Risk Management** : Introduction –The Nature of Risk - Managing Risk –Hazard Analysis –Risk Planning and Control.	6	18	Chalk & Talk
	Resource Allocation : The Nature of Resources –Identifying Resource Requirements –Scheduling Resources – Creating Critical Paths – Counting the Cost –Publishing the Resource Schedule –Cost Schedules –The Scheduling Sequence.	6		Chalk & Talk, Spot Test, PPT
	Monitoring and Control : Creating the FrameWork - Collecting the Data –Visualizing Progress –Cost Monitoring –Prioritizing Monitoring –Change Control.	6		Chalk & Talk

V	**Managing Contracts** : Introduction –Types of Contract – Stages in Contract Placement –Typical Terms of a Contract – ContractManagement –Acceptance	6	18	Chalk & Talk, Spot Test
	.**Managing People and Organizing Teams :** Organizational Behavior : a Background –Selecting the Right Person for the Job –Instruction in the Best Methods – Motivation –Decision Making –Leadership –Organizational Structures.	6		Chalk & Talk, PPT
	Software Quality : The Importance of software quality – Practical software quality Measures –Product versus process quality management	6		PPT , Students Seminar

Course Designer
Mrs.M.Murugeswari

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**Course Code**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
IV	III	23OPCAPR4	**Project :** Project with Viva Voce	7	10	20	80	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	

Course Objectives

1.The aim of the Project work is to acquire practical knowledge on the implementation of the programming concepts with innovative ideas.

2. Each student should carry out individually one Project Work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea.

Students are allowed to do their Project work under the guidance of Internal Examiner.

- After one month duration during the first review students should present the overview of their project work , tentative title , overview of the project work and the determination of the modules.
- After two and half months duration in the second review students should show the development in their project work , tools and coding used.
- In the final evaluation students should appear for a oral presentation . They should present their project work in front of the Internal and External Examiner.

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**CourseCode**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
IV	III	23OPCADSE4AP	**Elective –VI : (DSEC-6)** Social Networks Lab	3	5	40	60	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	

Course Objectives :

1. To familiarize the tools required to manage social network applications
2. To analyze social networks like Facebook, LinkedIn, Google+, GitHub
3. To teach the fundamental techniques and principles in Achieving Social networking environment.
4. To enable students to have skills that will help them to solve real time applications.
5. To get explore in the Github API.

Course Content :.

Unit	Content	Hours	K-Level	CLO
I	1. Creating and Exploring Twitter‟s API 2. To analyzing and visualizing tweets and tweet entities with frequency analysis	18	Up to K5	CLO1
II	3. Creating and Exploring Facebook‟s Social Graph API 4. To analyzing the Facebook‟s Social Graph connections	18	Up to K5	CLO2
III	5. Creating and Exploring LinkedIn API 6. To downloading LinkedIn connections as a CSV file	18	Up to K5	CLO3
IV	7. Creating and Exploring Google+ API 8. To create and querying Human Language Data with TF-IDF	18	Up to K5	CLO4

V	9. Creating and Exploring GitHub‟s API 10. To analyzing GitHub interest graph	18	Up to K5	CLO5

Book for Study :

Varinder Taprial, "Understanding Social Media", 2012.

Books for Reference:

1. Security and Privacy-Preserving in Social Networks, Editors: Chbeir, Richard, Al Bouna, Bechara (Eds.), Spinger, 2013
2. Security and Trust in Online Social Networks, Barbara Carminati, Elena Ferrari, Marco Viviani, Morgan & Claypool publications.
3. Security and Privacy in Social Networks, Editors: Altshuler, Y., Elovici, Y., Cremers, A.B.,Aharony, N., Pentland, A. (Eds.), Springer, 2013
4. Security and privacy preserving in social networks, Elie Raad & Richard Chbeir, Richard hbeir& Bechara Al Bouna, 2013
5. Social Media Security: Leveraging Social Networking While Mitigating Risk, Michael Cross,2013

Web Resources :

1. https://ils.unc.edu/cws/Handouts/Social%20Networking/Social-Networking.pdf
2. https://faisalchughtai.com/media/resources/Social_Networking.pdf
3. https://www.hhs.gov/sites/default/files/sg-youth-mental-health-social-media-advisory.pdf

e_books :

1. https://faculty.ucr.edu/~hanneman/nettext/Introduction_to_Social_Network_Methods.pdf
2. https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SITA3005.pdf
3. https://mu.ac.in/wp-content/uploads/2022/09/Paper-2-Social-Network-Analysis.pdf

Pedagogy :

Projector Demonstration and Practical sessions.

Rationale for Nature of the course

Create and Exploring Twitter‟s API, LinkedIn API and Google API

Activities to be Given:

- Practice to Code Programs
- Software Development

Course Learning Outcomes(CLO):

On successful Completion of the course Students will be able to

CLOs	Course Learning Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CLO1	To understand , implement and review the fundamental techniques and principles for social networks.	Up to K5
CLO2	To design and develop the programs using the tools required to develop and manage social network like Facebook, LinkedIn, Google+, GitHub	Up to K5
CLO3	To create and explore the functionality of social networking tools such as GitHub	Up to K5
CLO4	To create and explore the LinkedIn API	Up to K5
CLO5	To comprehend and critically analyse the existing API for social networks	Up to K5

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3 – Application oriented – Solving Problems

K4 –Examining, analyzing, presentation and make inferences with evidences

K5 – Evaluate, making Judgments based on criteria.

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	3	2	3	3	3
CLO2	3	3	3	3	3	3
CLO3	3	2	3	3	3	3
CLO4	3	3	3	3	3	3
CLO5	3	3	3	3	2	3

1 – Basic Level 2 – Intermediate Level 3-Advanced Level

Annexure - 3

LESSON PLAN:

UNIT	Programs	Hours	Mode of Teaching
I	1.Creating and Exploring Twitter‟s API 2.To analyzing and visualizing tweets and tweet entities with frequency analysis	18	Demo &Practical Session
II	3.Creating and Exploring Facebook‟s Social Graph API 4.To analyzing the Facebook‟s Social Graph connections	18	Demo &Practical Session
III	5.Creating and Exploring LinkedIn API 6. To downloading LinkedIn connections as a CSV file	18	Demo & PracticalSession
IV	7. Creating and Exploring Google+ API 8. To create and querying Human Language Data with TF-IDF	18	Demo &Practical Session
V	9.Creating and Exploring GitHub‟s API 10.To analyzing GitHub interest graph	18	Demo &Practical Session

Course Designer
Dr.(Mrs.)S.Vijayasankari

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**CourseCode**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
IV	III	23OPCADSE4BP	**Elective –VI : (DSEC - 6)** High Performance Computing Lab	3	5	40	60	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	

Course Objectives :

1.To understand concepts of High Performance Computing.

2.To get brief knowledge about PB and Slurm.

3.To understand techniques of OpenMP and OpenMPI.

4.To understand Parallel computing concepts.

5.To get familiar with CUDA.

Course Content :.

Unit	Contents	Hours	K-Level	CLO
I	1. Demo: - Access and best practices on HPC 2. Matrix multiplication with Job scheduling (PB or Slurm)	15	Up to K5	CLO1
II	3. Vectors add with malloc shared 4. Vector add program with MPI	15	Up to K5	CLO2
III	5. Hello world task for Multithreading with openMP 6.OpenMP shared memory on Host and Device	15	Up to K5	CLO3
IV	7. OpenMP Matrix Multiplication with parallelism and Barrier 8.openMP with Reduction on operands and aggregate functionality	15	Up to K5	CLO4

V	9. Vector and Matrix multiplication on CUDA 10. Feed forward computing on CUDA	15	Up to K5	CLO5

Book for Study:

Taylor & Francis, High Performance Computing, Second Edition, 021 , CRC Press.

Books for Reference:

1. Georg Hager Gerhard Wellein, Introduction to High Performance Computing for Scientists and Engineers, CRC Press , 2011
2. Victor Eijkhout with Edmond Chow,Robert van de Geijn , Introduction to High Performance Scientific Computing, 2nd Edition , 2016
3. Charles Severance, Kevin Dowd, High Performance Computing, O'Reilly Media, 2nd Edition, 1998.
4. Kai Hwang, Faye Alaye Briggs, Computer Architecture and Parallel Processing, McGraw Hill , 1984
5. D.L.Chopp, Introduction to High Performance Scientific Computing ,Siam Bookstore

Web Resources :

1. https://prdrklaina.weebly.com/uploads/5/7/7/3/5773421/introduction_to_high_performance_computing_for_scientists_and_engineers.pdf
2. https://www.vssut.ac.in/lecture_notes/lecture1428643084.pdf
3. https://open.umich.edu/find/open-educational-resources/information/high-performance-computing-open-textbook

e_Books :

1. https://homepage.physics.uiowa.edu/~ghowes/teach/ihpc10/lec/ihpc10Lec_IntroHPC10.pdf
2. https://teratec.eu/gb/library/pdf/doc/presse/2006_06_La_Recherche_VA.pdf
3. https://github.com/Foundations-of-HPC/High-Performance-Computing-2023

Pedagogy :

Projector Demonstration and Practical sessions.

Rationale for Nature of the course

Design programs and Develop a MPI Programs using image transformation and image filtering, and image segmentation algorithms.

Activities to be Given :

- Practice to Code Programs
- Software Development

Course Learning Outcomes(CLO):

On successful Completion of the course Students will be able to

CLOs	Course Learning Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CLO1	Apply and Evaluate the HPC Programs	Up to K5
CLO2	Design and Develop a MPI Programs	Up to K5
CLO3	Design and Develop a different programming concepts of OpenMP	Up to K5
CLO4	Develop an efficient PB and Slurm programming	Up to K5
CLO5	Evaluate an efficient CUDA programming	Up to K5

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3 – Application oriented – Solving Problems

K4 –Examining, analyzing, presentation and make inferences with evidences

K5 – Evaluate , making Judgments based on criteria.

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	1	2	1	1	1
CLO2	3	2	1	2	2	1
CLO3	3	3	3	2	2	1
CLO4	3	3-	3	2	2	1
CLO5	3	3	3	2	2	1

1 – Basic Level 2 – Intermediate Level 3- Advanced Level

Annexure - 3

LESSON PLAN :

UNIT	Programs	Hours	Mode of Teaching
I	1.Demo: - Access and best practices on HPC 2. Matrix multiplication with Job scheduling (PB or Slurm)	15	Demo & Practical Session
II	3. Vectors add with malloc shared 4. Vector add program with MPI	15	Demo & Practical Session
III	5. Hello world task for Multithreading with openMP 6.OpenMP shared memory on Host and Device	18	Demo & Practical Session
IV	7. OpenMP Matrix Multiplication with parallelism and Barrier 8.openMP with Reduction on operands and aggregate functionality	15	Demo & Practical Session
V	9. Vector and Matrix multiplication on CUDA 10. Feed forward computing on CUDA	15	Demo & Practical Session

Course Designer
Mrs.M.Murugeswari

Department of Computer Applications				Class : II M.C.A				
Sem.	**Part**	**Course Code**	**Course Title**	**Credits**	**Hrs.**	**CIA**	**Ext**	**Total**
IV	IV	23OPCASEC4P	**SEC 3 :** Data Visualization Lab	2	3	40	60	100

Nature of the Course

Knowledge and Skill Oriented	Employability Oriented	Entrepreneurship Oriented
√	√	

Course Objectives:

1. To learn the basic functions and operations of Excel and tableau
2. To explore to design, build, and deploy various charts for applications,
3. To comprehend, design and deploy the label and heat map
4. To understand and deploy dashboard
5. To understand the functions of tableau for data process.

Course Content :.

Unit	Content	Hours	K-Level	CLO
I	1. Create Pie chart for Sales and Sales % by Country (sorted in descending order) **2.** Create Bar chart for Sales by Country by Year (rounded to nearest thousand and sorted by Grand Total)	9	Up to K5	CLO1
II	3. Create Line char for Sales by Ship Mode (First Class, Same Day, Second Class and Standard Class) 4. Create Scatter chart for Sales by Ship Mode by Country (rounded to the nearest dollar and sorted by First Class)	9	Up to K5	CLO2
III	5. Create heat map for Sales by Category by Sub-Category (in thousands and sorted by sales value in descending order) 6. Design and create the label for vendor list	9	Up to K5	CLO3

IV	7. Design and create the dash board Implement the following using Tableau 8. Sales by Ship Mode (First Class, Same Day, Second Class and Standard Class)	9	Up to K5	CLO4
V	9. Sales by Ship Mode by Country (rounded to the nearest dollar and sorted by First Class) 10. Sales by Category by Sub-Category (in thousands and sorted by sales value in descending order)	9	Up to K5	CLO5

Books for Study :

1. Claus O. Wilke, "Fundamentals of Data Visualization", First Edition, O ' Relly Media Inc., 2019.
2. Kristen Sosulski , " Data Visualization made simple ", First Edition, Routledge Pearson Education, 2019.

Books for Reference:

1. Jack A. Hyman &Luca Massaron, " Data Analytics & Visualization" A –Wiley Brand,First Edition, 2024.
2. Dr. Gaurav Kumar Ameta Dr. Mahipal Singh Deora Prof. Amitava Chakraborty Dr. Pradeep Duraisamy" Data Analytics and Data Visualization", first edition , Scientific,2020.
3. Kieran Healy"Data Visualization: A Practical Introduction" First Edition , Princeton University Press, 2018.
4. Dr. Stephanie D. H. Evergreen "Effective Data Visualization " 2nd edition, sage Publications, 2020.
5. S. Margret Anouncia, Hardik A. Gohel, et al. "Data Visualization: Trends and Challenges Toward Multidisciplinary Perception Hardcover – Import" Kindle edition, 2020.

Web Resources :

1. **https://www.tableau.com/learn/articles/data-visualization**
2. **https://www.geeksforgeeks.org/data-visualization-and-its-importance/**
3. **https://www.techtarget.com/searchbusinessanalytics/definition/data-visualization**

e-books :

1. https://data.vk.edu.ee/PowerBI/Opikud/Fundamentals_of_Data_Visualization.pdf
2. https://haralick.org/DV/Handbook_of_Data_Visualization.pdf
3. https://media.espora.org/mgoblin_media/media_entries/1633/Visualizing_Data.pdf

Pedagogy :

Projector Demonstration and Practical sessions.

Rationale for Nature of the course:

To explore to design, build, and deploy various charts for applications.

Activities to be Given :

- Practice to Code Programs
- Software Development

Course Learning Outcomes(CLO):

On successful Completion of the course Students will be able to

CLOs	Course Learning Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CLO1	Understandingthe basic concepts of Visualizing Data and its Color Scales.	Up to K5
CLO2	Understanding the basic concepts of directory of visualizations and Cumulative Distributions.	Up to K5
CLO3	Analyzing the concepts of Visualizing Proportions and Nested Proportions.	Up to K5
CLO4	Understanding the basic concepts of Visualizing Associations Among Two or More Quantitative Variables	Up to K5
CLO5	Understanding the basic concepts of The Tools the Graphics of Visualizing Data	Up to K5

K1- Remembering and recalling facts with specific answers

K2- Basic understanding of facts and stating main ideas with general answers

K3 – Application oriented – Solving Problems

K4 –Examining, analyzing, presentation and make inferences with evidences

K5 – Evaluate , making Judgments based on criteria.

Mapping of Course Learning Outcomes(CLOs) with Program Outcomes(POs)

	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	3	2	1	2	3
CLO2	3	2	3	3	3	2
CLO3	3	2	4	2	4	2
CLO4	3	2	1	3	2	1
CLO5	2	3	2	1	3	1

1 – Basic Level **2 – Intermediate Level** **3- Advanced Level**

Annexure - 3

LESSON PLAN :

UNIT	Programs	Hours	Mode of Teaching
I	1. Create Pie chart for Sales and Sales % by Country (sorted in descending order) 2. Create Bar chart for Sales by Country by Year (rounded to nearest thousand and sorted by Grand Total)	9	Demo & Practical Session
II	1. Create Line char for Sales by Ship Mode (First Class, Same Day, Second Class and Standard Class) 2. Create Scatter chart for Sales by Ship Mode by Country (rounded to the nearest dollar and sorted by First Class)	9	Demo & Practical Session
III	5. Create heat map for Sales by Category by Sub-Category (in thousands and sorted by sales value in descending order) 6. Design and create the label for vendor list	9	Demo & Practical Session
IV	7. Design and create the dash board Implement the following using Tableau 8. Sales by Ship Mode (First Class, Same Day, Second Class and Standard Class)	9	Demo & Practical Session
V	9. Sales by Ship Mode by Country (rounded to the nearest dollar and sorted by First Class) 10. Sales by Category by Sub-Category (in thousands and sorted by sales value in descending order)	9	Demo & Practical Session

Course Designer
Dr.(Mrs.)J.CHINNA

Annexure - 3

EVALUATION (PRACTICAL)

Internal (Formative) : 40 marks
External (Summative) : 60 marks
Total : 100 marks

Question Paper Pattern for Internal Practical Examination: 40 Marks

S.No	Components	Marks
1.	Major Question	20
2.	Minor Question	10
3.	Record Work	5
4.	Program Explanation / VIVA	5
	Total	**40**

Question Paper Pattern for External Practical Examination (Major) : 60 Marks

S.No	Components	Marks
1.	Major Question	30
2.	Minor Question	20
3.	Record Work	5
4.	Program Explanation / VIVA	5
	Total	**60**

In respect of external examinations passing minimum is **45%** for Post Graduate Courses and in total, aggregate of **50%.**

Latest amendments and revisions as per **UGC** and **TANSCHE** norm is taken into consideration to suit the changing trends in the curriculum.