

SEMESTER II

SMC3TE201: CLOUD COMPUTING										
Teaching Scheme				Credits	Continuous Evaluation Scheme					
					Theory			Practical		Total
Th.	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext	
3	0	0	3	3	20	30	50			100

SMC3TE201: CLOUD COMPUTING		
Course Requisite: The term Cloud Computing refers to a big area of Information Technology that involves: hardware infrastructures, software infrastructures, data center facilities, virtualization technologies, and software Engineering concepts.		
Course Objective: <ol style="list-style-type: none"> To provide a basic understanding of cloud computing concepts, service models, deployment models, and cloud architecture. To explain virtualization technologies, virtual machines, and their role in building cloud infrastructure. To introduce cloud storage architectures, cloud file systems (GFS/HDFS), and service management through SLAs. To develop an understanding of cloud security challenges, risks, and techniques used to secure cloud data and services. To familiarize students with emerging cloud trends, IoT technologies, and major cloud platforms used in modern applications. 		
Course Outcome: After completion of the course students must be able to <ol style="list-style-type: none"> Understand the basics of cloud computing, its models, features, and architecture. Understand virtualization, types of virtualization, and the working of virtual machines. Understand cloud storage systems, file systems like GFS/HDFS, and the concept of SLAs. Understand cloud security concepts, risks, and data protection methods. Understand current trends in cloud computing, IoT technologies, and major cloud platforms. 		
	CLOUD COMPUTING	L
Unit-1:	Introduction to Cloud Computing Definition of Cloud Computing, Characteristics of Cloud computing, Cloud Deployment Models (Introduction, advantages and disadvantages) : Public Cloud, Private Cloud, Community Cloud, Hybrid Cloud, Cloud Service Models (Function, advantages, disadvantages) : IaaS, PaaS, SaaS, Cloud cost benefits, Architectural and Infrastructural components of Cloud Computing.	9
Unit-2:	Virtualization:	9

	Introduction, Virtualization Reference Model, Characteristics of virtualized environment, Differentiate various types of Virtualization : Storage, Network , Desktop , Application server . Definition and Life Cycle of Virtual Machine(VM), VM Migration: Concept and Techniques, VM Consolidation: Concepts, VM Management: Concepts , Advantages and Disadvantages of Virtualization	
Unit-3:	Cloud Storage, Monitoring and Management Cloud Storage System Architecture ,Virtualize Data Centre (VDC) Architecture, Cloud File Systems: Google File System (GFS) : Components, Features, Advantages and Disadvantages and Hadoop Distributed File System (HDFS) :Terminologies like Heartbeat, Balancing and Replication. Service Level Agreement (SLA) 3.5.1 SLA management,Types of SLA , Life cycle of SLA, Cloud Service life cycle phases	9
Unit-4 :	Security in Cloud Computing Cloud Security Concepts: Multi-tenancy, Virtualization, Data Outsourcing and Trust Management, Metadata security , Cloud Risk: Concept, Types of Cloud Risks - Policy and Organizational Risks ,Technical Risks , Legal Risks ,Data security technologies, Data Security risks .Digital Identity and Access Management , Content level security: Pros and Cons, Features of Security-As-A-Cloud Service	9
Unit-5:	Trends in Cloud Cloud trends in supporting Ubiquitous Computing , Enabling Technology in the Internet of Things(RFID, Sensor Networks and ZigBee Technologies, GPS) ,Innovative Applications with the Internet of Things (Ex: Health care: ECG Analysis in Cloud and it's access, CRM and ERP: Business and Consumer Application) , Benefits of Cloud Platforms : Amazon EC2 and S3, CloudStack, Intercloud, Google App Engine, Open stack, Open Nebulla	9

Text Books:

1. Kai Hwang, Geoffrey C. Fox and Jack J. Dongarra, —Distributed and cloud computing from Parallel Processing to the Internet of Things, Morgan Kaufmann, Elsevier – 2012
2. Barrie Sosinsky - Cloud Computing Bible, , Wiley- India, 2010
3. RajkumarBuyya, James Broberg, Andrzej M. Goscinski -Cloud Computing: Principles and Paradigms, Editors:, Wile, 2011

References:

1. Ronald L. Krutz, Russell Dean Vines, Cloud Security: A Comprehensive Guide to Secure Cloud Computing, Wiley-India, 2010
2. GautamShroff, Enterprise Cloud Computing Technology Architecture Applications
3. Dimitris N. Chorafas, Cloud Computing Strategies [ISBN: 1439834539]
4. Barrie Sosinsky, — Cloud Computing Bible John Wiley & Sons, 2010
Tim Mather, SubraKumaraswamy, and ShahedLatif, Cloud Security and Privacy An EnterprisePerspective on Risks and Compliance, O'Reilly 2009

SMC3TE 202: JAVA Programming

Teaching Scheme				Credits	Continuous Evaluation Scheme				
					Theory			Practical	
Th	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext
3	0	0	3	3	20	30	50		
					Total				
					100				

SMC3TE 202: JAVA Programming

Course Requisite:

Knowledge of basic programming.

Course Objective:

1. To learn basics of Java programming.
2. To learn exceptional handling and multithreading concept in java.
3. To learn about java network and file handling.
4. To learn the concepts of event handling using Swing API.
5. To learn about Servlet and Applet .

Course Outcome: After completion of the course students must be able to

CO1: Write OOPs programs, be able to handle Strings.

CO2: Handle runtime errors, and will be able to create multi-threads.

CO3: Gain skills in network programming using Java network APIs, TCP / IP sockets, and distribute application development using RMI.

CO4: Create I / O interfaces using event handling via the Swing API and AWT API and will be able to develop standalone software.

CO5: Obtain the skill to develop the website using APPLLET and Servlet

Programming with Java		L
Unit-1:	Concept of Object Oriented Programming (OOPs) Features of Java, Byte-code, JVM, Java data types, variables and arrays, vector, control statements, Introduction to Java class and object, main() function, garbage collection and finalize() method, this, inheritance, method overriding, dynamic method dispatching, calling constructor of super class, super, passing parameters to super class, final, package, interface, abstract class, class path, String and String Buffer Class.	9
Unit-2:	Exception Handling and Multithreading: Exception types, uncaught Exception, using try- catch, throw, throws, finally, Throwable class and object, Exception classes, create own exception subclass. Creating multiple threads using Thread class and Runnable interface, isAlive(), join(), Thread priorities, SYNCHRONIZATION, DEADLOCK handling, wait(), notify(), notifyAll() methods, Inter Thread Communication (ITC), suspend, resume and stop the threads.	9

Unit-3:	File handling and Java Networking: I/O classes & Interfaces, FILE, The Stream Classes, the Byte stream (InputStream, OutputStream, FileInputStream, FileOutputStream), SERIALIZATION. Java networking: Networking classes and Interfaces, InetAddress, TCP/IP Client/Server socket, URL, URLConnection, Datagram, distributed application development using Remote Method Invocation (RMI).	9
Unit-4 :	Standalone Software development: Delegation event model, Event sources, Event classes, Event listener interface, Introduction to AWT, Layout managers: setLayout(), Swing: benefits of Swing over AWT, JFrames, JPanels, JLabels, JButtons , JTabbedPane, JSplitPane, JOptionPane, JComboBox, JListbox, JtextField, JTextArea, JScrollPane, JMenu, JToolBar, JDialog, JTable, JDesktopPane, JInternalFrame, Java Database Connectivity: JDBC, Connectivity with Oracle/MySQL/MS-Access RDBMS	9
Unit-5:	Website development: The Applet class, Applet Architecture, Applet skeleton, HTML APPLET Tag, Passing parameter to Applet, getDocumentBase(), getCodeBase(), Applet Context, showDocument(). Web server: Tomcat & Jboss-Introduction overview, installation, Configuring, and comparison, Servlet: Background, life cycle, A simple servlet, Servlet Request/ Response interface, reading servlet parameters,cookies, session tracking. Introduction to advanced technologies: EJB, STRUTS, HIBERNATES, SPRING, JSP, JSF, AJAX.	9
Text Books: 1. The Complete Reference Java 2 (Updated to Cover J2SE 1.4) , Herbert Scheldt , Tata McGraw-Hill publishing company Ltd 2. Head First Java, Kathy Sierra, Bert Bates ,O'Reilly Media. 3. Java 2 for Professionals Developers, Michael Morgan SAMS, Techmedia, New Delhi. 4. Core Java 2 Volume-I Fundamentals Cay S. Horstmann Gary Cornell Pearson Education		
References: 1. Java 2 Developer's Hand Book Philip Heller and Simon Roberts BPB Publication, New Delhi 2. Java Swing Loy and Wood O' Reilly		

SMC3TE203:DATA SCIENCE WITH PYTHON										
Teaching Scheme				Credits	Continuous Evaluation Scheme					
					Theory			Practical		Total
Th	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext	
3	0	0	3	3	20	30	50			100

SMC3TE203:DATA SCIENCE WITH PYTHON		
Course Requisite: Basic knowledge of Programming Language.		
Course Objective: <ol style="list-style-type: none"> To Learn basics of Data Science. To learn Basics of Python Spyder (Tool) To learn Data Structures, Numpy and Control Structure in Python To learn Pandas Data Frame and Data Visualization To learn the concept of Machine Learning. 		
Course Outcome: After completion of the course students must be able to <ol style="list-style-type: none"> Understand Basics of Data Science Understand Basics of Python Spyder (Tool) Understand Data Structures, Numpy and Control Structure in Python Understand Pandas Data Frame and Data Visualization Understand the concept of Machine Learning. 		
	SMC3TE203:DATA SCIENCE WITH PYTHON	L
Unit-1:	Introduction: What is Data Science-Pillars of Data Science ,Real-time Example .Importance of Data Science-Data Scientist Skills ,Data Science in Latest Domains , Data Scientist Job Role . Advantages of Data Science ,Disadvantages of Data Science ,The Process of Data Science -Discovery , Data preparation ,Model Planning , Model-building ,Operationalize , Communicate results. Well-Defined Data Science Process. The Role of Data Scientist in Data Science., Tools in Data Science, Applications of data science	9
Unit-2:	Introduction to Python and Basics Of Python Spyder (Tool): What is Python-advantages and disadvantages ,features of python, Introduction Spyder, Setting working Directory, Creating and saving a script file, File execution, clearing console, removing variables from environment, clearing environment, Commenting script files, Variable creation, Arithmetic and logical operators, Data types and associated operations. Python Conditional statement. Python loops and control statement.	9
Unit-3:	Data Structures: Lists-Accessing the list, Python list operations and function. Tuples-creating a tuple, accessing a tuple,tuple operations ,functions and methods. Dictionary-creating dictionary,accessing dictionary,dictionary methods and functions. Sets, Numpy, Array, Matrix and associated operations, Linear algebra and related operations. Dataset- Control structures using Toyota Corolla dataset	9
Unit-4 :	Pandas Data frame: Pandas data frame and data frame related operations, Reading files, exploratory data analysis, Data preparation and preprocessing Data Visualization:	9

	Data visualization on Toyoto Corolla dataset using matplotlib and seaborn libraries Scatter plot, Line plot, Bar plot, Histogram, Box plot, Pair plot	
Unit-5:	Regression: Predictive Modeling, Linear Regression, Model Assessment, Diagnostic to implement linear fit model Classification: Cross validation, Classification, Logistic regression, Performance measure , Clustering: KNN, K-means clustering Multiple Regression: Multiple Regression, Decision Tree and Case Studies	9
Text Books: 1. Practical Data Science with Python 3, Varga, Ervin, ISBN 978-1-4842-4859-1, Publisher- Apress 2. Python for Data Science For Dummies 2nd Edition by John Paul Mueller, Luca Massaron, Wiley, ISBN 9781119547624		
References: 1. Python Data Science Handbook, ISBN-13: 978-1491912058 , Publisher- O'Reilly Media 2. Python Data Science Essentials, By Boschetti Alberto, ISBN: 9781785280429, 9781785280429, Publisher: Packt Publishing Limited		

SMC3TE204: DATA COMMUNICATION AND NETWORKING										
Teaching Scheme				Credits	Continuous Evaluation Scheme					
					Theory			Practical		Total
Th	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext	
3	0	0	3	3	20	30	50			100

SMC3TE204: DATA COMMUNICATION AND NETWORKING		
Course Requisite: Before you start proceeding with this subject, I'm making an assumption that you are already aware about basic computer concepts like what is keyboard, mouse, monitor, input, output, primary memory and secondary memory etc.		
Course Objective: <ol style="list-style-type: none"> To Learn basic of data communications and Computer Networks To learn about Encoding and modulating To learn about multiplexing and its application To learn data link protocols To learn about local area networks 		
Course Outcome: After completion of the course students must be able to <ol style="list-style-type: none"> Understand basic of data communications and Computer Networks Understand about Encoding and modulating Understand multiplexing and its application Understand data link protocols Understand about local area networks 		
	DATA COMMUNICATION & NETWORKING	L
Unit-1:	Introduction to Data Communication: Introduction to Data communication, Components, Networks, Protocols and standards, Basic Concepts: Line Configuration, Topology Transmission mode, analog and digital signals, periodic and aperiodic signals, analog signals, time and frequency domains, composite signals, digital signals.	9
Unit-2:	Encoding and modulating: Digital –to- digital conversion, analog-to-digital conversion, digital to analog conversion, analog to analog conversion, digital data transmission, DTEDCE interface, modems, cable modems. Transmission media: guided media, unguided media, and transmission impairment. Performance, wavelength, Shannon capacity, media comparison.	9
Unit-3:	Multiplexing: Many to one/ one to many, frequency division multiplexing, wave division multiplexing, TDM, multiplexing applications: the telephone system , Error detection and correction : types of errors, detection , VRC, Longitudinal redundancy check, cyclic redundancy check, checksum, error correction.	9
Unit-4 :	Data link Control: Introduction to data link control , Line Discipline, flow control, error control, Data link Protocols: Asynchronous Protocols, synchronous protocols, character oriented protocols, bit – oriented protocols, link access procedures.	9
Unit-5:	Local Area Networks: Ethernet, other Ethernet networks, token bus, token ring, FDDI, Comparison, IEEE802.6 (DQDB) SMDS, Switching: circuit switching, packet switching, message switching, integrated services digital networks (ISDN): services, history, Subscriber access to ISDN.	9

Text Books:

1. Behrouz A. Forouzan: Data Communication and Networking, (2/e) (TMH)

References:

1. William Stallings: Data & Computer Communications, 6/e, Pearson Education.
2. William L. Schweber : Data Communication, McGraw Hill.
3. J. Frey : Computer Communication & Networks, AEW Press.
4. D. Comer : Computer Networks & Internet, Pearson Education.

SMC3TE205: SYSTEM ANALYSIS AND DESIGN

Teaching Scheme				Credits	Continuous Evaluation Scheme				
					Theory			Practical	
Th	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext
3	0	0	3	3	20	30	50		
									100

SMC3TE205: SYSTEM ANALYSIS AND DESIGN
Course Requisite:

Basic knowledge of Programming Language.

Course Objective:

Upon the completion of the course students must be able to:

1. To Learn life cycle of a systems development project
2. To Learn investigating system requirement and feasibility analysis
3. To learn about modelling system requirements.
4. To Learn designing input, output and interface and testing strategies
5. To Learn about implementation and maintenance

Course Outcome: After completion of the course students must be able to

1. Understand life cycle of a systems development project
2. Understand investigating system requirement and feasibility analysis
3. Understand about modelling system requirements.
4. Understand designing input, output and interface and testing strategies
5. Understand about implementation and maintenance

	SYSTEM ANALYSIS AND DESIGN	L
Unit-1:	Introduction: Systems and computer based systems, types of information system, System analysis and design, Role, task and attribute of the system analyst. Approaches to System development:- SDLC, Explanation of the phases, Different models their advantages and disadvantages, Waterfall approach, Iterative approach, Extreme programming RAD model, Unified process, Evolutionary software process model, Incremental model, Spiral model, Concurrent development model.	9
Unit-2:	Analysis: Investigating System Requirements, Activities of the analysis phase, Fact finding methods, Review existing reports, forms and procedure descriptions, Conduct interviews, Observe and document business processes, Build prototypes Questionnaires, Validate the requirements, Structured walkthroughs. Feasibility Analysis: Feasibility Study and Cost Estimates, Cost benefit analysis Identification of list of deliverables.	9
Unit-3:	Modelling System Requirements: Data flow diagram logical and physical, Structured English, Decision tables, Decision trees, Entity relationship diagram, Data dictionary. Design:- Design phase activities, Develop System Flowchart, Structure Chart Transaction, Analysis, Transform Analysis, Software design and documentation tools, Hipo chart, Designing databases, Entities, Relationships, Attributes, Normalization.	9
Unit-4 :	Designing input, output and interface: Input design, Output design, User interface design Testing: Strategic approach to software testing, Test series for conventional software Test strategies for object – oriented software, Validation testing, System testing, Debugging.	9

Unit-5:	Implementation and Maintenance: Implementation and Maintenance, Activities of the implementation and support phase. Documentation, Use of case tools, Documentation – importance, types of documentation	9
Text Books: 1. “Analysis and Design of Information Systems” : Senn, TMH. 2. “System Analysis and Design” : Howryskiewicz, PHI. 3. “System Analysis and Design” : Awad. 4. “Software Engineering A practitioners Approach” : Roger S. Pressman TMH.		
References: 1. “System Analysis and Design Methods” :Whitten, Bentley. 2. “Analysis and Design of Information Systems”: Rajaraman, PHI.		

SMC3TE206: SOFTWARE TESTING

Teaching Scheme				Credits	Continuous Evaluation Scheme				
					Theory			Practical	
Th.	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext
3	0	0	3	3	20	30	50		
									100

SMC3TE206: SOFTWARE TESTING
Course Requisite:

Any prerequisites or preconditions that must be fulfilled prior to executing the test.

Course Objectives:

1. To Learn fundamentals of software testing
2. To Learn STLC and black box testing, white box testing
3. To Learn Software Code Testing Code
4. To Learn Software Testing types and Software Testing documentation
5. To Learn Test planning and quality assurance

Course Outcomes:

After successfully completing the course, the students will be able to

1. Understand fundamentals of software testing
2. Understand STLC and black box testing, white box testing
3. Understand Software Code Testing Code
4. Understand Software Testing types and Software Testing documentation
5. Understand Test planning and quality assurance

SOFTWARE TESTING		
Unit-1:	Introduction to Software Testing Software testing fundamentals: What is a bug? Why do bugs occur? The cost of bugs. Goals of a software tester. Characteristics of s/w tester. Software development process: product component, software project staff, software development life cycle model.	9
Unit-2:	Software Testing Mechanism The realities of s/w testing : testing axioms, s/w testing terms and definitions, Software Testing Life Cycle (STLC). Examining the specifications : Black box and white box testing, Static and dynamic testing, Static black box testing, Performing a high level review of the specification, low level specification test techniques. Testing the s/w with blinders on – Dynamic black box testing, Test to pass and test to fail, Equivalence partitioning, data testing, State testing, Other black box test techniques.	9
Unit-3:	Software Code Testing Examining the code : Static white box testing, Formal review, Coding standards and guidelines, Generic code review checklist. Testing the software with X-ray glasses: Dynamic white box testing, Dynamic white box testing verses debugging testing the pieces.	9
Unit-4 :	Software Testing types and Software Testing documentation Types of testing Configuration testing, Compatibility testing, Foreign language testing, Usability testing, Testing the documentation, Testing for software security	9
Unit-5:	Software Quality Assurance Test planning and quality assurance : Planning the test , Goal of test planning, Various test planning topics, Writing and tracking test cases, Goal of test case planning, Test case planning overview	9

Text Books:

1. Ron Patton, “Software Testing” SAMS Publishing
2. Marnei L. Hutcheson – “Software Testing Fundamentals: Methods and Metrics” WILEY Pub.

References:

1. Pressman “Software Engineering” McGraw-Hill publications
2. StrinivasanDesikan and GopalswamiRamesh, ”Software Testing – Principles and Practices” Pearson

SMC3TE207: DATA MINING										
Teaching Scheme				Credits	Continuous Evaluation Scheme					
					Theory			Practical		
Th.	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext	
3	0	0	3	3	20	30	50			100

SMC3TE207:DATA MINING		
Course Requisite: Basic knowledge of algorithms and web pages.		
Course Objective: <ol style="list-style-type: none"> 1. Learn data mining concepts understand association rules mining. 2. Discuss classification algorithms learn how data is grouped using clustering techniques. 3. To develop the abilities of critical analysis to data mining systems and applications. 4. To Understand Clustering techniques . 5. To implement web and text mining. 		
Course Outcome: After completion of the course students must be able to <ol style="list-style-type: none"> 1.Ability to perform the preprocessing of data and apply mining techniques on it. 2. Ability to identify the association rules, classification and clusters in large data sets. 3. Ability to identify the classification in large data sets. 4. Ability to solve real world problems in business and scientific information using data mining clustering techniques 5. Ability to classify web pages, extracting knowledge from the web. 		
	DATA MINING	L
Unit-1:	Introduction to Data Mining: Introduction, What is Data Mining, Definition, KDD, Challenges, Data Mining Tasks, Data Preprocessing, Data Cleaning, Missing data, Dimensionality Reduction, Feature Subset Selection, Discretization and Binaryzation, Data Transformation; Measures of Similarity and Dissimilarity- Basics.	9
Unit-2:	Association Rules: Problem Definition, Frequent Item Set Generation, The APRIORI Principle, Support and Confidence Measures, Association Rule	9

	Generation; APRIORI Algorithm, The Partition Algorithms, FP-Growth Algorithms, Compact Representation of Frequent Item Set- Maximal Frequent Item Set, Closed Frequent Item Set.	
Unit-3:	Classification: Problem Definition, General Approaches to solving a classification problem, Evaluation of Classifiers , Classification techniques, Decision Trees-Decision tree Construction , Methods for Expressing attribute test conditions, Measures for Selecting the Best Split, Algorithm for Decision tree Induction ; Naive-Bayes Classifier, Bayesian Belief Networks; K- Nearest neighbor classification-Algorithm and Characteristics.	9
Unit-4 :	Clustering: Problem Definition, Clustering Overview, Evaluation of Clustering Algorithms, Partitioning Clustering-K-Means Algorithm, K-Means Additional issues, PAM Algorithm; Hierarchical Clustering-Agglomerative Methods and divisive methods, Basic Agglomerative Hierarchical Clustering Algorithm, Specific techniques, Key Issues in Hierarchical Clustering, Strengths and Weakness; Outlier Detection	9
Unit-5:	Web and Text Mining: Introduction, web mining, web content mining, web structure mining, we usage mining, Text mining –unstructured text, episode rule discovery for texts, hierarchy of categories, text clustering.	9
<p>Text Books:</p> <ol style="list-style-type: none"> 1.Data Mining- Concepts and Techniques- Jiawei Han, Micheline Kamber, Morgan Kaufmann Publishers, Elsevier, 2 Edition, 2006. 2. Introduction to Data Mining, Pang-Ning Tan, Vipin Kumar, Michael Steinbach, Pearson Education. 3. Data mining Techniques and Applications, Hongbo Du Cengage India Publishing. <p>References:</p> <ol style="list-style-type: none"> 1. Data Mining Techniques, Arun K Pujari, 3rd Edition, Universities Press. 2. Data Mining Principles & Applications – T.V Suresh Kumar, B.Esware Reddy, Jagadish S Kalimani, Elsevier. 3. Data Mining, Vikram Pudi, P Radha Krishna, Oxford University Press. 		

SMC3TE208: IMAGE PROCESSING

Teaching Scheme				Credits	Continuous Evaluation Scheme				
					Theory			Practical	
T h.	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext
3	0	0	3	3	20	30	50		
					Total				
					100				

24SUMCAL208: IMAGE PROCESSING

Course Requisite: Knowledge of programming and mathematics.

Course Objective:

1. To Learn fundamental concepts of a digital image processing system
2. To Learn techniques for image enhancement
3. To Learn techniques for image restoration
4. To Learn image segmentation and representation techniques.
5. To Learn Image compression standards

Course Outcome:

1. Understand fundamental concepts of a digital image processing system
2. Understand techniques for image enhancement
3. Understand techniques for image restoration
4. Interpret image segmentation and representation techniques.
5. Interpret Image compression standards

IMAGE PROCESSING		L
Unit-1:	Digital Image Fundamentals: Digital Image through Scanner, Digital Camera. Concept of Gray Levels. Gray Level to Binary Image Conversion. Sampling and Quantization. Relationship between Pixels. Imaging Geometry. 2D Transformations-DFT, DCT, KLT and SVD.	9
Unit-2:	Image Enhancement in Spatial Domain Point Processing, Histogram Processing, Spatial Filtering, Enhancement in Frequency Domain, Image Smoothing, Image Sharpening.	9
Unit-3:	Image Restoration Degradation Model, Algebraic Approach to Restoration, Inverse Filtering, Least Mean Square Filters, Constrained Least Squares Restoration, Interactive Restoration.	9
Unit-4 :	Image Segmentation Detection of Discontinuities, Edge Linking and Boundary Detection, Thresholding, Region Oriented Segmentation.	9
Unit-5:	Image Compression Redundancies and their Removal Methods, Fidelity Criteria, Image Compression Models, Source Encoder and Decoder, Error Free Compression, Lossy Compression.	9

Text Books:

1. Digital Image Processing: R.C. Gonzalez & R. E. Woods, Addison Wesley/ Pearson Education, 2nd Ed, 2004.
2. Digital Image Processing: William K. Pratt, John Wiley, 3rd Edition, 2004.

References:

1. Fundamentals of Digital Image Processing: A. K. Jain , PHI.
2. Digital Image Processing using MAT LAB: Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins: Pearson Education India, 2004.

SMC2TI210 : COMMUNICATION SKILLS										
Teaching Scheme				Credits	Continuous Evaluation Scheme					
					Theory			Practical		
T h.	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext	
2	0	0	2	2	20	30	50			50

SMC2TI210 : COMMUNICATION SKILLS		
Course Requisite: Knowledge of programming and mathematics.		
Course Objective: <ol style="list-style-type: none"> To Learn Basics of Communication To Learn to prepare Job Application and Interview. To Learn Presentation Skills 		
Course Outcome: <ol style="list-style-type: none"> Understand Basics of Communication Understand to prepare Job Application and Interview. Understand Presentation Skill 		
	COMMUNICATION SKILLS	L
Unit-1:	Introduction: What is Communication? The Process of Communication, Barriers to Communication Different Types of Communication , Written vs. Oral Communication, Different Types of Face-to-Face Interactions , Email Communication, Drafting, Preparing Agenda and Minutes for Meetings.	10
Unit-2:	Communication Techniques: Telephone Techniques, Job Applications and Interview and its types , Do's and Don'ts in an interview, Basic Interview questions.	10
Unit-3:	Presentations Skills: Negotiation Skills Non-verbal communication in presentation, Preparation of a good presentation, Visual aids/Materials in presentation	10
Text Books: <ol style="list-style-type: none"> Developing Communication skills By Krishna Mohan/ Meera Banerji, Macmillan India Ltd. Communication Skills By Leena Sen-PHI Learning Pvt Ltd.New Delhi. 		
References: <ol style="list-style-type: none"> Business Communication By Asha Kaul, Prentice- Hall of India, Pvt.Ltd, New Delhi. 		

SMC2PE202: JAVA Programming LAB

Teaching Scheme				Credits	Continuous Evaluation Scheme					
					Theory			Practical		Total
Th	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext	
0	0	4	4	2				25	25	50

SMC2PE202: JAVA Programming LAB

Course Requisite:
Basic knowledge of Programming

Course Objective:

1. To learn basics of Java programming.
2. To learn exceptional handling and multithreading concept in java.
3. To learn about java network and file handling.
4. To learn the concepts of event handling using Swing API.
5. To learn about Servlet and Applet .

Course Outcome:

1. Write OOPs programs, be able to handle Strings.
2. Handle runtime errors, and will be able to create multi-threads
3. Gain skills in network programming using Java network APIs, TCP / IP sockets, and distribute application development using RMI.
4. Create I / O interfaces using event handling via the Swing API and AWT API and will be able to develop standalone software.
5. Obtain the skill to develop the website using APPLLET and Servlet.

List of Program

Sr. No.	Name of Experiments
1	Write a program to demonstrate creating object a class and call the methods of the class with different access modifiers (public, and private)
2	Write a program to demonstrate garbage collection through the finalize method () with a suitable example.
3	Write a program to demonstrate inheritance single and multilevel with a suitable example code.
4	Write a program to demonstrate interface and abstract class with a suitable example code.
5	Write a program to demonstrate how to create a package with a suitable example code.
6	Write a program to demonstrate handling the String through String class of Java. Use suitable example.
7	Write a program to demonstrate to create own exception class by using a suitable example code.
8	Write a program to create multi-thread using Runnable interface with a suitable example code.
9	Write a program to demonstrate isAlive() method of the thread class with a suitable example code.
10	Write a program to demonstrate read and write file content from and to the File using

	FileInputStream and FileOutputStream class.
11	Write a program to demonstrate how to send and receive text message using TCP/IP socket between client and server.
12	Write a program to create an I/O interface by using necessary suing components
13	Write a program to handle event of all source of event source component of Java Swing.
14	Create an I/O interface with database connectivity, and insert and retrieve data in to the table.
15	Write a program to demonstrate how to pass parameters from HTML document to the Applet with a suitable example code.

SMC2PE203: DATA SCIENCE WITH PYTHON LAB

Teaching Scheme				Credits	Continuous Evaluation Scheme					
					Theory			Practical		Total
Th	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext	
0	0	4	4	2				25	25	50

SMC2PE203: DATA SCIENCE WITH PYTHON LAB

Course Requisite:
Basic knowledge of Programming

Course Objective:

1. To Understand the basics of Python.
2. To Learn how to implement spider tools, Data Types, and operators.
3. To Understand the list Tuples, Array, and Loop Structures.
4. To Understand the concept of Pandas Data Frame
5. To Understand the concept of Regression

Course Outcome: After completion of the course students must be able to

1. Understand the basics of Python.
2. Implement spider tools, Data Types, and operators.
3. Understand the list Tuples, Array, and Loop Structures.
4. Understand the concept of Pandas Data Frame
5. Understand and Perform the Regression

List of Program

1. Defining instance variables using a constructor.
2. Write a Python function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument.
3. Write a python program to create a tuple and to find greatest and smallest element form the tuple.
4. Implement a class Student with information as rollno , class ,name. The information must be entered by the user.
5. Write a Python program to ADD, SUBSTRACT, MULTIPLY, AND DIVIDE two Pandas Series
6. Write a python program to read an entire text file.
7. Write a program to perform different Arithmetic Operations on numbers in Python.
8. Write a python program to define a module to find Fibonacci Numbers and import the module to another program.
9. Write a program in python and create a pandas dataframe and locate the row.
10. Write a program in python to display a digital clock.
11. Write a program in python to sort the given list without using in-built function.
12. Write a program in python to check whether the number entered is Armstrong or not.
13. Write a Python Program to merge to python dictionaries.
14. Write a Python Program to multiply two matrices.
15. Write a Program to perform Regression.

SMC4MP209: MINOR PROJECT

Teaching Scheme				Credits	Continuous Evaluation Scheme					
					Theory			Practical		Total
Th	Tu	Pr.	Total Hours		TAE	CAE	ESE	Int	Ext	
0	0	3	3	4				50	50	100

Students are expected to present a seminar & submit a mini-project with report for assessment & evaluation