C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF: - Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03MCP1
NAME: - Mobile Computing (MC)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03MCP1	Mobile Computing	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:

- Find tips and tricks to streamline the development process and take advantage of unique features of mobile based application development.
- To provides comprehensive guidance on designing, developing, testing, debugging, and distributing professional mobile based applications.

Prerequisites:

- Fundamentals knowledge of Core Java Programming, GUI Controls, Database Terminologies.

Course Outline:

Sr.No	Course Contents	Hours
1	Overview of Android; setting up android development environments	**3**
2	Android Application Design Essentials	**2**
3	Android Application Design Essentials; anatomy of an android application.	**2**
4	Android Application Design Essentials; managing android resources	**4**
5	Android User Interface Design Essentials; user interface screen elements	**8**
6	Android User Interface Design Essentials; layouts and working with animation	**6**

7	Using Common Android APIs; Data & Storage APIs	**8**
8	Using Common Android APIs; Content Providers	**4**
9	Using Common Android APIs; Telephony APIs	**4**
10	Android Application Design Principles; Notifications	**4**
11	Android Application Design Principles; Services. Deploying Android App to the Store	**3**

Learning Outcomes:

- Students learn to develop professional android applications.

Teaching & Learning Methodology:

- Using Whiteboard & Multimedia or OHP

Books Recommended:

Text Books:

1. Android Wireless Application Development, **Lauren Darcey and Shane Conder**, Pearson Education, 2nd Ed.
2. Beginning Android, **Mark L Murphy**, Wiley India Pvt Ltd.

E-Resources:

1. developer.android.com

C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03MIS1
NAME: – Management Information System

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			Total
		Th	Tu	Pr	Total		Sessional Exam		University Exam		Internal		University	
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03MIS1	Management Information System	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:

- The objective of this course is to emphasize on the application of information to business management. It also aims at providing a conceptual insight on the functions of management, importance of information, information needs at different levels, systems approach to management of information, process of development and implementation of MIS and thus improving the design and use of information systems.

Prerequisites:

- NIL

Course Outline:

Sr.No.	Course Contents	Hours
1	**Information and Management** Definition of Information, Types of Information, Sources, Values and Control of Information, Implications of Information in Business & MIS Need for Information Systems, Examples of Information Systems, Impact of IT on organizations and society	8
2	**Basics of MIS** Decision-making, Process and Modeling, MIS and Decision-Making, Classification of Information, Methods of Data and Information Collection, Model of Human as Information Processor, Knowledge & Knowledge Management Systems, Business Intelligence, System Concept & Control, General Model of MIS, Development Process of MIS, Implementation of MIS, Decision Support System, Group Decision Support System, Knowledge Based Expert Systems, Benefits of DSS	20
3	**MIS in Functional Areas of Manufacturing & Service Sectors** Application of MIS in various Manufacturing Sectors as well as Non-Manufacturing	10

	(Service) Sectors	
4	**New Concepts in MIS** e-Business, Information Security, Computer Crime & Cyber terrorism, Computer Forensics, Information Life Cycle Management	10

Learning Outcomes:

- After completion of the course the student will be able to understand and appreciate the basic concepts of MIS, importance of MIS for an organization and will be able to contribute effectively in the development and implementation of MIS in different types of organizations.

Teaching & Learning Methodology:

- Using multimedia - The institute provides an excellent academic environment with accent on self-learning. The teaching and learning methodologies follow a rigorous regime that involves intensive and extensive working on challenging academic assignments.

Books Recommended:
Text Books:

1. Analysis and Design of Information Systems, **indrajit Chaetterjit**, PHI Publication, 2nd Edition (2006)
2. Management Information Systems – Text & Cases, Tata McGrawHill Publication, 4th Edition (2009)
3. Management Information Systems – Managing the Digital Firm, Pearson Education, 11th Edition (2010)

E-Resources:

1.
http://www.tutorialspoint.com/management_information_system/management_information_system.htm
http://www.wiziq.com/tutorials/management-information-system
http://www.downloadmela.com/video-watch?sno=135

C. U. SHAH UNIVERSITY
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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03CNS1
NAME: - Computer Networks & Security (CNS)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			Total
		Th	Tu	Pr	Total		Sessional Exam		University Exam		Internal		University	
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03CNS1	Computer Networks & Security	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:

- To be able to understand the concepts of Designing Software and Getting Cost Estimations

Prerequisites:

- Knowledge of Basic System Analysis and Design

Course outline:

Sr.No.	Course Contents	Hours
1	**Computer Network Overview**	**12**
	1. Goal and Application of Computer Network. (1) **2. Network Hardware (2)** a. Network Devices b. Categories of Network c. Physical Structure of Network **3. Network Software(2)** a. Protocols b. Design Issues of Network Models c. Network Standardization **4. Reference Models** **a. OSI Reference Model, (1)** • Responsibility of each Layer **b. TCP/ IP Protocol Suite, (2)** i. Role of Each Protocol in TCP/IP Ref Model, ii. Differences between OSI and TCP/IP.	

	5. Addressing: (1) a) Physical address, b) Logical address , c) Port Address , d) Specific Address **6. Topologies and Computer Network Architecture: (3)** a) Introduction to x.25 Network, b) ATM & Frame Relay, c) Ethernet d) Wireless LAN	
2	**Physical Layer and Media:**	**9**
	1. Basic of communication, (2) **a.** Analog and digital Signal b. Transmission Impairment **2. Performance (1)** a. Data rate limits b. Bandwidth, Throughput, Latency (Delay), Bandwidth-Delay Product, Jitter) **3. Multiplexing methods (1)** a. FDMA, TDMA,WDM **4. Transmission Medium (2)** a. Guided media b. Unguided media **5. Switching: (1)** a. Circuit Switching Networks b. Packet switching Networks 6. **An example of Transmission Medium Application (2)** a. PSTN (Public Switch Telephone Network) b. Cable TV	
3	**Data Link Layer:**	**8**
	1. Design Issues : (1) **2. Basics of Error Detection & Error correction Code: (1)** **3. Data link Control: (1)** a. Abstract view of Noiseless Channel Protocols & Noisy Channels Protocols: **4. Examples of Data link control: (1)** a. HDLC b. PPP (Point to Point) **5. Medium Access: (2)** a. **Random Access-** Aloha**,** CSMA,CSMA/CD,CSMA/CA b. **Control Access-** Reservation, Polling, Token passing **c. Channelization** **6. IEEE Standard : (2)** a. Wired 802 for LAN, MAN Ethernet (Token Bus, Token Ring)	

	b. Wireless (Bluetoth,Wifi)	
4	**Network Layer:**	**8**
	1. Network Layer design issue. **2. IPV4 Addressing (2)** a. IP classification b. Classless IP c. IPV6 Addresses and structure d. Internetworking: e. Translation from IPv4 to IPv6: Tunneling **3. IPV4 Delivery Mechanism : ARP, RARP (1)** **4. Other Network Layered Protocol : ICMP, IGMP (1)** **5. Routing algorithms: (4)** a. Deterministic and Adaptive Routing (Direct vs Indirect Routing): b. Intra and inter domain protocol (Centralized and distributed) c. Shortest path (Distance Vector) d. Optimization e. Link state Routing(flow based routing) i. Path Vector Routing, Flooding **f.** Broadcast & Multicast routing	
5	**Transport Layer protocol and Congestion control**	**7**
	Transport layer services primitives: **Transport layer protocol : (UDP,TCP and SCTP) (2)** **Congestion control : (2)** a. Open-loop Congestion control b. Close loop congestion control **Congestion Examples : (1)** a. Open-loop Congestion in TCP **Quality of services : (2)** a. Flow characteristics b. Flow classes	
6	**The Application Layer:**	**6**
	DNS: (2) **Remote login: (1)** **File Transfer: (1)** **WWW & HTTP: (2)**	
7	**Network security & Cryptography:**	**10**
	Security services (2) **Cryptography (2)** **Symmetric Key Algorithms, (2)** **Public Key Algorithms, (2)** **Digital Signatures (2)**	

Learning Outcomes:

- Able to identify the network Devices.
- Able to create basic client / server application.
- Able to perform application of communication protocol (Data link and Network layers).

- Able to understand Transport layer communication protocol.
- Able to improve quality of services in network implementation with protocol.
- Able to implement security for message and data through different encryption technique.

Teaching & Learning Methodology:

- The module will be delivered via lectures (by teaching aids i.e. Projectors PPT and PDF's) and assignments. Students are also expected to undertake self-study during this course.

Books Recommended:

Text Books:

1. Computer Networking, ***Andrew S. Tanenbaum***, Prentice Hall, Fourth Edition
2. Data Communications and Networking, ***Behrouz A. Forouzan***, Tata McGraw-Hill, Fourth Edition

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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03PYP1
NAME: - Python Programming (Major Elective)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			Total
		Th	Tu	Pr	Total		Sessional Exam		University Exam		Internal		University	
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03 PYP1	Python Programming	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:

- To able to develop, automate, and test applications and systems using one of the open source programming language.

Pre-requisites:

- Students should have prior programming experience and be familiar with basic concepts such as variables/scopes, flow-control, and functions.
- Prior exposure to object-oriented programming concepts is not required, but definitely beneficial.

Course outline:-

Sr. No.	Course Contents	Hours
1	**The Python Language:** Lexical Conventions and Syntax, Types and Objects, Operators and Expressions Flow Control and Exceptions, Modules	**12**
2	**Python's Programming Paradigms:** Imperative/Procedural/Scripting, Functional Programming, Object Oriented Programming	**15**
3	**Working with Python:** Tools and Environment	**10**
4	**The Python Library:** String and Text Handling, Data Structures and Algorithms, Graphical Programming	**11**

Learning Outcomes:

- Open source software programming language

Books Recommended:

Text Books:

1. Exploring Python, **Timothy Budd**, Tata McGraw Hill Publication.
2. Practice of Computing using Python 2nd Edition, **William F. Punch & Richard Enbody**, Pearson Publication.
3. Introduction to Computing and Programming using Python 3rd Edition, **Guzdial & Ericson**, Pearson Publication.
4. Object-Oriented Programming in Python, 1/E, **Goldwasser & Letscher**, Prentice Hall

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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03NET1
NAME: - Programming Using ASP & C#.NET (Major Elective)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03NET1	Programming Using ASP & C#.NET	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:

- Gain a thorough understanding of the philosophy and architecture of Web applications using ASP.NET
- Acquire a working knowledge of Web application development using Web Forms and Visual Studio .NET
- Optimize an ASP.NET Web application using configuration, security, and caching
- Access databases using ASP.NET and ADO.NET

Prerequisites:

- knowledge of basic object-oriented programming and the .NET Framework

Course Outline:

Sr. No.	Course Contents	Hours
1	**Microsoft.Net Introduction** Features and Advantages Microsoft.Net Framework and Architecture MS .Net Platform Microsoft .Net and Windows DNA, Microsoft .Net Architecture Hierarchy Features of Microsoft .Net Platform Multilanguage development, Platform and Processor independent, Automatic Memory Management, Easy Deployment, Distributed Architecture, Interoperability with Unmanaged code, Security, Performance and Scalability Component of the .Net Architecture MS .Net Runtime, Managed/Unmanaged code, Intermediate language, Common type System, MS .Net Base Class Library (BCL), Assemblies, Metadata, Assemblies and Modules, Assembly Cache, Reflection, Just In Time Compilation, Garbage Collation	8

2	**Introduction to C# .Net** C# Program Console Application Development Compiling and Execution, Defining a Class, Declaring the 'main()' Method, Organizing Libraries with Namespace, Using the 'using' keyword, Adding Comments **C# Data Types** Values Types- Primitive Data Type, Reference Type **C# Control Structure** Using the if statement, Using the if-else statement, Using the switch-case statement, Using the for statement, Using the while statement, Using the do-while statement, Using the break statement, Using the continue statement, Using the goto statement, Using the return statement **C# Properties and Indexers** Using Properties, Get Accessor, Set Accessor Accessing List with Indexers **Delegates and Events in C#** Delegates , Single Cast and Multicast, Events **Exception Handling in C#** Using the try block, Using the catch block, Using the finally block, Using the throw statement Inheritance, Polymorphism and Interfaces in C# Structures in C# Operator Overloading in C# Using Generics in C#	18
3	**Web Application Development with ASP .Net** Introduction to the ASP .Net,ASP .Net Controls, ASP .Net Pages, ASP .Net Framework, Global.asax Page **Standard Controls** Displaying Information, Accessing User Input, Submitting Forms Data Displaying Images, Using the Panel Control, Using the Hyper Link Control **Validation Controls** Overview of the Validation Controls, RequiredFieldValidator Control RangeValidator Control , CompareValidator Control, RegularExpressionVelidator Control, CustomValidator Control ValidationSummary Control, Custom Validation Control **Rich Controls** Accepting File Uploads, Displaying a Calendar, Displaying Advertisements Displaying Different Page Views, Displaying Wizard **Designing ASP .Net Websites** Designing Websites with Master Pages Creating Master Pages, Modifying Master Page Content Loading Master Pages Dynamically Designing Websites with Themes Creating Themes, Adding Skins to Themes Adding Cascading Style Sheets to Themes Creating Global Themes Applying Themes Dynamically Creating Custom Controls with User Controls Creating User Controls	12

	AJAX and User Controls Dynamically Loading User Controls	
4	**Database Application Development with ADO .Net** **Introduction to ADO .Net** ADO .Net Architecture Understanding the Connection Object Building the Connection String Understanding the Command Object Understanding DataReaders Understanding DataSets and DataAdapters DataTable, DataColumn, DataRow Differences between DataReaders model and DataSet model Understanding the DataView Object Working with System.Data.OleDb Using DataReaders, Using DataSets **Performing Data Access in ASP .Net** Overview of Data Access, Using SqlDataSource Control, Using different List Controls, Using the GridView Control Using the DetailsView Control, Using the FormView Control Using the Repeater Control, Using the DataList Control **Site Navigation** Site Maps, SiteMapPath Control, Menu Control, Tree View Control **Security in ASP .Net** Using the Login Control, Using the CreateUserWizard Control Using the LoginStatus Control, Using the LoginName Control Using the ChangePassword Control, Using the PasswordRecovery Control Using the LoginView Control **AJAX** AJAX implementation in ASP .Net	10

Learning Outcomes:

- The course is for application developers and architects who wish to become competent at designing and implementing Web applications in a .NET environment.
- After completion of this course students are able to creating & manipulating dynamic web application.

Teaching & Learning Methodology:

- Using Whiteboard & Multimedia or OHP

Books Recommended:

Text Books:

1. Inside C#, **by Tom Archer**, Microsoft Press
2. Microsoft ADO .Net by **Rebecca M. Riordan**, Microsoft Press
3. ASP .Net Unleashed, Sams Publication
4. Beginning C#, Wrox Publication
5. Professional ADO .Net
6. Microsoft .Net XML Web Services Step by Step by Adam Freeman

C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03CGS1
NAME: - Computer Graphics (Major Elective)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03 CGS1	Computer Graphics	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:

- To know and be able to describe the general software architecture of programs that use 2D computer graphics.
- Know and be able to discuss hardware system architecture for computer graphics. This includes, but is not limited to: graphics pipeline, frame buffers, and graphic accelerators/co-processors.

Pre-requisites:

- Knowledge of Computer Programming, algorithms and mathematical method to implement graphics logic through the programming.

Course outline:-

Sr. No.	Course Contents	Number of Hours
1	**Introduction:** Computer Graphics, Elements of a Graphics, Application of Computer Graphics, I/O Devices, Display System, Color Monitors, Display Processors, Resolution	**12**
2	**Scan Conversion Techniques :** Image representation, Simple Line drawing Algorithm, DDA Line Drawing Algorithm, Bresenham's Line Drawing Algorithm, Simple Circle drawing Algorithm, Mid point Circle Drawing Algorith,. Bresenham's Circle Drawing Algorithm	**10**
3	**2D & 3D Transformation :** Translation, Rotation, Scaling, Reflection, Curves, Bezier curve, B-spline curve, viewing Transformation, Parallel and Perspective Projections	**10**

4	**Graphics Operations :** Clipping, Window Port & Viewport Clipping, Line Clipping Algorithms, Sutherland Cohen Line Clipping algorithms, Introduction to Hidden Surface elimination, Basic illumination model, diffuse reflection, specular reflection, phong shading, Gourand shading ray tracing, color models like RGB, YIQ, CMY, HSV etc.	**08**
5	**Visibility:** Character Generation, Generation of Bar Chart, Generation of Pie Chart, Stack Based Seed Fill Algorithm, Scan Line Seed Fill Algorithm, Z- buffer algorithms	**08**

Learning Outcomes:

- Be able to design and implement models of surfaces, lights, sounds, and textures (with texture transformations) using a 2D graphics API.
- Be able to discuss the application of computer graphics concepts in the development of computer games, information visualization, and business applications.
- Be able to discuss future trends in computer graphics and quickly learn future computer graphics concepts and APIs.

Books Recommended:
Text Books:

1. Mathematical Elements for Computer Graphics, **D.Rogers and J. Adams**, McGraw –Hill International Edition.
2. Procedural Elements for Computer Graphics, **David F. Rogers**, McGraw Hill
3. Computer Graphics (Schaum Series), **Lipschutz**, McGraw Hill.
4. Computer Graphics, **Dr. N. N. Jani**, Akshat Publication.

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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03AJV1
NAME: - Advanced Java Programming (Major Elective)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03 AJV1	Advanced Java Programming	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:

- To be able to understand the concepts of Database Programming, using JDBC.
- To develop proficiency in creating web based applications using the Servlets and JSP, following MVC architecture

Technical Prerequisites:

- Knowledge of the Core Java Programming

Course outline:-

Sr. No.	Course content	No. of Hours
1	Introduction to JFC and Swing, Features of the Java Foundation Classes, Swing API Components, JComponent Class, Windows, Dialog Boxes, and Panels, Labels, Buttons, Check Boxes, Menus, Toolbars, Implementing Action interface, Pane, JScrollPane, Desktop pane, Scrollbars, Lists and Combo Boxes, Text-Entry Components, Colors and File Choosers, Tables and Trees.	12
2	Java Database Connectivity, JDBC Product, Types of Drivers, Two-Tier Client/Server Model, Three-Tier Client/Sever Model ,Basic Steps of JDBC, Creating and Executing SQL Statement, The Result Set Object, Working with Database MetaData	8
3	Servlet Basics, Basic Servlet structure, Servlets Generating text/html content, Packaging Servlets, The servlet life-cycle, Handling Client Request Form Data, Reading Form Data from Servlets, Handling Client Request, Reading Request Headers, Understanding HTTP/1.1 Request Headers, Changing the page according to how the user got there, Accessing the Standard CGI Variables,Generating the Server Response, HTTP Status Codes, Specifying Status Codes, HTTP / 1.1 Status Codes, Using Redirections, HTTP Response Headers, Setting Response Headers from Servlets, Understanding HTTP / 1.1 Response Headers, Using Servlets to Generate JPEG Image,	14

	Handling Cookies, Remembering Usernames and Passwords, Deleting Cookies, Sending and Receiving Cookies, Using Cookie Attributes, Differentiating Session Cookies from Persistent Cookies, Using Cookies to Remember User Preferences, Session Tracking, Need for Session Tracking, Session Tracking API, Encoding URLs Sent to the Client, Accumulating a List of User Data	
4	JSP Basic Syntax, HTML Text, HTML comments, Template Text, JSP Comment, JSPExpression, JSP Scriptlet, JSP Declaration, JSP Directives, JSP Action, JSP Expression Language Element, Custom Tag (Custom Action), Escaped Template Text, Using JSP Scripting, Elements, Using Predefined Variables, XML syntax for Expressions, Scriptlets, Declarations and Directives, Using Scriptlets, Using Declarations, Using Page Directive,Using Standard Actions Tags – <jsp:plugin>, <jsp:forward>, <jsp:include>,Using JavaBeans in JSP pages – <jsp:useBean>, <jsp:getProperty>, <jsp:setProperty>, Sharing Beans, Use of Scopes and their Attributes,Integrating Servlets and JSP in a Web Application (MVC Architecture for Web Applications), Implementing MVC with Request Dispatcher	9
5	RMI Architecture, Designing RMI application, Executing RMI application	5

Learning Outcomes:

- Ability to create Web applications using Servlets and JSP, following MVC architecture for developing web applications
- Ability to fetch data from a database server and use in a web application.

Teaching & Learning Methodology:

- Using multimedia in a problem-based learning environment.
- The institute provides an excellent academic environment with accent on self-learning. The teaching and learning methodologies follow a rigorous regime that involves intensive and extensive working on challenging academic assignments.

Books Recommended:

Text Books

1. Marty Hall, Larry Brown, Core Servlets and JavaServer Pages Volume – 1, Pearson Education, 2nd ed.(2004)
2. Java The Complete Reference,**HERBERT SCHILDT**7th Edition Author
3. Servlet Specifications 3.0
4. Web Technologies Black Book, Dreamtech Press, Edition 2010
5. Core Servlets and JavaServer Pages Volume – 2,**Marty Hall, Larry Brown, Yaakov Chaikin**, Pearson Education, 2nd ed.(2004)

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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03ANT1
NAME: - Artificial Intelligence (Minor Elective)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
		Th	Tu	Pr	Total		Sessional Exam		University Exam		Internal		University	Total
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03ANT1	Artificial Intelligence	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:-

- Explain the basic knowledge representation, problem solving, and learning methods of Artificial Intelligence
- Develop intelligent systems by assembling solutions to concrete computational problems

Prerequisites:-

- The Artificial Intelligence involves the ability to be intelligent artificially and must possess the ability to come out with the human like responses and for the achievement of all these features.

Course outline:-

Sr. No.	Course content	No. of Hours
1.	**AI and Knowledge Based Decision Support** **Artificial Intelligence**: Concepts, Definitions, Fields, AI v/s Natural Intelligence **Problem Solving**: Defining the Problem as State Space Search, Water-jug Problem, Production System , Problem Characteristics, Production System Characteristics. **Heuristic Search Techniques**: Generate and Test, Hill Climbing, Best First Search, A* Algorithm, Problem Reduction, Constraint Satisfaction, Means - End Analysis.**Expert System**: Types of Knowledge Based DSS, Basic Concepts of ES, Structure of ES, Type of ES, Development Life Cycle of ES, Problem Area's and Example Of ES, Advantages and Limitations of ES, ES and Internet/Intranet/Web.	**20**
2.	**Knowledge Representation and Knowledge Acquisition Knowledge Representation**: Introduction, Representation in logic and Other Schemas, Rules in Knowledge Representation, Multiple, Experimental and Uncertain Knowledge Representation, Knowledge Representation Techniques: Semantic Net, Frame, Script.**Knowledge Acquisition**: KE Introduction, Scope Of Knowledge: Sources, Level and Categories, Difficulties in KA, Methods Of Knowledge Acquisition: Interview, Tracking Methods, Observation And Manual Methods, Expert Driven Method, RGA, Role Of Knowledge Engineer, Machine learning, KA from Multiple Experts ,V & V in Knowledge Base, Analyzing, coding, Documenting, Diagramming knowledge, Numerical	**20**

	and Documented KA, KA and Internet/Intranet. **Game Playing**: The Minimax Search Procedure, Alpha - Beta Cutoffs.	
3.	**Fuzzy Logic Fuzzy Set:** Introduction, Basic Types and Concepts, Basic Operation, Arithmetic and Relation, Fuzzy Decision Making	**10**

Learning Outcomes:

- Analyze and solve problems involving various forms of search algorithms, including the design of heuristic functions to improve the efficiency of such solutions
- solve a complicated task with limited resources in the form of time and computations
- solve problems both individually and in groups
- formulate and solve problems with uncertain information using Bayesian approaches

Books Recommended:

Text Books:

1. Decision Support System and Intelligent System, **Efraim Turban and Jay E. Aronson**, Pub: PHI.
2. Fuzzy Sets and Fuzzy Logic: Theory and Applications ,**GEORGE J. KLIR AND BO YUAN**, Pub: Prentice Hall
3. Principles of Artificial Intelligence and Expert System Development,**David W. Rolston**, Pub: McGraw Hill Book Company
4. Artificial Intelligence – Author, **Elaine rich, Kevin Knight,** Pub: Tata McGraw Hill

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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03DWD1
NAME: - Data Warehouse & Data Mining (Minor Elective)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			Total
		Th	Tu	Pr	Total		Sessional Exam		University Exam		Internal		University	
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03DWD1	Data Warehouse & Data Mining	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:-

- To understand the need of Data Warehouses over Databases, and the difference between
- Usage of operational and historical data repositories.
- To be able to differentiate between RDBMS schemas & Data Warehouse Schemas.
- To understand the concept of Analytical Processing (OLAP) and its similarities & differences with respect to Transaction Processing (OLTP).
- To conceptualize the architecture of a Data Warehouse and the need for pre-processing.
- To understand the need for Data Mining and advantages to the business world. The validating criteria for an outcome to be categorized as Data Mining result will be understood. To get a clear idea of various classes of Data Mining techniques, their need, scenarios (situations) and scope of their applicability.
- To learn the algorithms used for various type of Data Mining problems.

Prerequisites:-

- Knowledge of RDBMS and OLTP

Course outline:-

Sr. No.	Course content	Hours
1	**Introduction to Data Warehousing, A Multi-dimensional Data Model & Schemas, OLAP Operations & Servers** An overview and definition along with clear understanding of the four key-words appearing in the definition. Differences between Operational Database Systems and Data Warehouses; Difference between OLTP & OLAP • Overview of Multi-dimensional Data Model, and the basic differentiation between "Fact" and "Dimension"; Multi-dimensional Cube Concept Hierarchies of "Dimensions" Parameters: Examples and the advantages Star, Snowflakes, and Fact Constellations Schemas for Multi-dimensional Databases Measures: Their Categorization and Computation OLAP Operations in Multi-dimensional Data Model: Roll-up, Drill-down, Slice & Dice, Pivot (Rotate)Indexing OLAP Data; Type of OLAP Servers: ROLAP versus	**6**

	MOLAP versus HOLAP ,Metadata Repository	
2	**Data Warehouse Architecture; Further Development of Data Cube & OLAP Technology** The Design of A Data Warehouse: A Business Analysis Framework; The Process of Data Warehouse Design .A 3-Tier Data Warehouse Architecture; Enterprise Warehouse, Data mart, Virtual Warehouse	**3**
3	**Data Mining: Introduction** An Overview; What is Data Mining; Data Mining – on What Kind of Data .Data Mining Functionalities – What Kind of Patterns Can be Mined; Concept/Class Description: Characterization & Discrimination; Mining Frequent Patterns, Associations, and Correlations; Classification & Prediction; Cluster Analysis; Outlier Analysis .Classification of Data Mining Systems. Data Mining Task Primitives. Integration of a Data Mining System with a Database or Data Warehouse System. Major Issues in Data Mining	**8**
4	**Data Pre-processing** The need for Pre-processing, Descriptive Data Summarization. Data Cleaning: Missing Values, Noisy Data, Data Cleaning as a Process. Data Integration & Transformation. Data Cube Aggregation; Attribute Subset Selection. Dimensionality Reduction: Basic Concepts only Numerosity Reduction: Regression & Log-linear Models, Histograms, Clustering, Sampling	**5**
5	**Mining Frequent Patterns, Associations, and Correlations** Basic Concepts: Market Basket Analysis; Frequent Itemsets, Closed Itemsets, and Association Rules; Frequent Pattern Mining: A Roadmap Apriori Algorithm: Finding Frequent Itemsets Using Candidate Generation; Generating Association Rules from Frequent Itemsets; Improving the Efficiency of Apriori From Association Mining to Correlation Analysis; Strong Rules Are Not Necessarily Interesting: An Example; From Association Analysis to Correlation Analysis	**5**
6	**Classification & Prediction** Introduction to Classification and Prediction; Basics of Supervised & Unsupervised Learning; Preparing the Data for Classification and Prediction; Comparing Classification and Prediction Methods. Classification by Decision Tree Induction, Attribute Selection Measures; Rule-based Classification: Using IF-THEN Rules for Classification; Bayesian Classification: Bayes' Theorem, Naïve Bayesian Classification; Bayesian Belief Networks An Overview of Other Classification Methods Prediction: Linear Regression; Non-linear Regression; Other Regression Models Classifier Accuracy and Error Measures: Classifier Accuracy Measures; Predictor Error Measures	**12**
7	**Cluster Analysis** Introduction to Cluster Analysis; Types of Data in Cluster Analysis; A Categorization of major Clustering Methods Partitioning Methods; Centroid-Based Technique: K-Means Method; Overview of Other Clustering Methods Outlier Analysis; Statistical Distribution-based Outlier Detection; Distance-based Outlier Detection; Density-based Outlier Detection	**6**
8	**Data Mining Applications** Financial Data Analysis, The Retail Industry, The Telecommunication Industry	**5**

Learning Outcomes:

- Ability to create a Star Schema for a given Data warehousing requirements
- Ability to decide the number & levels of pre-computed Data Cubes, the corresponding Metadata and the appropriate OLAP operation
- Ability to apply pre-processing on existing operational & historical data for creation of Data

Warehouse

- Ability to apply Apriori algorithm for Association Mining
- Ability to apply Decision Tree and Bayesian algorithms for Classification

Teaching & Learning Methodology:

- Using Whiteboard & Multimedia or OHP

Books Recommended:

Text Book:

1. Data Mining: Concepts & Techniques 3rd ed. **Jiawei Han & Micheline Kamber**, Morgan Kaufmann Publishers (2006)
2. Building the Data Warehouse, **W. H. Inmon**, Wiley Dreamtech India Pvt. Ltd.
3. Data Mining , **Pieter Adriaans & Dolf Zentinge, Addison-Wesley**, Pearson (2000) Rs. 195/-
4. Data Mining Methods & Models ,**Daniel T. Larose,** Wiley-India (2007)
5. Data Mining , **Vikram Pudi & P. Radhakrishnan**, Oxford University Press (2009)
6. Data Warehousing, Data Mining & OLAP , **Alex Berson & Stephen J. Smith,** Tata McGraw-Hill (2004)
7. Data Mining Techniques, **Michael J. A. Berry & Gordon S. Linoff**, Wiley-India (2008)
8. Data Mining – a Tutorial-based Primer, **Richard J. Roiger & Michael W. Geatz** ,Pearson Education (2005)
9. Data Mining: Introductory and Advanced Topics , **Margaret H. Dunham & S. Sridhar**, Pearson Education (2008) Rs. 235/-
10. Introduction to Data Mining with Case Studies , **G. K. Gupta**, EEE, PHI (2006) Rs. 325/-

C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03BIO1
NAME: - Fundamentals of Bioinformatics (Minor Elective)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03BIO1	Fundamental of Bioinformatics	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:

- Introduce students to the current bioinformatics concepts and their implementations.
  Introduce students to the basics of working knowledge about how to use computer system for bioinformatics problems. Teach and train the students with the skills necessary to select relevant tools, optimize their settings, and solve the set problem.

Prerequisites:

- Basic knowledge of working with computer.

Course outline:-

Sr. No.	Course content	No. of Hours
1	**Introduction** Biology in the computer age, computing changes in biology, Bioinformatics just about building database, Meaning of informatics to biologists, challenges offered by biology to computer scientists, skills required for this field, Available information & software for this domain.	10
2	**Tools for Bioinformatics** Biological Research on the web, Using search engines, finding scientific articles. Public biological databases, Searching biological databases, Depositing data into the public databases, finding software, Judging the quality of information.	10
3	**Sequence Analysis**	10

	Chemical composition of bio-molecules, Composition of DNA & RNA, Development of DNA sequencing methods, Gene finders & feature detection in DNA, DNA translation.	
4	**Pair-wise alignment techniques & Database searching** Database searching, Alphabets and complexity, Algorithm and programs, Comparing two sequences, sub-sequences, Identity and similarity, The Dotplot, Local and global similarity, different alignment techniques, Dynamic Programming, Pair wise database searching.	10
5	**Secondary database searching** Importance and need of secondary database searches, secondary database structure and building a sequence search protocol .	08
	Total	**48**

Learning Outcomes:

- To familiarize the students with fundamental concepts of bioinformatics.
- To give overview of various tools available.
- Provides the foundation for sequence analysis.
- To familiarize the students with database searching techniques.

Teaching & Learning Methodology:

- Class room and laboratory teaching using teaching and learning tools like multimedia projector, overhead projectors etc.

Books Recommended:

1. Developing Bio-informatics computer skills, **Cynthia Gibas & Per Jambeck,** O'REILLY.
2. Introduction to Bioinformatics, **T K Attwood D J Parry-Smith**, Pearson Education
3. Bioinformatics Computing, **Bryan Bergeron M.D**., Prentice-Hall of India
4. Bioinformatics- A Beginner's Guide, **Jean-Michel Claveriw, Cerdric Notredame**, WILEY dreamlech India Pvt. Ltd
5. Introduction to Bioinformatics ,**M.Lesk**, OXFORD publishers (Indian Edition)

C. U. SHAH UNIVERSITY
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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03GIS1
NAME: - Geographical Information System (Minor Elective)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03GIS1	Geographical Information System	4	-	-	4	4	30	1.5	70	3	-	-	-	**100**

Objectives:

- To maximize the efficiency of decision making and planning, provide efficient means for data distribution and handling, integration of information from many sources, analysis of queries involving geographical reference data for generation of new information, update data quickly and at the minimum cost. The main objective of the course is to give a basic theoretical understanding of GIS concepts and technical issues.

Prerequisites:

- Knowledge of Database Management, Basic Knowledge of Statistical Methods

Course outline:-

Sr. No.	Course content	No. of Hours
1	**Introduction to GIS and Digital Geographic Data & Maps** **Introduction to Digital Geographic Data:** Introduction to Geographic Information Systems, Developing spatial awareness Spatial Measurement level, Spatial Location and Reference, Spatial Patterns, Geographic Data Collection **Map Basics:** Abstract Nature of Maps, Map Scale, More Map Characteristics, Map Projection, Grid Systems for Process, Map Symbolism **GIS Data Models:** Computer File Structure, Database Structure, Graphic Representation of Entities and Attributes, GIS data Models for Multiple MAPS Compact storing of raster data,	12

	Commercial Raster compaction products, Vector model, Compacting vector data models Vector model to represent Surfaces System models	
2	**Input, Storage and Editing** **The Input Subsystem:** Primary Data, Input Devices, Vector Input, Raster Input, Remote Sensing Data Input, GPS Data Input, Secondary data, Metadata and Metadata Standards. **Data Storage and Editing:** Storage of GIS Databases, Basic Error Types Consequences of Errors Error detection and editing Dealing with Projection Changes, Edge Matching, Conflation, Rubber Shitting	8
3	**Analysis Elementary Spatial Analysis:** GIS Data Query, Locating and identifying spactial objects Defining Spatial Characteristics, Working with Higher – Level Objectives **Measurement:** Measuring Length of Linear Objectives, Polygons, Shape and Distance **Classification:** Classification Principal, Elements of Reclassification, Neighborhood Functions, Roving Windows, Buffers **Statistical Surfaces:** Surface Mapping, Sampling the Statistical Surface, The DEM, Raster Surface, Interpolation, Terrain Reclassification, Slicing the Statistical Surface, Cut and Fill **Spatial Arrangement** Point, Line and Area Arrangement, Point Patterns, Thiessen Polygons, Area Patterns, Distance and Adjacency, Polygon Arrangement Measures, Linear Patterns, Directionality of Linear and Areal Objective, Connectivity of Linear Objects, Gravity Model, Routing and Allocation, The Missing Variables **Comparing Variables Among Maps:** The Cartographic Overlay, Point-in-Polygon, Line-in-Polygon, Polygon Overlay, Automating the Overlay, Types of Vector Overlay, CAD-Type Overlay, Dasymetric Mapping **Cartographic Modeling:** Model Components, The Cartographic Models, Types of Cartographic Models, Inductive and Deductive Modeling, Factor Selection, model Flowcharting, Model implementation, Model Verification	23
4	**GIS Output** **The Output from Analysis:** Output: The Display of Analysis, Cartographic Output, Noncartographic Output	5
	Total	**48**

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Learning Outcomes:

- Understand the spatial aspects of an external client's GIS needs and develop a plan for addressing those needs Design, compile, and develop a spatial database and a set of analytical tools into a system appropriate to the problem. Demonstrate a mastery of geographic analysis and cartographic skills communicate the GIS project process and the results in written, oral, and graphic Medias at a professional level. By completing the course the student will have a basic, theoretical understanding of GIS, and be able to work independently with various types of geographical data in GIS.

Teaching & Learning Methodology:

- Using multimedia in a problem-based learning environment. The institute provides an excellent academic environment with accent on self-learning. The teaching and learning methodologies follow a rigorous regime that involves intensive and extensive working on challenging academic assignments.

Books Recommended:

1. Fundamentals of Geographic Information Systems ,**Michael N DeMers**, Wiley India Education
2. Introduction to Geographic Information Systems , **Kang-tsung Chang**, McGraw-Hill Publication
3. Concepts and Techniques of Geographic Information Systems , **YEUNG, ALBERT K. W., LO, C. P.**, , PHI Learning

E-Resources:

http://hcl.harvard.edu/libraries/maps/gis/tutorials.html

http://en.wikipedia.org/wiki/Geographic_information_system

http://www.gislounge.com/what-is-gis/

http://freepdfdb.com/ppt/gis-tutorial-1

C. U. SHAH UNIVERSITY
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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03MCP2
NAME: - Programming Technique-V (MC)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03MCP2	Programming Technique-V (MC)	-	-	4	4	2	-	-	-	-	20	-	80	**100**

Objectives:-

- Find tips and tricks to streamline the development process and take advantage of unique features of mobile based application development.
- To provide comprehensive guidance on designing, developing, testing, debugging, and distributing professional mobile based applications.

Prerequisites:-

- Fundamentals knowledge of Core Java Programming, GUI Controls, Database Terminologies.

Course outline:-

Sr. No.	Experiments
1.	1. Demo of setting up development environment, installing eclipse, ADT plugin, Setting Emulator, package. 2. Simple android app with displaying text on the screen in color, left, right, bottom, center, middle of the screen.
2.	Perform experiments on 1. Launching a new activity by class name 2. Launching an activity belonging to another application. 3. Passing additional information using intents.
3.	Perform experiments on 1. Designing a primary entry point activity using an intent filter 2. Configuring other intent filters 3. Setting up manifest.xml for managing application & activity settings using the application tab, enforcing application permission using the permission tab, managing test instrumentation using the instrumentation

	tab.
4.	Perform experiments on 1. Specifying supported input methods 2. Specifying required device features 3. Specifying supported screen sizes 4. Registering activities and other application components 5. Permissions.
5.	Perform experiments on 1. Setting up simple resource values using eclipse 2. Accessing resources programmatically 3. Working with string resources 4. Working with string arrays
6.	Perform experiments on 1. Working with integer resources 2. Working with colors 3. Working with dimensions 4. Working with simple drawables
7.	Perform experiments on 1. Working with images 2. Working with Animation
8.	Perform experiments on 1. Working with Menu
9.	Perform experiments on 1. Working with XML files 2. Working with Raw files 3. Working with resources 4. working with Layouts 5. Working with Style
10.	Perform experiments on 1. TextView, Configuring layout and sizing, Creating contextual links
11.	Perform experiments on 1. EditText, Retriving data from users, auto completion, input filters
12.	Perform experiments on 1. Spinner, giving users input choices 2. Buttons, check boxes and Radio Buttons
13.	Perform experiments on 1. Getting Dates and Times from users. 2. ProgressBar, SeekBar: using indicators to display data to users.
14.	Perform experiments on 1. RatingBar 2. Chronometer 3. Digital clock
15.	Perform experiments on 1. Options and context menu 2. Handling user events
16.	Perform experiments on 1. Working with Dialogs 2. Working with Style 3. Working with Themes

17.	Perform experiments on 1. Creating layouts programmatically 2. View / ViewGroup 3. FrameLayout, LinearLayout, RelativeLayout, TableLayout 4. Multiple Layouts on the Screen.
18.	Perform experiments on 1. Screen with Tabs, TabActivity 2. Adding scrolling support
19.	Perform experiments on 1. Working with Canvases and Paints 2. Working with Animation 3. Working with Bitmaps 4. Working with Shapes
20.	Perform experiments on 1. Data & Storage APIs
21.	Perform experiments on 1. Working with SQLite databases
22.	Perform experiments on 1. Working with SQLite databases
23.	Perform experiments on 1. Content providers 2. Browsing the Web with WebView
24.	Perform experiments on 1. Phone Numbers, Phone Call, Monitoring signal strength, service information, Call state 2. Using SMS: Sending & Receiving

Reference Books:

1. "Android Wireless Application Development", **Lauren Darcey and Shane Conder**, Pearson Education, 2nd Ed.

C. U. SHAH UNIVERSITY
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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03PYP2
NAME: - Programming Technique-VI (Python Programming)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03PYP2	Programming Technique-VI (Python Programming)	-	-	4	4	2	-	-	-	-	20	-	80	**100**

Objectives:

- To able to develop, automate, and test applications and systems using one of the open source programming language.

Pre-requisites:

- Students should have prior programming experience and be familiar with basic concepts such as variables/scopes, flow-control, and functions.
- Prior exposure to object-oriented programming concepts is not required, but definitely beneficial.

List of Practical:

Sr. No.	Course Contents
1	Write a program in Python to define a list.
2	Write a program in Python to add elements to a list.
3	Write a program in Python to access sub lists.
4	Write a program in Python to search within lists.
5	Write a program in Python to delete elements from a list.
6	Write a program in Python to use mathematical Operators and lists.
7	Open a terminal. What directory are you in? List the files in your current directory. Make the following new directories - 'folder1/folder2/folder3'. Navidgate to folder2 and create a file "catted.txt" using cat with the words "I made this!." Delete folder1, folder2 and folder3.

8	Create a list of cubes for all the positive inteters less than 10 (i.e. [1,8,27,...,729]) using a) a for loop and b) a list comprehension.
9	Find all the characters that are used exactly once in the sentence "A person who never made a mistake never tried anything new". Ignore case, so 'A' and 'a' would be counted as 2 occurrences of 'a'.
10	Find the second largest number in this list [9, 61, 2, 79, 58, 87, 68, 83, 61, 13]
11	Write a program that generates this list [0,1,2,3,4,5,5,4,3,2,1,0]. Your program should only contain a single integer.
12	Write a program that uses while and raw_input and simply repeats the question "who wins?" until you type the words "you win".
13	Write a program that produces these 2 lines of output from range(1,11): 0001 0002 0003 0004 0005 6.00 7.00 8.00 9.00 10.00
14	Write a program that starts with range(1, 6) and ends up with this string '1-one-thousand-2-one-thousand-3-one-thousand-4-one-thousand-5', using a list comprehension, the str() function and a string join.
15	Write a function that returns the cumulative sum of numbers in a list. For example, if the function is given the list [1,2,3,4,5], it should return the list [1, 3, 6, 10, 15].
16	Write a function fib that generates the first n Fibonacci numbers. The Fibonacci numbers are the sequence [1,1,2,3,5,8,13,...], where each successive number is the sum of the two preceding numbers.
17	Write a program that takes two arguments, your first name, and your age, and then prints out your name and the year you were born.
18	Write a program that takes a number on the command line and calculates the log, square, sin and cosine, and writes them out in a csv file.

Books Recommended:

Text Books:

5. Exploring Python, **Timothy Budd**, Tata McGraw Hill Publication.
6. Practice of Computing using Python 2nd Edition, **William F. Punch & Richard Enbody**, Pearson Publication.
7. Introduction to Computing and Programming using Python 3rd Edition, **Guzdial & Ericson**, Pearson Publication.
8. Object-Oriented Programming in Python, 1/E, **Goldwasser & Letscher**, Prentice Hall

C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03NET2
NAME: - Programming Technique-VI (Programming Using Asp & C#.Net)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03NET2	Programming Technique-VI (Programming Using Asp & C#.Net)	-	-	4	4	2	-	-	-	-	20	-	80	**100**

Objectives:

- Gain a thorough understanding of the philosophy and architecture of Web applications using ASP.NET
- Acquire a working knowledge of Web application development using Web Forms and Visual Studio .NET
- Optimize an ASP.NET Web application using configuration, security, and caching
- Access databases using ASP.NET and ADO.NET

Technical Prerequisites:

- knowledge of basic object-oriented programming and the .NET Framework

List of Practical:-

Sr.no	**Course Contents**
1	Write a program that prints “Hello World” on screen.
2	Write a program to ask user to input three Numbers and display average of them.
3	Write a program that prints & calculate Addition, subtraction, division, multiplication, module in program.
4	Write a program to find the area of circle. {**Hint**:- Area=3.14*r*r}
5	Write a program to convert years into minutes. {**Hint**:-Min=Years*365*24*60}
6	Write a program to interchange the values of two variables with and without using third variable
7	Write a program to find out maximum and minimum number out of three numbers
8	Write a program to find a factorial of given number.
9	Write a program to find whether the given number is odd or even.
10	Write a program to find whether the given number is prime or not
11	Input number through the keyboard, Write a program to find whether the given number is perfect or not.

	(Hint: Perfect no -> 6. i.e. 2*3*1=6 and 2+3+1=6)
12	Write a program to generate a Fibonacci series of first n numbers.
13	Five digit number is input through the keyboard. Write a program to reverse the number.
14	Write a program to print the total of ½+2/3+……+9/10.
15	Write a program to calculate total of first 50 odd numbers.
16	Write a program to calculate sum of digits of given number.
17	Create a console application to implement Constructors and Constructor overloading.
18	Create a console application to implement method overloading.
19	Create a console application to implement Simple Inheritance.
20	Create a console application to implement Polymorphism.
21	Create a console application to implement Boxing & Unboxing.
22	Create a console application to implement Properties.
23	Create a console application to implement Indexers.
24	Create a console application to implement Structures.
25	Create a console application to implement Interface.
26	Create a console application to implement Delegate.
27	Create a console application to implement Exception Handling.
28	Create a console application to implement Custom Exception.
29	Create a console application to implement Operator Overloading.
30	Create web application using standard control.
31	Use all validation control on above application in suitable manner.
32	Create Asp.net webpage Accepting File Upload Control.
33	Create Asp.net webpage displaying a Calender.
34	Create Asp.net webpage displaying an Advertisements using adrotator control.
35	Create Asp.net webpage displaying different page views.
36	Create Asp.net webpage displaying Wizard.
37	Designing Asp.net webpage using Master page.
38	Designing Asp.net webpage using Themes.
39	Change webpage design using CSS style.
40	Create User control on Asp.net Webpage.
41	Dynamically loaded User Control on Asp.net webpage.
42	Create Asp.net webpage using GridView control.
43	Create Asp.net webpage using DetailView control.
44	Create Asp.net webpage using FormView control.
45	Create Asp.net webpage using Datalist control.
46	Create Asp.net webpage using ListView control.
47	Create Asp.net webpage using Repeater Control.
48	Create Asp.net webpage using DataPager control.
49	Create Asp.net webpage using SiteMapPath Control.
50	Design Menu in Asp.net Webpage.
51	Design TreeView in Asp.net Webpage.
52	Create Asp.net webpage using Login Control.

53	Create Asp.net webpage using LogonView Control.
54	Create Asp.net webpage using PasswordRecovery Control.
55	Create Asp.net webpage using Loginstatus control.
56	Create Asp.net webpage using LoginName control.
57	Create Asp.net webpage using Create User Wizard control. Create Asp.net webpage using Change Password.
58	Create Asp.net webpage using AJAX.
59	Create a web application for runtime adding controls.
60	Create a web application for connection with MS-Access and SQL-Server. Create a web application to perform insert, Update & delete operations using Store procedure.
	Total

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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03CGS2
NAME: - Programming Technique-VI (Computer Graphics)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03CGS2	Programming Technique-VI (Computer Graphics)	-	-	4	4	2	-	-	-	-	20	-	80	**100**

Objectives:

- To know and be able to describe the general software architecture of programs that use 2D computer graphics.
- Know and be able to discuss hardware system architecture for computer graphics. This includes, but is not limited to: graphics pipeline, frame buffers, and graphic accelerators/co-processors.

Pre-requisites:

- Knowledge of Computer Programming, algorithms and mathematical method to implement graphics logic through the programming.

List of Practical:-

Sr. No.	Course Contents
1	Implement all graphics function
2	Write a program to draw a flag
3	Draw a smiley using in built functions
4	Draw a rainbow using in built functions
5	Write a program to draw a clock
6	Write a program to draw a line using DDA Line Algorithm
7	Write a program to draw a line using Bresenham's Line Algorithm
8	Write a program to draw a lines of attributes using DDA Line Algorithm

9	Write a program to draw a Circle using Mid Point Circle Algorithm
10	Write a program to draw a Rubber Band Line using Mouse
11	Write a program to generate character using bitmap method
12	Write a program to draw polygon using graphics function
13	Write a program to fill polygon using flood fill algorithm
14	Write a graphics program to scale a polygon in which values of polygon edges and translation points will be given by user
15	Write a graphics program to rotate a polygon by using pivot-point in which values of polygon edges, pivot-point and rotation angle will be given by user
16	Write a graphics program for composite transformation which include translation, rotations and scaling
17	Write a program which reflects a polygon on different direction
18	Write a graphics program which translates a point from window-to-view port coordinate transformation
19	Write a graphics program for point clipping algorithm
20	Write a graphics program for Cohen-Sutherland Line clipping algorithm

Learning Outcomes:

- Be able to design and implement models of surfaces, lights, sounds, and textures (with texture transformations) using a 2D graphics API.
- Be able to discuss the application of computer graphics concepts in the development of computer games, information visualization, and business applications.
- Be able to discuss future trends in computer graphics and quickly learn future computer graphics concepts and APIs.

Books Recommended:
Text Books:

1. Mathematical Elements for Computer Graphics, **D.Rogers and J. Adams**, McGraw –Hill International Edition.
2. Procedural Elements for Computer Graphics, **David F. Rogers**, McGraw Hill
3. Computer Graphics (Schaum Series), **Lipschutz**, McGraw Hill.
4. Computer Graphics, **Dr. N. N. Jani**, Akshat Publication.

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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03AJV2
NAME: - Programming Technique-VI (Advanced Java Programming)

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03AJV2	Programming Technique-VI (Advanced Java Programming)	-	-	4	4	2	-	-	-	-	20	-	80	**100**

Objectives:

- To be able to understand the concepts of Database Programming, using JDBC.
- To develop proficiency in creating web based applications using the Servlets and JSP, following MVC architecture

Technical Prerequisites:

- Knowledge of the Core Java Programming

List of Practical:-

Sr.no	Course Contents
1	Using JavaScript take a date from user and display the day of the week on that date.
2	Write a JavaScript to generate two random numbers and find out maximum and minimum out them.
3	Create a Form in HTML with two fields, minimum and maximum, write JavaScript to validate that only numeric value is entered in both, and the value entered in minimum is less than the value entered in maximum.
4	Develop an application that takes students roll number. If the marks of the student is between 40 and 50, change the backColor of “result.jsp” to” yellow”, if the marks is between 50 and 60, change the backColor of the same page to “green” . if marks less than 40 the backColor should be “red” and if marks is above 60, the backColor should be “blue”.
5	Using JavaScript count and display the total number of components on a form. Also display the name and the value of each of the component.
6	Write a JavaScript that finds out multiples of 10 in 0 to 10000. On the click of button start the timer and stop the counter after 10 seconds. Display on the screen how many multiples of 10 are found out within stipulated time.
7	Write a JavaScript to generate two random numbers and find out maximum and minimum out of it.
8	Write a JavaScript to remove the highest element from the array and arrange the array in ascending order.

9	Write a JavaScript to find a string from the given text. If the match is found then replace it with another string.
10	Write a JavaScript to show a pop up window with a message Hello and background color lime and with solid black border.
11	Write a Servlet to display “Hello World” on browser.
12	Write a Servlet to display all the headers available from request.
13	Write a Servlet to display parameters available on request.
14	Write a Servlet which displays a message and also displays how many times the message has been displayed (how many times the page has been visited).
15	Assume that we have got three pdf files for the MCA-1 Syllabus, MCA-2 Syllabus and MCA-3 Syllabus respectively, Now write a Servlet which displays the appropriate PDF file to the client, by looking at a request parameter for the year (1, 2 or 3).
16	Develop a Servlet which looks for cookies for username and password, and forwards to a home.jsp in case the cookies are valid and forwards to login.jsp, in case the cookies are not found or the cookies are nto valid. Develop a Servlet to authenticate a user, where the loginid and password are available as request parameters. In case the authentication is successful, it should setup a new session and store the user's information in the session before forwarding to home.jsp, which displays the user's information like full name, address, etc.
17	Write a simple JSP page to display a simple message (It may be a simple html page).
18	Write a JSP page, which uses the include directive to show its header and footer.
19	Develop interest calculation application in which user will provide all information in HTML form and that will be processed by servlet and response will be generated back to the user.
20	Develop an application to demonstrate how the client (browser) can remember the last time it visited a page and displays the duration of time since its last visit. (Hint: use Cookie)
21	Develop an application to write a "page-composite" JSP that includes other pages or passes control to another page. (Hint: Use <jsp:include> or <jsp:forward>).
22	You want to reduce the amount of Java coding in your JSP using a JavaBean component. (Hint: Use <jsp:useBean> with the name of your bean).
23	Develop a program to perform the database driven operation like insert, Delete, Update and select. To perform the above operations create one table named Employee. Field Name Field Type EmpId Integer Empname Varchar Emp_desig Varchar Emp_J_Date Varchar Emp_Salary Numeric
24	Develop a Java application to perform the database driven operation like insert, Delete, Update and selection using PreparedStatement. To perform the above operations use the table from above exercise.

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Learning Outcomes:

- Ability to create Web applications using Servlets and JSP, following MVC architecture for developing web applications
- Ability to fetch data from a database server and use in a web application.

Teaching & Learning Methodology:

- Using multimedia in a problem-based learning environment.
- The institute provides an excellent academic environment with accent on self-learning. The teaching and learning methodologies follow a rigorous regime that involves intensive and extensive working on challenging academic assignments.

Books Recommended:

- Marty Hall, Larry Brown, "Core Servlets and JavaServer Pages Volume – 1", Pearson Education, 2nd ed.(2004)
- "Java" The Complete Reference 7th Edition Author: HERBERT SCHILDT
- Servlet Specifications 3.0
- "Web Technologies Black Book", Dreamtech Press, Edition 2010
- Marty Hall, Larry Brown, Yaakov Chaikin, "Core Servlets and JavaServer Pages Volume – 2", Pearson Education, 2nd ed.(2004)

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FACULTY OF:- Computer Science
DEPARTMENT OF: - Master of Science (Information Technology)
SEMESTER: - III
CODE: - 5CS03PRJ1
NAME: - Mini Project

Teaching and Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
							Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	Total
		Th	Tu	Pr	Total		Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS03PRJ1	Mini Project	-	-	4	4	2	-	-	-	-	20	-	80	**100**

Objectives:-

The following guidelines must be following at time of project development:

1) Project must be developed under supervision of allotted guide by the institution.
2) Student can develop project on any subject studied in previous semester or in current semester.
3) As a Case study evaluation, Students needed to present their progress report (SDLC, Data Dictionary, DFD, Source Code and project report) at time to time
4) The project must be in running mode during project viva practical examination
5) Project must be submitted before two week of commencement of theory examination of university
6) At the time of Presentation of project Viva examination, each student must have certified hard copy and soft copy of developed project.