SARDAR PATEL UNIVERSITY

B.Sc. Computer Science VI Semester

Course: US06CCSC21

(Object Oriented Programming Using Java)

Effective from June-2020

Credits : 4 **Lectures per week: 4**

University examination duration: 3 Hours **All units carry equal weightage**

Unit 1	**Introduction** − History of Java, features, the Java environment, the Java Virtual Machine (JVM) − Structure of a Java program, a simple Java program, implementing a Java program − Tokens, comments, constants, variables and data types − Scope of variables, type casting − Operators: arithmetic, relational, logical, assignment, increment/decrement, conditional, ternary operator & special operators − Decision making: if statement, if…else statement, nesting of if…else, the else if ladder, switch statement − Looping: while, do…while, for, for each loop jumps in loops, labeled loops
Unit 2	**Arrays, Classes, Objects, Interfaces and Inheritance** − Arrays: one, two dimensional arrays − Defining a class, members of a class: variables and methods, creating objects, constructors, accessing class members − Static members v/s instance members − Introduction to inheritance, super keyword − Interfaces: Introduction, definition, extending, implementing & accessing − Final variables, methods and classes, abstract methods and classes − Introduction to method overloading and overriding
Unit 3	**Exception Handling, I/O Management and Packages** − Managing errors & exceptions: introduction, types of errors, exceptions, syntax of exception handling construct, multiple catch statements, the finally clause, defining and throwing user-defined exceptions, the throw statement − Managing I/O files: introduction, concept of streams, Character stream classes − Introduction to the concept of package, Java API packages, using the System package − Using java.lang (String, Math)
Unit 4	**Applet Programming & JDBC** − Applet architecture and skeleton − java.awt package (Button, CheckBox, CheckBoxGroup, Choice, Color, Label, List, TextArea, TextField) − HTML applet tag, display techniques (DrawString, Lines, Rectangle, Ellipses, Circles, Arcs, Polygons, Color) − Introduction to event handling − Introduction to JDBC, types of drivers − java.sql package − Retrieving, inserting, deleting and updating data though Java

REFERENCE BOOKS:

1. Programming with Java- A Primer by E. Balaguruswami, 3rd Edition, TMH Publ.
2. The Complete Reference – Java 2 7th Edition Herbert Schildt. TMH Publication
3. Saba Zame, Handbook of Object technology, CRC Press, Washington DC, 1999
4. Mary Campion and Kathy Walrath, Java tutorial, Second Edition, Addison Wesley Pun. 1998.
5. Java 2 Programming Black Book, Steven Holzner

SARDAR PATEL UNIVERSITY

B.Sc. Computer Science VI Semester

Course: US06CCSC22

(PHP using MySQL)

Effective from June-2020

Credits : 4 **Lectures per week: 4**

University examination duration: 3 Hours **All units carry equal weightage**

Unit 1	**PHP Programming Concepts -1** – Introduction to open source – Advantage and capabilities of open source – Introduction to apache – Introduction to PHP: features, adding PHP to HTML – PHP Variables – Static & global variables – GET & POST method – PHP Operators – Conditional Structure & Looping Structures – User Defined Functions – Arrays – Strings and its functions
Unit 2	**PHP Programming Concepts-2** – Site structure and basics of web site development using PHP – PHP and OOP templates – Error Handling – Authentication – Cookies and Session Management – Browser detection – Sending MIME Mail Message with Mail_mime, smtp
Unit 3	**Working with images, pdf files, ajax and XML** – Creating and Manipulating images – Using Text in Images – Creating database driven graph – Saving and building on existing image. – Generate PDF file. – PHP with XML – PHP with Ajax
Unit 4	**Accessing Database** – Working with MySQL using PhpMyAdmin – PHP-MySQL Connectivity – PHP-MySQL Functions

REFERENCE BOOKS:

1. Essential PHP Tools Modules, extensions and Accelerators–David Sklar–APRESS (SPD)
2. PHP advance for the World Wide Web – Larry Edward Ullman – peachpit press
3. Advance PHP for Web professionals – Christopher Cosentino – Pearson education
4. Expert PHP 5 Tools – Dirk Merkel – PACKT(SPD)
5. Learning PHP 5 – David Sklar –O'Reilly (SPD)
6. Beginning PHP 5.1 For Begginers – Iyan Byross, Sharanam Shah- The Team (SPD)

SARDAR PATEL UNIVERSITY

B.Sc. Computer Science VI Semester

Course: US06CCSC23

(Python Programming)

Effective from June-2020

Credits : 4 **Lectures per week: 4**

University examination duration: 3 Hours **All units carry equal weightage**

Unit 1	**Introduction & Basic Concept of Python** – Python Introduction – Python Features – Python Applications – Data type, Variable, keywords, literals, operators, comments – Flow control statements. If, Switch, while, for, do…while – Break, continue and pass statements
Unit 2	**Inbuilt & UDF Functions** – Strings (String Operations & Functions) – Lists (List Operations & Functions) – Tuples (Tuple Operations & Functions) – Sets (Set Operations & Functions) – Dictionary (Dictionary Operations & Functions) – Functions (Built-in, User-define, Lambda)
Unit 3	**File I/O Handling** – FILE & I/O Handling – Modules – Exceptions – Date – Regex – Read & Write CSV file. – Use of different kind of modules
Unit 4	**Working with Database** – Environment Setup – Database Connection – Creating new Database – Creating Tables – Working with table (Insert operations, Read operations, Update Operations, Join Operations) – Transaction

REFERENCE BOOKS:

1. Paul A. DeBarry: Head First Python, 2010, O'Reilly Media, Inc.
2. Martin C. Brown: The Complete Reference Python, McGraw Hill
3. David M. Beazley: Python Essential Reference, Pearson Addison-Wesley Professional
4. Python Tutorial/Documentation www.python.or 2010
5. http://docs.python.org/3/tutorial/index.html
6. http://www.javapoint.com/python-tutorial

SARDAR PATEL UNIVERSITY

B.Sc. Computer Science VI Semester

Course: US06CCSC24

(Software Engineering & Introduction to SASD)

Effective from June-2020

Credits : 4 **Lectures per week: 4**

University examination duration: 3 Hours **All units carry equal weightage**

Unit 1	**Introduction** – Introduction: Software and Software Engineering – General Characteristics of Software Process – Phases in Software development – Effort and Error Distribution – Process Models: Waterfall, Prototype, Iterative enhancement, spiral
Unit 2	**Requirement Specification and Software Project Planning** – Introduction: Software Requirement Specification (SRS) and Needs – Problem Analysis - Structuring Information – Software Requirement Specifications (SRS), Characteristics and Components of SRS – Specification language (Structured English, Regular Expression and Decision Table) – Introduction: Software Projects, Planning, Categories of Software projects – Project Monitoring Plan: Time sheets, Reviews, Cost- schedule milestone and Earned value method – Software Quality Assurance Plans (SQAP) – Overview of Risk Management
Unit 3	**System Design, Coding and Testing** – Introduction: System Design – Design Objectives and Design Principles – Design Concepts - Top down and Bottom up approach, Problem Partition, Abstraction, Modularity, Module Level concept, Coupling, Cohesion – Overview of structured design – Introduction: Coding, Top Down and Bottom Up approach for coding – Structured programming, Information Hiding – Programming style, Internal documentation – Introduction: Testing, Error, Fault, Failure & Reliability – Testing process, Top down and bottom up approach for testing – Levels of Testing – Functional Testing v/s. Structural testing

Unit 4	**The Concepts of a System, System Analysis and Development Life Cycle (SDLC)** – The concept of a system – The elements and characteristics of a system – Types of systems – Meaning of systems analysis – Role of a systems analyst – SDLC - Introduction – Stages of SDLC.

REFERENCE BOOKS:

1. An Integrated Approach to Software Engineering: By Pankaj Jalote, Narosa Publishing House, Second Edition,1997
2. Software Engineering a practitioner's approach: By Roger S. Pressman, Tata McGraw-Hill, 5th Edition
3. Software Engineering Fundamentals, by Richard Fairley, Tata McGraw Hill
4. Software Engineering by Ian Somnmerville, Addition- Wesley, 5th Edition, 2000
5. S. Parthasarthy & B. W. Khalkar: System Analysis & Design, 1st Edition, Master Ed. Cons., Nashik.
6. James A. Sen: Analysis & Design of Information System 2nd Edition, McGraw-Hill Int.

SARDAR PATEL UNIVERSITY

B.Sc. Computer Science

VI Semester

Course: US06CCSC25

(Practical)

Effective from June-2020

Credits : 6

No. of laboratory hours per week : 12

University examination duration : 6 Hours

Part-I: Practical based on US06CCSC21

Part-II: Practical based on US06CCSC22

Part-III: Practical based on US06CCSC23

SARDAR PATEL UNIVERSITY

B.Sc. Computer Science
VI Semester
Course: US06DCSC26
(Artificial Intelligence)
Effective from June-2020

Credits : 2 **Lectures per week: 2**
University examination duration: 2 Hours **All units carry equal weightage**

Unit 1	**Introduction** – Concepts and Definitions of AI – Brief history of AI – AI and related fields
Unit 2	**Expert Systems** – Introduction – Characteristic features of Expert System – Representing and Using Domain knowledge – General Structure of Expert Systems – Expert System Shell – Advantages and Disadvantages of Expert system
Unit 3	**Introduction to AI techniques and Application Areas-I** – Introduction to Basic search strategies: Some examples and Classification – Introduction to Heuristic Search technique: Best First Search – Using Predicate Logic – Representing simple facts in logic
Unit 4	**Introduction to AI techniques and Application Areas-II** – Introduction to Fuzzy logic – Introduction to various application areas of AI like: – Natural Language Processing, Game Playing, Robotics – The Concepts of System, Systems Analysis and Systems Development

REFERENCE BOOKS:

1. Elain Rich: Artificial Intelligence, McGraw Hill, 2001.
2. Patterson, Dan W.: Introduction to Artificial Intelligence, Prentice Hall of India (PHI)
3. R. Akerkar: Introduction to Artificial Intelligence, PHI, 2005
4. S. Russell and P. Norvig, Modern Approach to Artificial Intelligence, Prentice Hall of India Ltd., 2006.
5. George Luger, Artificial Intelligence, 5th Edition, Addison Wesley, 2004.

SARDAR PATEL UNIVERSITY

B.Sc. Computer Science
VI Semester
Course: US06DCSC27
(Enterprise Resource Planning)
Effective from June-2020

Credits : 2 **Lectures per week: 2**
University examination duration: 2 Hours **All units carry equal weightage**

Unit 1	**Introduction to ERP** – Enterprise: introduction, business modeling, integrated data model, integrated management information – Enterprise Resource Planning (ERP): Introduction, history. Basic concepts of ERP – Risks (All types risks in brief)
Unit 2	**ERP & Related Technologies** – Benefits of ERP.[just an overview] Business Process Reengineering (BPR) – Data warehousing, data mining and Online Analytical Processing (OLAP) – Product Life Cycle Management (PLM) – Supply Chain Management (SCM) – Customer Relationship Management (CRM)
Unit 3	**ERP – Selection and Implementation** – ERP Package Selection – ERP Implementation Life Cycle. – Introduction Objective Phases of implementation
Unit 4	**ERP –Operation, Maintenance & Evaluation** – Operation of the ERP system – ERP Maintenance Phase – Measuring performance of ERP – Functional modules of ERP software

REFERENCE BOOKS:

1. Alexis Leon: Enterprise Resource Planning, Tata McGraw-Hill, New Delhi 2nd editions