

DEPARTMENT OF COMPUTER SCIENCE
VALUE ADDED COURSE
PYTHON PROGRAMMING

Hours: 30

Course Outcomes:

At the end of the course, students will be able to:

CO 1: Understand the building blocks of python programming

CO 2: Apply the various control structures and functions to real time problems

CO 3: Write Python functions to facilitate code reuse

CO 4: Make their code robust by handling errors and exceptions properly

CO 5: Ability to engage in independent and life-long learning in the broadest context of technological change.

UNIT I

6 hrs

Introduction: Welcome to Python - What is Python? – Origins – Features of Python – Downloading and Installing Python –Running Python - Comments - Operators - Variables and Assignment - Numbers –Strings – Lists and Tuples –Dictionaries - **Python Objects:** Standard Types - Other Built-in Types – Internal Types.

UNIT II

6 hrs

Numbers: Introduction to Numbers - Integers - Floating Point Numbers - Complex Numbers – Operators -Built-in and Factory Functions. **Conditionals and Loops:** *if* statement - *else* statement - *else if* statement - *while* statement - *for* statement - *break* statement - *continue* statement - *pass* statement.

UNIT III

6 hrs

Sequences (Strings, Lists and Tuples) : **Strings:** String and Operators- String Only Operators – String Built-in Methods – Special features of Strings - **Lists:** Operators –Built-in functions- List type Built-in functions-Special features of Lists - **Tuples:** Tuple operators and Built-in function-Special features of Tuples.

UNIT IV

6 hrs

File I/O and Functions: File Objects –File Built-in Functions-File Built-in Methods-File Built-in Attributes-Standard Files-Command-Line Arguments- **Functions:** Calling, Creating and Passing functions-Formal and variable length arguments-recursion

UNIT V

6 hrs

Object Oriented Programming – Introduction: Classes- Class Attributes- Instances- Instance Attributes-Static Methods and Class Methods- Inheritance.

Text Book

Wesley J Chun, Core Python Programming, 2nd Edition, Prentice Hall Publisher, 2006

Unit I : Chapter 1,2,3,4

Unit II : Chapter 5, 8

Unit III : Chapter 6

Unit IV : Chapter 9,11

Unit V : Chapter 13

VALUE ADDED COURSE

MATLAB

Hours: 30

UNIT I

(4 Hours)

Introduction to MATLAB: Brief Introduction - Installation of MATLAB – History - Use of MATLAB - Key features - MATLAB software: Introduction to MATLAB Software – MATLAB - window Command - window Workspace-Command history-Setting directory- Working with the MATLAB- user interface- Basic commands-Assigning variables- Operations with variables.

UNIT II

(4 Hours)

Data files and Data types: Character and string- Arrays and vectors - Column vectors - Row vectors - Basic Mathematics: Arithmetic operations-Operators and special characters- Mathematical and logical operators-Solving arithmetic equations-Operations on matrix- Creating rows and column Matrices.

UNIT III

(6 Hours)

Matrix operations: Finding transpose-determinant and inverse - Solving matrix Other operations - Trigonometric functions - Complex numbers – fractions - Real numbers - Complex numbers - M files: Working with script tools -Writing Script file - Executing script files - The MATLAB Editor - Saving m files.

UNIT IV

(8 Hours)

Plots: Plotting vector and matrix data - Plot labelling, curve labelling and editing. 2D plots: Basic Plotting Functions - Creating a Plot - Plotting Multiple Data Sets in One Graph - Specifying Line Styles and Colors - Graphing Imaginary and Complex Data - Figure Windows - Displaying Multiple Plots in One Figure - Controlling the Axes. 3D plots: Creating Mesh and Surface - Mesh and Surface Visualizing – Subplots.

UNIT V

(8 Hours)

MATLAB Programming: Automating commands with scripts - Writing programs with logic and flow control - Writing functions - Control statement Programming - Conditional Statement Programming - Examples - Loops and Conditional Statements: Control Flow: Conditional Control - if, else, switch Loop Control: for, while, continue, break Program Termination: return Functions Writing user defined functions - Built in Function - Function calling Return Value. Image Processing functions

Text Books:

1. S. Swapna Kumar and Lenina S V B, MATLAB *Easy way of Learning*, PHI Learning Pvt. Ltd. , First Edition, 2016
2. Syed Nasimul Alam and Syed Samsul Alam, *Understanding MATLAB A Text Book for Beginners*, I.K International Publishing House Pvt. Ltd., First Edition, 2013

VALUE ADDED COURSE DATABASE ADMINISTRATOR

Hours: 30

Course Outcome:

At the end of the course, students will be able to:

CO 1. Understand the fundamental concepts of SQL

CO 2. Design the tables using Data Definition Languages

CO 3. Implement sub queries concepts for retrieving the records from the tables

CO 4. Execute various advance PL/SQL queries related to real time problems.

CO 5. Perform PL/SQL programming using concept of Cursor Management, Error Handling, Package and Triggers

UNIT I

6 hrs

Beginning with SQL: Introduction – SQL Fundamentals – Data Types of SQL – Creating and Manipulating Tables: Introduction – Structure of Table – Table Creation Rules – Create Table Statement – Creating Table from an Existing Table – Role of Constraints to achieve – Data Integrity.

UNIT II

6 hrs

Types of Constraints – To Display Information about Table – Altering Table – Removing Tables – Renaming Tables – Table available as Data Dictionary – DML Statement – Inserting Records – Updating Records– Deleting Records – Truncate Statement – Importance of TCL Statements.

UNIT III

6 hrs

Simple Data Retrieval Statement: SQL*PLUS – Select Statement – Changing Column Heading with Column Aliases – Oracle Functions & Group by Clause: Introduction – Single Row Functions –Aggregate Functions – Group Data. Joins & Sub-queries: Types of Join – Nested Queries.

UNIT IV

6hrs

Introduction to PL/SQL: Introduction – SQL vs PL/SQL – Advantages of PL/SQL – Architecture of PL/SQL – Structures of PL/SQL – PL/SQL Elements – Variables and Constants. Control Statement: Introduction – Conditional Control –Iterative Control – Sequential Control.

UNIT V

6 hrs

Error Handling: Handling of Errors – Advantages of Exceptions – Exception Types – Cursor Handling: Introduction – Types of Cursor – Implicit Cursor Handling – Explicit Cursor Handling – Use of variable attributes %row type in Cursor – Cursor Loop

Book for Referecne:

1. Parteek Bhatia, Sanjiv Datta, Ranjit Singh, Simplified Approach to Oracle, Third Revised Edition 2008.Kalyani Publications.
2. Ivan Bayross, Commercial Application Development Using Oracle, 2nd Revised Edition, BPB Publications,2013
3. Rajeeb C. Chatterjee, Learning Oracle SQL and PL/SQL: A Simplified Guide, PHI Learning PrivateLimited, 2012

VALUE ADDED COURSE

ANGULAR JS

Hours: 30

Course Outcome:

- At the end of the course, students will be able to:
- CO 1. Understand the basic concepts in Angular JS
 - CO 2. Implement the various Filters in the web applications
 - CO 3. Develop the real time applications using services
 - CO 4. Utilizing the predefined functions
 - CO 5. Presenting route usefulness in web applications

UNIT I

6 hrs

Getting Started Section - Showcasing all common Angular constructs Section - The importance of scope – Components - Built-in directives.

UNIT II

6 hrs

Custom Directives - How data binding works – Filters - Custom filters - Constants.

UNIT III

6 hrs

Controllers – Services – Events - Form Validation - ng-class directive - ng-repeat - ng-style - ng-view.

UNIT IV

6 hrs

Providers – Decorators - Built-in helper Functions.

UNIT V

6 hrs

Angular \$scopes - Using AngularJS with TypeScript - HTTP Interceptor - Unit tests

References:

1. Angular JS Notes for Professionals, JS group of company. www.GoalKlicker.com
2. Learn Angular JS Tutorials Web application framework, www.Tutorialspoint.com

VALUE ADDED COURSE
BASICS OF INTERNET OF THINGS (IoT)

Hours: 30

Course Outcome:

At the end of the course, students will be able to:

CO 1. Understand the underlying concepts of Internet of Things.

CO 2. Realize the various IoT enabling technologies and to comprehend the idea of M2M.

CO 3. Apply the concept of IoT in the real world scenarios.

CO 4. Impart the knowledge on the devices and tools of IoT

CO 5. Implement the real time problem with IoT concepts

UNIT – I

6 hrs

Introduction: Definition and Characteristics of IoT-Things in IoT-IoT Protocols-IoT Functional Blocks-IoT Communication Models-IoT Communication APIs.

UNIT – II

6 hrs

IoT Enabling Technologies: Wireless Sensor Networks-Cloud Computing-Big Data Analytics-Communication Protocols-Embedded System. **IoT & M2M:** Machine to Machine-Difference between IoT and M2M-SDN and NFV for IoT.

UNIT –III

6 hrs

Domain Specific IoTs: Home Automation-Cities-Environment-Retail-Logistics-Agriculture-Industry-Health & Lifestyle.

UNIT –IV

6 hrs

Developing IoTs: IoT Design Methodology. **IoT Physical Devices & Endpoints:** What is an IoT Device-Exemplary Device:Raspberry Pi-Linux on Raspberry Pi-Other IoT Devices.

UNIT – V

6 hrs

Python Packages of Interest for IoT: JSON-XML-HTTPLib & URLLib-SMTPLib. **Case Studies:** Home Automation-Productivity Applications.

Book for Reference:

1. Arshdeep Bahga and Vijay Madisetti, “*Internet of Things: A Hands-On Approach*”, Universities Press (India) Private Limited, 1st Edition, 2015.
2. Ryan Heitz,” Hello Raspberry Pi! Python programming for kids and other beginners”, United States of America by Manning Publications Co, 2016.

VALUE ADDED COURSE
DREAMWEAVER

Course Outcome:

At the end of the course, students will be able to:

- CO 1. Understand the basic concepts of Dreamweaver
- CO 2. Construct a website using Adobe Dreamweaver that contains links, HTML tags, CSS code, Microsoft Word integration, tables, forms, object tag, page layout, fonts, colors and frames.
- CO 3. Implement the CSS concepts in web applications including video, sound, and graphics
- CO 4. Design a web page with multimedia content for commercial applications
- CO 5. Validate the web pages using JavaScript concepts for developing web applications

Unit I **6 hrs**

Introduction to Dreamweaver CS4, Working with Dreamweaver Websites.

Unit II **6 hrs**

Working with Web Pages, Working with HTML Tables, Framesets and Frames

Unit III **6 hrs**

Introduction to Cascading Style Sheets

Unit IV **6 hrs**

Working with Templates, Working with Flash Contents and HTML Forms

Unit V **6 hrs**

Working with JavaScript, Finalizing the Site

Books for Reference

1. Dreamweaver CS4 in Simple Steps, Kogent Learning Solutions Inc, Dreamtech Press, 2010

DEPARTMENT OF INFORMATION TECHNOLOGY
VALUE ADDED COURSE
MOBILE APPLICATION DEVELOPMENT

Hours: 30

Course Outcome:

At the end of the course, students will be able to:

- CO 1. Understand the purpose different development tools for Android
- CO 2. Integrate an application with pre-existing third party libraries
- CO 3. Utilize Android Studio to create simple and complex applications
- CO 4. Plan, prepare and build an original Android from concept to working program.
- CO 5. Publish an application to the Android Market

UNIT I

6 hrs

Introduction - Installation and Configuration of Your Development Platform: Installing Eclipse and Java – Installing Android Developer Kit -Starting an Android Application Project

UNIT II

6 hrs

Application Design –Controls and User interface: Check Boxes, Radio Button, The Spinner, and Date Picker – Key classes

UNIT III

6 hrs

Basic Graphics by Extending the View Class - Multi Screen applications: Stretching the Screen – Popup Dialog Boxes – Menus on the Android Devices – Key Classes

UNIT IV

6 hrs

Working with Images - Text Files – Data Tables and XML: Working with Text Files – Data Tables using SQLite – Using XML for Data Exchange – Key classes

UNIT V

6 hrs

Client Server Application – Key classes: Socket – Server Socket – HTTP URL connection – URL

Book for Reference:

1. James C. Sheusi, Android Application Development for Java Programmers, Course Technology, 2013
2. Wei Meng Lee, Beginning Android Application Development, Wiley Publishing, Inc, 2011