

SRI VENKATESWARA UNIVERSITY
BCA (General) Honours– W.E.F. 2024-25

Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
II	IV	9	Python Programming	3	3
			Python Programming Lab	2	1
		10	Operating Systems	3	3
			Operating Systems Lab	2	1
		11	Web Programming	3	3
			Web Programming	2	1

Note:

Course-9 Python Programming is common to all BCA General/ Artificial Intelligence/ Big Data / Data Science / Cloud Computing Specializations

SRI VENKATESWARA UNIVERSITY::TIRUPATI
BCA General/Artificial Intelligence/Big Data/Cloud Computing/ Data Science
Honours

II Year IV Semester
COURSE 9: PYTHON PROGRAMMING
(w.e.f. 2024-25)

Theory	Credits: 3	3 hrs/week
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Course Objectives:

Python is a language with a simple syntax, and a powerful set of libraries. It is an interpreted language, with a rich programming environment, including a robust debugger and profiler. While it is easy for beginners to learn, it is widely used in many scientific areas for data exploration.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
2. Demonstrate proficiency in handling Strings and File Systems.
3. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
4. Interpret the concepts of Object-Oriented Programming as used in Python.

Unit-I

Getting Started with Python: Introduction to Python, Python Keywords, Identifiers, Variables, Comments, Data Types, Operators, Input and Output, Type Conversion, Debugging. Flow of Control, Selection, Indentation, Repetition, Break and Continue Statement, Nested Loops.

Strings-String Operations, Traversing a String, String handling Functions.

Case Study:

1. Study the features that make Python different from Procedural Languages.

Unit-II

Functions: Functions, Built-in Functions, User Defined Functions, recursive functions, Scope of a Variable

Python and OOP: Defining Classes, Defining and calling functions passing arguments, Inheritance, polymorphism, Modules– date time, math, Packages.

Exception Handling- Exception in python, Types of Exception, User-defined Exceptions.

Case Study:

1. Present a report of how Exception handling is different from JAVA Exceptional Handling.

Unit-III

List: Introduction to List, List Operations, Traversing a List, List Methods and Built-in Functions.

Tuples and Dictionaries: Introduction to Tuples, Tuple Operations, Tuple Methods and Built-in Functions, Nested Tuples. Introduction to Dictionaries, Dictionaries are Mutable, Dictionary Operations, Traversing a Dictionary, Dictionary Methods and Built-in functions.

Case Study:

1. What are the special features of dictionaries and try to analyze about the same features in any other language.

Unit-IV

Introduction to NumPy: Array, NumPy Array, Indexing and Slicing, Operations on Arrays, Concatenating Arrays, Reshaping Arrays, Splitting Arrays, Statistical Operations on Arrays.

Data Handling: Introduction to Python Libraries, Series, Data Frame, Importing and Exporting Data between CSV Files and Data Frames.

Case Study:

1. Present a paper on advanced features of NumPy.

Unit-V

Plotting Data using Matplotlib: Introduction, Plotting using Matplotlib – Line chart, Bar chart, Histogram, Scatter Chart, Pie Chart.

Database Connectivity: Importing MySQL for Python, Connecting with a database, Forming a query in MySQL, Passing a query to MySQL.

Case Study:

1. Present a paper on the features and advantages of MySQL compared to other commercial Databases.

References:

1. Mark Lutz, Learning Python, 5th Ed. O'REILLY
2. Core Python Programming by Dr. R. Nageswara Rao
3. Problem Solving and Python Programming by E. BalaguruSwamy
4. Python programming: using problem solving approach by Reema Thareja.
5. Albert Lukaszewski, MySQL for Python, Packet Publishing

**BCA General/Artificial Intelligence/Big Data/Cloud Computing/ Data Science
Honours**

II Year IV Semester

COURSE 9: PYTHON PROGRAMMING

Practicals

Credits: 1

2 hrs/week

Lab Programs

1. Write a Program to check whether given number is Armstrong or not.
2. Write a Program to check whether given number is perfect or not.
3. Write a program to find factorial of given number using recursive function
4. Write a program to implement inheritance and polymorphism
5. Demonstrate a python code to print try, except and finally block statements
6. Write a program to demonstrate String handling functions
7. Write a program to input n numbers from the user. Store these numbers in a tuple. Print the maximum and minimum number from this tuple.
8. Write a program to enter names of employees and their salaries as input and store them in a dictionary
9. Write a program to implement statistical operations on arrays using numPy
10. Write a program to import and export CSV file to DataFrame.
11. Create the DataFrame Sales containing yearwise sales and perform basic operation on it.
12. Visualize the plots using matplotlib lib.
13. Write a program to connect with MySQLdatabase and perform CRUD(Create, Read, Update and Delete) operations

MODEL QUESTION PAPER
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Honours
II Year IV Semester
COURSE 9: PYTHON PROGRAMMING
(w.e.f. 2024-25)

Time : 3 Hrs

Max Marks : 75

SECTION - A

Answer any Five of the following

5 X 3= 15 Marks

1. Short answer question from Unit-1
2. Short answer question from Unit-1
3. Short answer question from Unit-2
4. Short answer question from Unit-2
5. Short answer question from Unit-3
6. Short answer question from Unit-3
7. Short answer question from Unit-4
8. Short answer question from Unit-4
9. Short answer question from Unit-5
10. Short answer question from Unit-5

SECTION - B

Answer any Five of the following

5 X 12= 60 Marks

11. Long answer question from Unit-1
12. Long answer question from Unit-1
13. Long answer question from Unit-2
14. Long answer question from Unit-2
15. Long answer question from Unit-3
16. Long answer question from Unit-3
17. Long answer question from Unit-4
18. Long answer question from Unit-4
19. Long answer question from Unit-5
20. Long answer question from Unit-5

Note: The question paper setter is requested to set question paper based on a model question paper and ensure coverage across all units equally.

SRI VENKATESWARA UNIVERSITY::TIRUPATI

BCA General Honours

II Year IV Semester

COURSE 10: OPERATING SYSTEMS

(w.e.f. 2024-25)

Theory

Credits: 3

3 hrs/week

Course Objectives:

1. To know the basic Structure, Components and Organization of Operating System.
2. To learn the notation of a Process-a Program in Execution, Management, Scheduling and Classic Problems of Synchronization.
3. To gain knowledge in various Memory Management Techniques.
4. To understand Unix Operating System and Various File operations.

Course Outcomes:The students will be able to:

1. Understand the main components and Structure of Operating System & their functions.
2. Analyze various ways of Process Management & CPU Scheduling Algorithms.
3. Evaluate various device and resources like Memory, Time and CPU Management techniques in distributed systems.
4. Apply different methods for Preventing Deadlocks in a Computer System.
5. Create and build an Application/Service over the UNIX operating system.

Unit I

Introduction: What is Operating System? History and Evolution of OS, Basic OS Functions, Computer System Architecture, Operating System Structure.

System Structures: Operating System Services, User Operating System Interface, System Calls, Types of System Calls, Overview of UNIX Operating System, Basic Features of Unix Operating System.

Case Study :

1. Understanding and listing the basic differences between UNIX OS and Windows OS in usage, user interface, features etc.

Unit II

Process Management: Process Concept, Operation on Processes, Communication in Client- Server Systems.

Process Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, RR, Priority).

Case Study:

1. Present your understanding on how CPU Scheduling is different in various OS.

Unit III

Synchronization: Process Synchronization, Semaphores: Usage, Implementation, The Critical Section Problem., Classic problems of synchronization.

Deadlocks: Introduction, Deadlock Characterization, Necessary and Sufficient conditions for Deadlock, Deadlock Handling Approaches: Deadlock prevention, Deadlock Avoidance and Deadlock detection and Recovery.

Case Study:

1. Present your understanding of Deadlocks and new methodologies available in new Operating Systems released in the market.

Unit IV

Memory Management: Overview, Swapping, Contiguous Memory Allocation, Paging, Paging Examples, Segmentation, Page Replacement Algorithms

Case Study:

1. Present a paper on new methods used in Memory management in the present day Operating Systems .

Unit V

Files and Directories: Files, Directory Structure, File Operations, File System. Implementation: File Allocation Methods, Comparison of UNIX and Windows.

Case Study:

1. Present a Paper on how UNIX treats regular files and directories differently from other operating systems.

TEXTBOOKS

1. Operating System Concepts: Abraham Silberschatz, Peter B. Galvin, Greg Gagne, 8th Edition, Wiley.
2. Unix and shell Programming by B.MH Arwani, OXFORD University Press.

REFERENCE BOOKS:

1. Operating System Principles, Abraham Silberchatz, PeterB.Galvin, GregGagne 8th Edition, Wiley Student Edition.
2. Principles of Operating Systems by Naresh Chauhan, OXFORD University Press.
3. Tanenbaum AS, Woodhull AS, Operating System Design and Implementation, 3rd edition, PHI2006.
4. Unix Shell Programming-Yashwant Kanetkar

BCA General Honours
II Year IV Semester
COURSE 10: OPERATING SYSTEMS

Practical

Credits: 1

2 hrs/week

List of Experiments

1. Write about any 10 Internal and External Dos Commands
2. Getting hands-on on basic UNIX Commands.
3. Getting hands-on file management in Windows
4. Write C program to implement the FCFS Scheduling Algorithm
5. Write C program to implement the SJF Scheduling Algorithm
6. Write C program to implement the RR Scheduling Algorithm
7. Write C program to implement the Priority Scheduling Algorithm
8. Write C program to implement the FIFO Page Replacement Algorithm
9. Write C program to implement the LRU Page Replacement Algorithm
10. Write C program to implement the MRU Page Replacement Algorithm

MODEL QUESTION PAPER
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BCA General Honours
II Year IV Semester
COURSE 10: Operating Systems
(w.e.f. 2024-25)

Time : 3 Hrs

Max Marks : 75

SECTION - A

Answer any Five of the following

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SECTION - B

Answer any Five of the following

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BCA General Honours

II Year IV Semester

COURSE 11: WEB PROGRAMMING

(w.e.f. 2024-25)

Theory

Credits: 3

3 hrs/week

Course Objectives:

1. Learn the basics of creating a website.
2. Understand HTML5 coding conventions
3. Understand the philosophy of how HTML and CSS should fit together
4. Learn how JavaScript came to be.

Course Outcomes: Upon Completion of the course, the students will be able to

1. Understand the Web Design Process.
2. Apply the HTML tags, elements and attributes
3. Apply different types of HTML elements
4. Use of organizational elements, tables and images
5. Use of audio, video files
6. Apply JavaScript concepts

Unit-I:

Introduction to Web Programming: Introduction, creating a website, HTML tags, HTML Elements, HTML attributes, CSS Preview, History of HTML, Differences between old HTML and HTML5, how to check your HTML code

Case Study: Create a web page of your department using standard HTML tags, HTML elements and HTML attributes

Unit-II:

Coding Standards, Block Elements:

HTML coding conventions, Comments, HTML Elements, Should Describe Web Page Content Accurately, Content Model Categories, Block Elements, blockquote Element, Whitespace Collapsing, pre Element, Phrasing Elements, Editing Elements, q and cite Elements, dfn, abbr, and time Elements, Code-Related Elements, br and wbr Elements.

Text Elements, and Character References: sup, sub, s, mark, and small Elements, strong, em, b, u, and i Elements, span Element, Character References, Web Page with Character References, and Phrasing Elements.

Case Study: Create a web page related to famous water reservoir/ famous tourist spots near by your location using block elements, text elements and character references

Unit-III:

Cascading Style Sheet(CSS) : CSS Overview, CSS Rules, Example with Type Selectors and the Universal Selector, CSS Syntax and Style, Class Selectors, ID Selectors, span and div Elements, Cascading, style Attribute, style Container, External CSS Files, CSS Properties, Color Properties, RGB Values for Color, Opacity Values for Color, HSL and HSLA Values for Color, Font Properties, line-height Property, Text Properties, Border Properties, Element Box, padding Property, margin Property,

Case Study: Description of your City or place with the use of CSS and compare it with previous two case studies

Unit-IV:

Organizing a page's, content with lists, figures and various organizational elements: List, Descendant selector, Figure with picture and caption, Organizational elements, Navigation

bar, Header and Footer, User agent stylesheet, Child selector, CSS inheritance

Tables and CSS Layout: Data tables vs Layout tables, Table elements, Format table

Links and Images: Implement a link with the a element, different types of href attribute Values, relative URLs, Implement a link that jumps to a particular location within a web page, element's target attribute, Understand the concepts behind GIF, JPEG, and PNG bitmap image formats, implement bitmap image elements within a web page, implement SVG image elements within a web page

Case Study: Create a web page related to your department time table and images of any activity
Unit-V:

Image Manipulations, Audio and Video: : Position an image, how to display a shortcut icon in a browser's tab area, iframe, Create an image sprite file, Implement an audio player using the audio element, Handle different audio file formats, Cover a web page's background with an image, web fonts, Implement a video player using the video element, Center a web page's content, Cover a web page's background with a color gradient

Introduction to JavaScript: Button control with an event Handler, Syntax rules for functions, variables, identifiers, and assignments, Document Object Model(DOM), form with a text control and a button, event-handler attributes, rollover using mouse events

Case Study: Create a webpage involving audio and video of your college day activities

Prescribed Text Books:

1. Web Programming with HTML5,CSS and JavaScript, John Dean, Jones & Bartlett Learning

Reference Text Books:

HTML & CSS: The Complete Reference, 5th Edition, Thomas. A. Powell

BCA General Honours
II Year IV Semester
COURSE 11: Web Programming
Credits: 1

Practical

2hrs/week

LIST OF EXPERIMENTS:

Course Outcomes: On successful completion of this practical course, student shall be able to:

1. Create web pages using HTML.
2. Apply different styles to HTML page.
3. Work with different scripting elements .

WEEK-1

1. Write an HTML code to display your education details in a tabular format.
2. Write an HTML code to display your CV on a web page.

WEEK-2

1. Create a webpage with HTML describing your department. Use paragraph and list tags.
2. Apply various colors to suitably distinguish key words. Also apply font styling like italics, underline and two other fonts to words you find appropriate. Also use header tags.
3. Create links on the words e.g. “Wi-Fi” and “LAN” to link them to Wikipedia pages.
4. Insert an image and create a link such that clicking on image takes user to other page.
5. Change the background color of the page. At the bottom create a link to take user to the top of the page.

WEEK-3

1. Create a table to show your class time-table.
2. Use tables to provide layout to your HTML page describing your university infrastructure.
3. Use and tags to provide a layout to the above page instead of a table layout.
4. Use frames such that page is divided into 3 frames 20% on left to show contents of pages, 60% in center to show body of page, remaining on right to show remarks.
5. Embed Audio and Video into your HTML web page.

WEEK-4

1. Write an HTML code to illustrate the usage of the following:
 - Ordered List
 - Unordered List
 - Definition List

WEEK-5

1. Write an HTML code to create a frameset having header, footer, navigation and content sections.

WEEK-6

1. Write an HTML code to demonstrate the usage of inline CSS.
2. Write an HTML code to demonstrate the usage of internal CSS.
3. Write an HTML code to demonstrate the usage of external CSS.

WEEK-7

1. Create a form similar to the one in previous experiment. Put validation checks on values entered by the user using JavaScript (such as age should be a value between 1 and 150).
2. Write a JavaScript program to display information box as soon as page loads.
3. Write a JavaScript program to change background color after 5 seconds of page load.
4. Write a JavaScript program to dynamically bold, italic and underline words and phrases based on user actions.
5. Write a JavaScript program to display a hidden div (e.g. showing stats of a player when user clicks on his name)
6. Write a Java script to prompt for users name and display it on the screen.
7. Design HTML form for keeping student record and validate it using Java script.
8. Write programs using Java script for Web Page to display browsers information.

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COURSE 11: WEB Programming
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Time : 3 Hrs

Max Marks : 75

SECTION - A

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SECTION - B

Answer any Five of the following

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