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

Year	Semester	Course	Titleofthe Course	No. of Hrs /Week	No. of Credits
II	IV	9	Python Programming	3	3
			Python ProgrammingLab	2	1
		10	OperatingSystems	3	3
			OperatingSystemsLab	2	1
		11	Mobile application development using ANDROID	3	3
			Mobile application development using ANDROID Lab	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

COURSE9:PYTHONPROGRAMMING

(w.e.f. 2024-25)

Theory **Credits: 3** **3 hrs/week**

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, NumPyArray, 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.

CaseStudy:

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.

CaseStudy:

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 ReemaThareja.
5. Albert Lukaszewski, MySQL for Python, Packet Publishing

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

Honours

II Year IV Semester

COURSE9:PYTHONPROGRAMMING

Practicals **Credits: 1** **2hrs/week**

LabPrograms

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 Data Frame.
11. Create the Data Frame Sales containing year wise sales and perform basic operation on it.
12. Visualize the plots using matplot lib.
13. Write a program to connect with MySQLdata base and perform CRUD (Create, Read, Update and Delete) operations

MODEL QUESTION PAPER

SRI VENKATESWARA UNIVERSITY::TIRUPATI

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

II Year IV Semester

COURSE9:PYTHONPROGRAMMING

(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

SRI VENKATESWARA UNIVERSITY::TIRUPATI

BCA General Honours

II Year IV Semester

COURSE 10:OPERATINGSYSTEMS

(w.e.f. 2024-25)

Theory **Credits: 3** **3 hrs/week**

CourseObjectives:

1. To knowthe basic Structure, Components and Organization of Operating System.
2. To learn the notation of aProcess-aProgram inExecution, Management, SchedulingandClassicProblems ofSynchronization.
3. To gain knowledge in various MemoryManagement Techniques.
4. To understand Unix OperatingSystem and Various Fileoperations.

Course Out comes : The students will be able to:

1. Understand the main components and Structureof Operating System&their functions.
2. Analyzevarious waysof Process Management&CPU SchedulingAlgorithms.
3. Evaluatevariousdeviceand resources likeMemory, Timeand CPU Management techniques in distributedsystems.
4. Applydifferent methods forPreventingDeadlocks in a Computer System.
5. Createand build an Application/Service over theUNIX operatingsystem.

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.

CaseStudy:

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).

CaseStudy:

1. Presentyour understandingon how CPU Schedulingis different invarious OS.

Unit III

Synchronization: ProcessSynchronization,Semaphores: Usage,Implementation, TheCritical 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.

CaseStudy:

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 MemoryAllocation, Paging, Paging Examples, Segmentation, Page Replacement Algorithms

CaseStudy:

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.

CaseStudy:

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

TEXT BOOKS

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

REFERENCEBOOKS:

1. Operating System Principles, Abraham Silberchatz, PeterB.Galvin, GregGagne8th Edition, Wiley Student Edition.
2. Principles of Operating Systems by NareshChauhan, OXFORD UniversityPress.
3. TanenbaumAS,WoodhullAS,OperatingSystemDesignandImplementation,3rd edition, PHI2006.
4. UnixShell Programming-YashwantKanetkar

BCA General Honours

II Year IV Semester

COURSE 10:OPERATINGSYSTEMS

Practical **Credits: 1** **2hrs/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 FCFSScheduling Algorithm
5. Write C program to implement the SJFScheduling 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
COURSE10:Operating Systems
(w.e.f. 2024-25)

Time : 3 Hrs **Max Marks : 75**

SECTION - A

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SECTION - B

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SRI VENKATESWARA UNIVERSITY::TIRUPATI

BCA General Honours

II Year IV Semester

COURSE 11:MOBILE APPLICATION DEVELOPMENT USING ANDROID

(w.e.f. 2024-25)

Theory **Credits: 3** **3 hrs/week**

COURSE OBJECTIVES:

1. To facilitate students understandingandroid SDK
2. To help students to gain basic understandingof Android application development
3. To instill workingknowledgeof Android Studio development tool

COURSE OUTCOMES:

The theory, practical experiences and relevant skills associated with this course are to be taught and implemented, so that the student demonstrates the following industry – oriented Cos associated with the above – mentioned competency:

1. IdentifyvariousconceptsandfeaturesofAndroidoperating system.
2. ConfigureAndroidenvironmentand developmenttools.
3. DeveloprichuserInterfacesbyusing layoutsandcontrols.
4. UseUserInterface componentsforandroidapplication development.
5. CreateAndroidapplicationusing database.
6. Publish Androidapplications.

UNIT-I

Introductionto Android:- Overview, History,Featuresof Android,The Android Platform, UnderstandingtheAndroidSoftware Stack–Android Development Environment -Android SDK, Android Installation, Building you First Android application.

CaseStudy:

i. GiveabriefdescriptionofAndroid Architectureand its parts.
ii. Listoutthe challenges we facewhileusing Android?
iii. List thenewfeatures ofAndroid inthelatest version.

UNIT-II

Android Application Design Essentials : Understanding Anatomy of Android Application, Android terminologies, Creating User Inter faces with basic views – Application Context, Activities, Services, Intents, linking activities with Intents, Receiving and Broad casting Intents, Android Mani fest File and its common settings, Using IntentFilter, Permissions.

CaseStudy:

i. Present an idea that you would like to convert it into an application in the future.

UNIT-III

Android User Interface Design Essentials: User Inter face Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation. Layouts,RecyclerView, ListView, Grid View and Web view

Input Controls : Buttons, Checkboxes, Radio Buttons, ToggleButtons, Spinners,Input Events, Menus, Toast, Dialogs, Styles and Themes, Creatinglists, and Customlists

CaseStudy:

i. Present detailreport on the features of Check Boxes, Radio Buttons and ToggleButtons.

UNIT-IV

Testing Android applications : Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, workingwith different types of resources.

CaseStudy:

1. Listout thespecialfeatures of Android with its counterparts.

UNIT-V

Using Common Android APIs : Internal Storage, External Storage, SQLite Databases, managing data using Sqlite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs.

Case Study:

i. List out the points to keep in mind to makeyou application more attractive.
ii. List the controls that make your application attractive.

REFERENCE BOOKS:

1. Lauren Darceyand ShaneConder, “Android Wireless Application Development”, Pearson Education, 2nd ed. (2011)
2. Google Developer Training, "Android Developer Fundamentals Course – Concept Reference”, Google Developer Training Team, 2017.
3. RetoMeier, “Professional Android 2 Application Development”, WileyIndiaPvtLtd
4. MarkLMurphy, “BeginningAndroid”, WileyIndiaPvtLtd
5. “Android ApplicationDevelopment Allin one for Dummies”byBarryBurd, Edition:I
6. “Android”, Dixit, PrasannaKumarVikasPublications, New Delhi2014, ISBN: 9789325977884
7. Maclean David, KomatineniSatya,AllenGrant, “Pro Android 5”, ApressPublications2015ISBN: 978-1-4302-4680-0
8. ”AndroidProgrammingfor Beginners”byHortan, John, Packet Publication, 2015ISBN: 978-1-78588-326-2

ONLINEREADING/ SUPPORTINGMATERIAL:

1. http://www.developer.android.com
2. http://developer.android.com/about/versions/index.html
3. http://developer.android.com/training/basics/firstapp/index.html
4. http://docs.oracle.com/javase/tutorial/index.htm(Available in the form offreedownloadable ebooksalso).
5. http://developer.android.com/guide/components/activities.html
6. http://developer.android.com/guide/components/fundamentals.html
7. http://developer.android.com/guide/components/intents-filters.html.
8. http://developer.android.com/training/multiscreen/screensizes.html
9. http://developer.android.com/guide/topics/ui/controls.html
10. http://developer.android.com/guide/topics/ui/declaring-layout.html
11. http://developer.android.com/training/basics/data-storage/databases.html

BCA General Honours

II Year IV Semester

COURSE 11:MOBILE APPLICATION DEVELOPMENT USING ANDROID

Practical **Credits: 1** **2hrs/week**

LIST OF EXPERIMENTS:

1. Develop a program to implement frame layout, table layoutand relative layout.
2. Develop a program to implement Text View and Edit Text.
3. Develop a program to implement Auto Complete Text View.
4. Develop a program to implement Button,ImageButtonand ToggleButton.
5. Develop a program to implement login window usingaboveUIcontrols.
6. Develop a program to implement Checkbox.
7. Develop a program to implement Radio Button and Radio Group.
8. Develop a program to implement Progress Bar.
9. Develop a programto implementListView, GridView,ImageViewand Scroll View.
10. Develop a program to implement CustomToast Alert.
11. Develop a program to implement Date and TimePicker.
12. Develop a program to create an activity.Developaprogram to implementnew activityusing explicitintent and implicitintent.
13. Develop a program to implement content provider.
14. Develop a program to implement service.
15. Develop a program to implement broadcast receiver.
16. Develop a program to implement sensors.
17. Develop a program to build Camera.
18. Develop a program for providing Bluetooth connectivity.
19. Perform CRUDoperations usingSQLite.

MODEL QUESTION PAPER

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BCA General Honours

II Year IV Semester

COURSE 11:MOBILE APPLICATION DEVELOPMENT USING ANDROID

(w.e.f. 2024-25)

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