TEXT BOOKS:
1. Wes McKinney, "Python for Data Analysis", O'Reilly, First Edition, 2012.
2. Avrim Blum, John Hopcroft, Ravindran Kannan, "Foundations of Data Science", Cambridge University Press, 2018.

REFERENCES:
1. Jorl Gurus, "Data Science from Scratch", O'Reilly, First Edition, 2015.
2. Jake VanderPlas, "Python Data Science Handbook", O'Reilly, First Edition, 2016.
3. Samir Madhavan, "Mastering Python for Data Science", PACKT Publishing, 2015.
4. Alberto Boschetti, Luca Massaron, "Python Data Science Essentials", PACKT Publishing, Third Edition, 2018.
5. Gopi Subramanian, "Python Data Science Cookbook", PACKT Publishing, 2015.

COURSE OUTCOMES:
At the end of this course, the students will be able to
1. Describe the data structures suitable for handling data.
2. Apply data cleaning and transformation techniques on datasets.
3. Create simple visualization plots of data.
4. Apply Singular Value Decomposition for data in high dimensional space.
5. Explain algorithms for massive data problems.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Mapping of Course Outcomes with Programme Outcomes												
CO1	1	-	-	-	-	-	-	-	-	-	-	-
CO2	2	2	1	-	2	-	-	-	-	-	-	2
CO3	1	-	1	-	2	-	-	-	-	-	-	-
CO4	3	2	2	2	-	1	-	-	-	-	-	-
CO5	2	2	1	2	1	-	-	-	-	-	-	1

DSPC406	**PYTHON PROGRAMMING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**

COURSE OBJECTIVES:
- To understand the variables, conditionals, loops, recursion and function calls in Python.
- To use basic data structures such as List, Dictionary and be able to manipulate text files and images.
- To learn the object oriented concepts in Python.
- To acquire skills in database and GUI programming through Python.

UNIT - I Introduction
Elementary Programming, Selections and Loops: History of Python – Getting Started with Python – Programming Style – Writing a Simple Program – Reading Input from the Console – Identifiers – Variables, Assignment Statements, and Expressions – Simultaneous Assignments – Named Constants – Numeric Data Types and Operators – Type Conversions and Rounding–Introduction – Boolean Types, Values, and Expressions – if Statements – Two-Way if-else Statements – Nested

if and Multi-Way if-else Statements – Logical Operators – Conditional Expressions – Operator Precedence and Associativity – Detecting the Location of an Object Case Study: Computing Body Mass Index – The while Loop – The for Loop –Nested Loops – Keywords break and continue – Case Studies: Displaying Prime Numbers and Random Walk.

UNIT - II Python Function
Mathematical Functions, Strings and User Defined Functions: Simple and Mathematical Python Built–in Functions – Strings and Characters – Introduction to Objects and Methods – Formatting Numbers and Strings– Drawing Various Shapes – Drawing with Colors and Fonts – Defining a Function – Calling a Function –Functions with/without Return Values – Positional and Keyword Arguments –Passing Arguments by Reference Values –
Modularizing Code – The Scope of Variables – Default Arguments – Returning Multiple Values – Function Abstraction and Stepwise Refinement – Case Study: Generating Random ASCII Characters.

UNIT - III Class and Object
Introduction to Object – Oriented Programming – Basic principles of Object – Oriented Programming in Python – Class definition, Inheritance, Composition, Operator Overloading and Object creation – Python special Unit – Python Object System – Object representation, Attribute binding, Memory Management, and Special properties of classes including properties, Slots and Private attributes.

UNIT - IV Files and Exception Handling
Files, Exception Handling and Network Programming: Introduction –Text Input and Output – File Dialogs – –Exception Handling – Raising Exceptions – Processing Exceptions Using Exception Objects – Defining Custom Exception Classes – Binary IO Using Pickling – Case Studies: Counting Each Letter in a File and Retrieving Data from the Web–Client Server Architecture–sockets – Creating and executing TCP and UDP Client Server Unit – Twisted Framework – FTP – Usenets – Newsgroup – Emails – SMTP – POP3.

UNIT - V Database and GUI
Database and GUI Programming: DBM database – SQL database – GUI Programming using Tkinter: Introduction – Getting Started with Tkinter – Processing Events – The Widget Classes – Canvas – The Geometry Managers –Displaying Images – Menus – Popup Menus – Mouse, Key Events, and Bindings –List boxes – Animations – Scrollbars – Standard Dialog Boxes–Grids.

TEXT BOOKS:
1. Mark Lutz, "Learning Python, Powerful OOPs", O'Reilly, 2011.
2. Guttag, John, "Introduction to Computation and Programming Using Python", MIT Press, 2013.

REFERENCES:
1. Jennifer Campbell, Paul Gries, Jason montajo, Greg Wilson, "Practical Programming an Introduction to Computer Science Using Python" The Pragmatic Bookshelf, 2009.
2. Wesley J Chun "Core Python Applications Programming", Prentice Hall, 2012.
3. Jeeva Jose, "Taming Python by Programming", Khanna Publishing House, 1st edition, 2017.
4. J.Jose, "Introduction to Computing and Problem Solving with Python", Khanna Publications, 1st edition, 2015.
5. ReemaThareja, "Python Programming", Pearson, 1st edition, 2017.

COURSE OUTCOMES:
 At the end of this course, the students will be able to
1. Understand basic concepts of Conditional and Looping Statements in python programming.
2. Solve large program in a easy way using Modules concepts.
3. Apply the concepts of Object Oriented programming including encapsulation, inheritance and polymorphism as used in Python.
4. Simulate the commonly used operations in file system and able to develop application program to communicate from one end system to another end.
5. Develop menu driven program using GUI interface and to gain knowledge about how to store and retrieve data.

Mapping of Course Outcomes with Programme Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	-	1	-	-	-	-	-	-	-	-	-
CO2	2	1	-	-	1	-	-	-	-	-	-	-
CO3	1	2	-	-	1	-	-	-	-	-	-	-
CO4	1	2	2	1	-	-	-	-	-	-	-	-
CO5	1	2	3	1	2	-	-	-	1	-	-	2

DSCP407	**DATABASE TECHNOLOGY LAB**	**L**	**T**	**P**	**C**
		3	**0**	**3**	**1.5**

COURSE OBJECTIVES:
- To understand basic database concepts, including the structure and operation of the relational data model.
- To construct simple and moderately advanced database queries using Structured Query Language (SQL).
- To understand and successfully apply logical database design principles, including E-R diagrams and database normalization.
- To design and implement a small database project.

LIST OF EXERCISES

1. Implementation of queries for student data base.
2. Data Definition Language – with constraint and without constraint.
3. Data Manipulation language – Insert, Delete, Update, Select and truncate.
4. Transaction Control Statement – Commit, Save point, Roll back.
5. Data Control Statement – Grant, Revoke.
6. Data Projection Statement – Multi column, alias name, arithmetic operations, Distinct records, concatenation, where clause.
7. Data Selection Statement – Between, and, not in, like, relational operators and logical operators.
8. Aggregate functions – count, maximum, minimum, sum, average, order by, group by, having.