



**SANDIP**  
UNIVERSITY

SCHOOL OF COMMERCE AND MANAGEMENT SCIENCES  
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Course: Data Analysis using Python										Course Code: PBA211	
Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA)					End Semester Examination		Total
L	T	P	C	CIA-1	CIA-2A	CIA-2B	CIA-3	T/P	Theory	T/P	
4	1	0	4	10	10	10	10	10	50	00	100
Max. Time, End Semester Exam (Theory) -3Hrs.											

Course Objectives	
1	To learn and understand Python programming basics and paradigm.
2	To learn and understand python looping, control statements and string manipulations.
3	To learn and understand NumPy and Array.
4	To learn and understand gathering and manipulating data with Pandas
5	To learn and understand data visualization with using Matplotlib

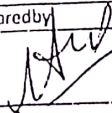
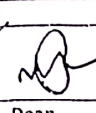
Course Content			
Unit No.	Module No.	Content	Hours
1.		<b>Introduction to Python:</b> Variables Numeric Data Types: Int & Float Sequential Types: Str & List Definite Loops: For loops If-Elif-Else Statements Data Types: Tuples Build Mortgage Calculator with Python	12
2		<b>Advanced Python:</b> Creating Custom Functions Indefinite Loops: while loops Data Types, Dictionary and Set Slicing Data Types Reading txt files with Python Analyze data from text and CSV file	12
3		<b>Numerical Python &amp; Pandas:</b> NumPy Array Broadcasting and U-Functions Introduction to Pandas Series, DataFrame, Panel Manipulate live data from website	12

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		BOS Chairman (SOCMS)	Dean (SOCMS)
			Asso. Dean Registrar Curriculum Development (SUH)

4		<b>Data Manipulation</b> 5 ways to create a DataFrame Slicing and Filtering DataFrame Lambda Run If and Else scenarios Gather and Manipulate Data with Pandas Analyze business data from csv files	12
5		<b>Data Extraction &amp; Analysis:</b> Get live data from APIs Plot data with Matplotlib Merge and Concat Data Groupby in Pandas What if logic in Finance with Pandas	12
<b>Total No. of Hrs</b>			60

<b>Course Outcome</b>	
<b>Students should able to</b>	
CO1	Define and demonstrate the use of built-in data structures "lists" and "dictionary".
CO2	Design and implement a program to solve a real world problem.
CO3	Make database connectivity in python programming language.
CO4	Design and implement data analysis with Pandas
CO5	Design and implement data visualization

<b>Recommended Resources</b>	
<b>Text Books</b>	1. Hands-On Data Structures and Algorithms with Python — By Dr. Basant Agarwal. 2. Michael Urban and Joel Murach, Python Programming, Shroff/Murach, 2016. 3. Mark Lutz, Programming Python, O'Reilly, 4th Edition, 2010
<b>Reference Books</b>	1. Wes McKinney, Python For Data Analysis 2. Chris, Albon Machine Learning with Python Cookbook 3. David Beazley & Brian K. Jones, Python CookBook 4. Daniel Nelson ,Data Visualization in Python 5. Introduction to Machine Learning with Python: A Guide for Data Scientists — By Andreas C. Müller and Sarah Guido

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