PURDUE UNIVERSITY FORT WAYNE

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Course	ECE 23000 – Engineering Data Analysis in Python
Type of Course	Required for EE and CmpE Program
Catalog Description	This course introduces data analysis to engineering students through Python programming. Students learn Python programming and introductory data science topics. The topics include data sampling and estimation, classification, clustering and advanced data analysis approaches. Students will be able to use Python as the programming language to solve data science problems in their course and research work.
Credits	3
Contact Hours	3
Prerequisite Courses	ENGR 12800 or equivalent course of computer programming
Corequisite Courses	None
Prerequisites by Topics	None
Recommended Textbooks:	Avinash Navlani et. al. Python Data Analysis. 3rd, edition John V. Guttag. Introduction to Computation and Programming Using Python, 3rd Edition
Course Objectives	Students should be able to program in Python, understand basic data analysis methods and apply the knowledge in data processing problems.
Course Outcomes	A student who successfully fulfills the course requirements will have demonstrated: 1. An ability to program in Python [1] 2. An ability to understand and implement data analysis algorithms [2] 3. An ability to explain the results of data analyses [2] 4. An ability to incorporate basic data structure and numerical packages in their computer programs [6]

Lecture Topics	1. Python Data Types, Flow Controls 2. Data Structures, Functions 3. Input/Output and Files 4. Error and Exception Handling, Assertion 5. Object Oriented Programming 6. Python Standard Libraries 7. Essential Python packages for Data Science 8. Python Data Visualization 9. Python Data Analysis Topics: Histograms, probability distributions Data retrieving, cleaning, and sampling Regression, Classification and Clustering
Computer Usage	High
Laboratory Experience	None
Design Experience	Medium
Coordinator	Bin Chen, Ph.D.
Date	3/14/2022