WIIT-7110 Applied Data Analytics
Syllabus

Description of Course:

This course will expose students to a typical analytics process beginning with examining business requirements and culminating in the communication of information to address those requirements. To achieve this, students will identify and perform exploratory analysis on data sources, clean and combine data, create models, and conduct analysis. Students will make use of Python and Tableau to access and analyze data. Students will complete out-of-class exercise that reinforce or expand on the in-class topics.

Learning Outcomes:

- Translate business requirements into analytics needs
- Identify data sources and extract data from databases and flat files or using APIs
- Perform exploratory data analysis
- Clean data of inconsistencies, errors, and outliers
- Merge data from multiple sources
- Identify patterns, trends, and relationships in data
- Identify and apply appropriate models; validate models
- Interpret results of modeling and analysis
- Compile reports with relevant information
- Create visualizations and dashboards to present information
- Design, deploy, and test an automated process based on prior work
- Document processes and data structures
- Use notebooks to manipulate data

Required Technology and Technology Skills:

- Computer and Internet access with the most recent release of Firefox or Chrome*
- Python Interpreter with Jupyter Notebook - Anaconda (free)
- Tableau (license provided in class)

For the best experience, please make sure you use Chrome, Firefox or Safari browsers when accessing all course materials.

Students should possess the following technology skills:

- Check, write, and send email with attachments using Columbus State's Student Mail system (Office 365) and a modern web browser to navigate and explore web sites.
- Navigate a Blackboard course, including reviewing content and submitting assignments.

Required Textbooks:

***NOTE**: All of the books are available for free on safari books online through the Columbus State library licensing agreement.*

Evaluating Learning

Students participating in this course you are assessed and graded on your achievement of the outcomes for this course. Tests and lab exercises will have the following weights:

Assignments and Assessments	Points	Total
8 Learning Exercises	5 points each	40 points
8 Individual Labs	20 points each	160 points
3 Group Labs	20 points each	60 points
	Grand Total	**260 points**

Course Grading

Students receive a letter grade of either P (Pass) or NP (Not Pass) for this course.

Students must obtain a 70%, or higher, to receive a letter grade of P (Pass). The grading scale used to determine a FINAL grade for this course is as follows:

Points	Percentage	Final Grade
182-240 points	70-100%	P (Pass)
0-181 points	0-69%	NP (Not Pass)

Student Resources

As a student at Columbus State Community College (CSCC), you have access to campus services, including the CSCC library and CSCC Disability Services. The contact information is below.

CSCC Library
Columbus Hall (CO)
(614) 287-2465
CSCC Library

CSCC Disability Services
101 Eibling Hall (EB)
(614) 287-2570
Disability Services

Class Schedule

Unit 1/Week 1 Problem Statement; Requirements Gathering; Data Understanding	**Readings/Websites:** Unit 1 Problem Statement; Requirements Gathering; Data Understanding (DOCX) **Active Learning Lab(s):** Unit 1 Jupyter Notebook Exercises (01-Requirements-Data-identification.ipynb) **Assessment(s):** Unit 1, Lab 1 (Individual): Scraping data using pandas, 10 points Unit 1, Lab 2 (Individual): Using an API call to retrieve and review data, 10 points
Unit 2/Week 2 Data Cleansing	**Readings/Websites:** Unit 2 - Data Cleansing.docx **Active Learning Lab(s):** Unit 2 Jupyter Notebook Exercises (02-Clean-Merge.ipynb) **Assessment(s):** Unit 2, Lab (Individual): 20 points
Unit 3/Week 3 Data Exploration	**Readings/Websites:** Unit 3 - Data Exploration.docx **Active Learning Lab(s):** Unit 3 Jupyter Notebook Exercises (03-Data-Exploration.ipynb) **Assessment(s):** Unit 3 Lab (Individual): 20 points Group Lab 1 – Data retrieval and presentation of progress; to be presented beginning of **Week 5,** 20 points
Unit 4/Week 4 Data Modeling Part I: Theory and Basics	**Readings/Websites:** Unit 4 - Data Modeling Part I.docx **Active Learning Lab(s):** Unit 4 Jupyter Notebook Exercises (04-Data-Model-Basics.ipynb) **Assessment(s):** Unit 4 Lab (Individual): 20 points

Unit 5/Week 5 Data Modeling Part II: Advanced Topics	**Readings/Websites:** Unit 5 - Data Modeling Part II.docx **Active Learning Lab(s):** Unit 5 Jupyter Notebook Exercises **Assessment(s):** Unit 5 Lab (Individual): 20 points Presentations of **Group Lab 1** Group Lab 2 with focus on early data analysis and basic data modeling assigned – to be presented **Week 7**, 20 points
Unit 6/Week 6 Data Visualization Part I: Theory and Basics	**Readings/Websites:** Contained within Unit 6 Jupyter Notebook **Active Learning Lab(s):** Unit 6 Jupyter Notebook exercises + Tableau workbook (06-Data-Visualization-Part-I.ipynb) **Assessment(s):** Unit 6 Lab (Individual): 20 points
Unit 7/Week 7 Data Visualization Part II: Reports and Dashboards	**Readings/Websites:** Contained within Unit 7 Jupyter Notebook **Active Learning Lab(s):** Unit 7 Jupyter Notebook exercises + Tableau workbook (07-Data-Visualization-Part-II.ipynb) **Assessment(s):** Unit 7 Lab (Individual): 20 points Presentations of **Group Lab 2** Group Lab 3 data visualization and presentation – to be presented **Week 8**, 20 points
Unit 8/Week 8 Automation and Big Data	**Readings/Websites:** Contained within Unit 8 Jupyter Notebook **Active Learning Lab(s):** Unit 8 Jupyter Notebook exercises + Amazon Web Services (08-Automation-Big-Data.ipynb) **Assessment(s):** Unit 8 Lab (Individual): 20 points Presentations of **Group Lab 3**