Course Syllabus
CSC: Data Science
Fall 2024

Department of Mathematics and Computer Science
Claflin University

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OFFICE HOURS by phone or with appointment by Zoom

Three lecture hours per week. Since this semester is shorter than normal, classes will be scheduled for an extra 5 min. per lecture. Class will be held on Zoom.

Zoom Requirement:
Have your video on during the lecture and your microphone on mute. Unmute your microphone when you are speaking.

Class meeting: JST301

Text Book:

R for Data Science: Import, Tidy, Transform, Visualize, and Model Data
ISBN-13: 978-1491910399
ISBN-10: 1491910399
https://r4ds.had.co.nz/

Prerequisites: A grade of "C" or better in MATH 201 Calculus I

1. **Course Description:**
   CSC**:** Data Science
   Prerequisites: A grade of "C" or better in MATH 201 or its equivalent.

2. **Rationale**
   This course is designed to help students grasp basic statistical concepts and techniques, and to present real-life opportunities for applying them to their specific disciplines

3. **Course Overview**:

   - **Major Concepts targeted to be covered in semester**:

Data Commons for Data Science Tutorial
A quick tutorial introducing the key concepts of working with the Data Commons Python API. Great for familiarizing yourself with how to adapt datasets to your particular needs.

Feature Engineering
Explores the first steps of any data science pipeline: feature selection, data visualization, preprocessing and standardization. Pairs well with "Classification and Model Evaluation".

Classification and Model Evaluation
Explores the second half of a data science pipeline: training and test splits, cross validation, metrics for model evaluation. Focus is on classification models. Pairs well with “Feature Engineering”.

Regression: Basics and Prediction
An introduction to linear regression as a tool for prediction, from a modern machine learning perspective.

Regression: Evaluation and Interpretation
A more in-depth look at linear regression, with an emphasis on interpreting model parameters and evaluation metrics beyond simple accuracy. Provides a more statistical perspective.

Clustering
An introduction to clustering analysis for unsupervised learning. Explores the mechanics of K-means clustering and cluster interpretation.

4. Learning Outcomes and Assessments

Data wrangling, visualization, Machine Learning QDA, LDA, ROC, Decision Trees, Regularization, Text Analysis Feature Engineering, Classification and Model Evaluation, Regression: Basics and Prediction, Evaluation and Interpretation, Clustering.

5. SPECIAL COURSE REQUIREMENTS:

Usage of available computer resources such as R

6. METHOD OF EVALUATION:

Home Work 15%
Attendance & Participation ….. 5%
R ……..……...20%
2 Tests 60%

7. GRADING SCALE:

90-100.....A
85-89.....B^+
80-84.....B
75-79.....C^+
70-74.....C
65-69..... D^+
60-64.....D
0-59.....F

CLAFLIN UNIVERSITY EARLY ALERT PROGRAM

As a part of our renewed focus on engaged learning, Claflin University has enhanced and expanded its current Early Alert Program. This program is designed to assist with your success and will be given a high priority as a strategy for this class. Should the instructor determine that you might benefit from taking advantage of these support services and campus resources, you will be referred for such additional support as a means to assist with successful completion of this course. It is further expected that you will comply with the referral and take advantage of the services offered. Please understand that such referrals are not a form of punishment, rather, they are intended to help you reach and achieve your academic and personal goal."

ASSURANCE STATEMENT

If you need accommodations in this class related to a disability, please make an appointment as soon as possible. My office location and office hours can be found on page one of this syllabus.

In addition, classroom and testing accommodations should be discussed very early in the semester. Student should contact disability services--(**Mrs. Sadie Jarvis Corson Hall Room 121—535-5285 or sjarvis@claflin.edu**) regarding appropriate classroom accommodations.

STATEMENT OF POLICY CONCERNING ACADEMIC DISHONESTY

"Code of Honor Policy Statement
Claflin University prohibits all forms of academic or scholarly dishonesty, including written or oral examinations, term and research papers or theses, modes of creative expression, and computer-based work.

Scholarly dishonesty includes lying, cheating, plagiarism, collusion, and the falsification or misrepresentation of experimental data. (For social behavior, see Claflin University Student Handbook: Code of Conduct and Code of Ethics).

Code of Honor Definition of Violations

1. Academic Dishonesty – This includes any other act (not specifically covered in previous provisions) that compromises the integrity of a student or intrudes on, violates, or disturbs the academic environment of the University Community. Examples include attempting or agreeing to commit, or assisting or facilitating the commission of, any scholastic dishonesty, failing to appear or testify without good cause when requested by the Council for the Code of Honor, failing to keep information about cases confidential, supplying false information to the Council for the Code of Honor and accusing a student of a violation of this Code in bad faith.

2. Cheating – This act implies an intent to deceive. It includes all actions, electronic or other devices and deceptions used in the attempt to commit this act. Examples include, but are not limited to, copying answers from another student's exam and using a cheat sheet or crib notes in an exam.

3. Collusion – This is the act of working together on an academic undertaking for which a student is individually responsible. Examples include, but are not limited to, sharing information in labs that are to be done individually.

4. Plagiarism – Plagiarism is representing the words or ideas of someone else as one's own. Examples include, but are not limited to, failing to properly cite direct quotes, the false utilization of copyrighted material and the failure to give credit for someone else's ideas."
(*2010-2011 Claflin University Catalog*, pg. 39-40)