Topics Covered:

1. Introduction to data analysis with python (Text: *Python for Data Analysis* by McKinney)
   a. Linear equation
   b. Curve fitting
   c. Roots of an equation
   d. Numerical differentiation and Integration
   e. Initial value and two-point problem
   f. Symmetric matrix eigenvalue
   g. Optimization
   a. Introduction to applied machine learning.
   b. Supervised and unsupervised model development
   c. Neural network introduction
4. Basic web development using ‘flask’ and ‘dash’

The course is designed to introduce students to tools and references available. Students are expected to develop deep understanding in at least one topic that may be most relevant to their research or work.

Grading:

60% of the class grades will be based on three group projects (20% each).

A final individual project will count for 40% of the grade.

<table>
<thead>
<tr>
<th>Average, %</th>
<th>Course Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥90</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B</td>
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<tr>
<td>70-79</td>
<td>C</td>
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<tr>
<td>60-69</td>
<td>D</td>
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<tr>
<td>&lt; 60</td>
<td>F</td>
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Software:

Students may choose to use any software for analysis including MS Excel, MATLAB, and Minitab. Instruction will be based on the following software

- Python
- Anaconda (Python and R installer with other libraries)

*It will be beneficial for students to go through [https://www.codecademy.com/learn/python](https://www.codecademy.com/learn/python) or any other online tutorial that introduces basics of writing code in Python before the first day of the class.*
Other notes

Plagiarism or cheating will not be tolerated; anyone caught cheating will receive a failing grade for the class.

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass.