

Data Science with Python

Pre-requisites or Other Academic Requirements

Programming:

Familiarity with the basics of Python

Python 3.7 or 3.8 installed as a part of the Anaconda Python distribution of Data Science, or equivalent.

Libraries: scipy, numpy, matplotlib, pandas, sklearn

Mathematics and statistics:

Working knowledge of linear algebra, calculus, basic probability and statistics

Artificial Intelligence and Machine Learning

Pre-requisites or Other Academic Requirements

1.1 Mathematics

Students should develop some skills and familiarity with the mathematical topics below before the course starts.

Mathematical Topics

- Matrices- What a matrix is: Matrix representation of data-sets
- Matrix operations: Addition (+), Subtraction (-), Multiplication (.), Transpose (T)

- The link between algebra and matrices: Expressing systems of algebraic equations in matrix form

· Probability

- What is a 'probability'?
- Different views of what a probability represents: Bayesian Vs.

Frequentist view

- Operations on probabilities: 'AND' and 'OR'
- Definitions: 'Statistical distribution', 'Sample Space', 'Random Variable'
- Discreet Vs. Continuous Random Variables and the relationship between them
- Expectation: Definition and use in valuing options

1.2 The course programming language is Python

Python Programming Language

Intermediately skilled at Python before starting the course