



About This Course

This is a hands-on course. There will be 20 hours of instruction, exercises, and breaks. In the end, you will not only have learned new concepts, but practiced them.

This course counts toward the Data Analysis Track certification in Enthought Academy.

Certificate Awarded Upon Completion Of Course



Course Overview

Data Analysis for Scientists & Engineers is designed in two parts. The first part presents a typical data analysis workflow with the foundational ideas behind each step. Here students will be presented with major concepts and given short exercises to practice those ideas with NumPy, Pandas, and XArray.

The second part of the course is a practicum in which the workflow is used in conjunction with Pandas to work through a small data analysis project from beginning to end. Here, each session will remind students of the main workflow, teach how Pandas approaches that specific step, and then allow the students to put what they have learned into practice. In the end, the students will have built an end-to-end data analysis workbook that can be used as a basic template for other data analysis projects.

Packages: numpy, pandas, xarray

Lectures

Data Analysis Workflow

Introduction, Examples of Use Cases

Data Sources

Finding & Storing Data, Scraping Web, Databases, Formats

Preparing Data

Tidy Data, Missingness, Filling Gaps

Exploring Data

Summary Statistics, Visualization

Analysis & Modeling

Analysis & Modeling Use Cases

Workflow Practicum I

Practicum with Various Data Sources

Workflow Practicum II

Reshape, Pivot, Join, Merge

Workflow Practicum III

Dates & Times, Text Data, Categorical Data

Workflow Practicum IV

Multi-Level Indexing, Computations, Chaining

Workflow Practicum V

Automation, Building Analysis Notebooks

Prerequisites

This course requires basic proficiency with Python and the scientific Python stack. Some practical experience with Jupyter Notebooks, NumPy (ndarrays), Pandas (DataFrames), and scientific visualization in Python using Matplotlib are essential to working with the code and concepts presented in this course.

If you have taken Enthought's **Python Foundations for Scientists & Engineers**, you have the requisite background knowledge for this course.

About Our Instructors

Enthought instructors have advanced degrees in scientific fields such as physics engineering, computer science, and mathematics, and all have extensive experience through research and consulting in applying Python to solve complex problems across a range of industries allowing them to bring their real world experience to the classroom every day.