



## 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 and Manager Track certifications in Enthought Academy.

## Certificate Awarded Upon Completion Of Course



## Course Overview

Data is a valuable scientific resource.

In Data Management for Scientists & Engineers students will learn best practices for data stewardship as well as the digital skills needed to store, retrieve, and manage data.

While learning the technical Python skills required to effectively store and retrieve data from text files, relational databases, and structured data files, students will also gain exposure to the need for a data management plan, metadata, and long-term storage.

After this course, students will have both the skills and mindset needed to transform raw data collected for a single experiment into a long-term resource that can be mined for multiple purposes.

**Packages:** csv, json, pandas, pickle, re, sqlite, uuid, yaml

## Lectures

### Managing Scientific Data

Data Management Workflow

### Raw Data

Pattern Matching, Analysis Ready

### Structured Data (Text)

Parsing

### Structured Data (Tabular I)

Relational Databases, Filtering, Indexing

### Structured Data (Tabular II)

Normal Form, Keys, Joins

### Structured Data (Media)

Image, Video, Audio

### Semi-Structured Data

Flexible Schemas, Nested Relationships

### State Data

Configuration, Objects

### Data Curation

Tidy Data, Storage, Search, Documentation

### Data Management Planning

Long Term Value

## 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.