Welcome to *Using Python for Research*! We're excited to have you join us in this course, which is designed to bridge the gap between introductory and more advanced courses in Python. There are many excellent introductory Python courses available, but most typically do not go deep enough for you to apply your Python skills to research projects. In this course, after first reviewing the basics of Python 3, we learn about tools commonly used in research settings.

This course assumes some prior knowledge of Python programming. Take this pre-quiz to help you assess whether this course is the right one for you.

Using a combination of a guided introduction and more independent in-depth exploration, you will get to practice your new Python skills with various case studies chosen for their scientific breadth and their coverage of different Python features.

In this course, you will...

- Review the basics of Python 3 programming
- Learn how to use Python tools (e.g., the NumPy and SciPy modules) for research applications
- Learn how to apply Python research tools in practical settings

Course overview

Week 1: Basics of Python 3

Review of basic Python 3 language concepts and syntax.

Week 2: Python Libraries and Concepts used in Research

Introduction to Python modules commonly used in scientific computation, such as NumPy.

Weeks 3 & 4: Case Studies

This collection of six case studies from different disciplines provides opportunities to practice Python research skills.

Week 5: Statistical Learning

This new module covers linear and logistic regression as well as random forest regression and classification with an opportunity to practice Python research skills in a two-part case study.