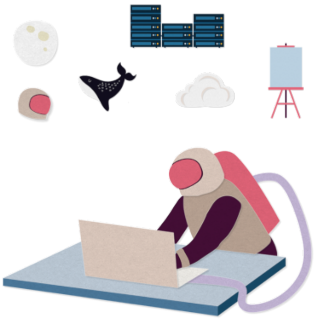
Object-Oriented Programming in Python

Object-oriented programming is the dominant programming paradigm in Python and can be used to improve the structure of your data science code. Here, we will learn how to model real-world entities using classes, how to create class instances, and how to attach data and behaviour to these objects. The main ideas of object-oriented design (inheritance, polymorphism, encapsulation, abstraction) are covered, and you will learn how to extend existing classes from well-known data science packages.



Course Outline

- **Object-oriented design**: An introduction to the aims and mindset of object-oriented programming, the most dominant programming paradigm in Python.
- **Classes in Python**: How to define classes, and how to use these to create instances.
- **Methods and attributes for instances and classes**: How to attach data and behaviour to classes and their instances.
- **Inheritance, Composition, Polymorphism**: A brief introduction to best practices for creating flexible object-oriented code.
- **Extending classes from well-known data science packages**: How to take existing classes and add new features to them.

Learning Outcomes

Session 1:

By the end of session 1 participants will...

- understand how to model real-world (and more abstract) objects using classes
- be able to define classes in Python
- understand how to make class instances
- understand instance methods and attributes

Session 2:

By the end of session 2 participants will...

- understand how inheritance can help with code reuse
- be able to define class and static methods
- understand how to use composition to make classes that contain other objects
- understand how OOP and inheritance makes it easier to write polymorphic code

This course does not include:

- using object-relational mappings to interact with databases, see our Intro to SQL with Python course for this
- advanced OOP ideas (design patterns, metaclasses)

- unified modelling language or other graphical ways to represent how classes/instances interact
- a comparison of the programming paradigms that are available in Python
- an introduction to Pandas, Numpy or Matplotlib, see our Intro to Python course for this

Attendee Feedback