

Lecturer Aurélien Mazurie, Ph.D.
(406-994-5689; aurelien.mazurie@montana.edu)

Location 101 South Chemistry Modular Building

Schedule Weekly on Thursday, 8am to 11am
starting September 22, 2011

Week 1 First elements of programming

- Workshop orientation
- What is a program; benefits of programming
- The Python programming language; how to execute a Python program
- First elements of programming, part 1: variables and statements

Week 2 Controlling and reusing code

- First elements of programming, part 2: flow control
- Functions: regular functions, lambda expressions, class methods
- Libraries: creating and importing libraries; built-in Python libraries

Week 3 Building a data analysis toolbox, Part 1

- Construction of a library to describe one- and two-dimensional datasets, part 1

Week 4 Building a data analysis toolbox, Part 2

- Construction of a library to describe one- and two-dimensional datasets, part 2

Week 5 Inputs and outputs

- Reading and writing files
- Interfacing with command-line programs; notion of Unix processes
- Command line arguments

Week 6 Recipes: Generic data manipulation

- List manipulation: union and intersection, iteration, range
- String manipulation: split and join, find and replace, format

Week 7 Recipes: Bioinformatics data manipulation

- Introduction to Biopython
- Parsing and processing of nucleotide sequences
- Parsing and processing of BLAST results
- Questions & answers about bioinformatics

Week 8 Errors handling

- Errors and exceptions
- Throwing and catching exceptions
- Using the standard error; exit codes

Workshop: Introduction to Programming

Requirements:

- Basic knowledge of a command-line environment (navigating directories, executing a file), either Unix/OSX (preferred) or Windows
- A personal computer for the homework

Recommended lecture:

- Python Pocket Reference, 4th Edition (Mark Lutz, O'Reilly Ed.)
- Learning Python, 4th Edition (Mark Lutz, O'Reilly Ed.)
- Python Cookbook, 3rd Edition (Brian Jones and David Beazley, O'Reilly Ed.)

Note that a copy of the first book, “Python Pocket Reference”, will be offered to each student. If you are planning to buy any of the two other books, please let the lecturer know as we can get some discount for bulk ordering.