

MY470 Computer Programming

Welcome to Computer Programming

Week 1 Admin, MT 2017

Overview

- Course content
- Prerequisites and materials
- Course meetings
- Assessment and collaboration
- Weekly schedule

Instructors

- Dr. Milena Tsvetkova, `m.tsvetkova@lse.ac.uk`
- Prof. Kenneth Benoit, `k.r.benoit@lse.ac.uk`
- Dr. Kohei Watanabe (TA), `k.watanabe1@lse.ac.uk`

Course Content

- Introduction to the fundamentals of computer programming
- We will cover the foundations of computer languages, object-oriented programming, and algorithms
- You will learn how to design, write, and debug computer programs and how to evaluate algorithms

Prerequisites and Software

- Introductory course — no prerequisites
- Software
 - **Python** and **R** (Anaconda distributions) to learn basic concepts in computer science
 - **Jupyter** notebooks web app to write code
 - **GitHub** to share course documents and assignments

Books

- Guttag, John V. *Introduction to Computation and Programming Using Python: With Application to Understanding Data*. Mit Press, 2016.
- Grolemund, Garrett and Hadley Wickham. *R for Data Science*. O'Reilly, 2016.
<http://r4ds.had.co.nz> (<http://r4ds.had.co.nz>)
- Grolemund, Garrett. *Hands-On Programming with R*. O'Reilly, 2014.
- Matthes, Eric. *Python Crash Course, Cheat Sheet* at <https://ehmatthes.github.io/pcc/cheatsheets/README.html>
(<https://ehmatthes.github.io/pcc/cheatsheets/README.html>).
- Python Intermediate and Advanced Documentation at <http://docs.python.org/3/>
(<http://docs.python.org/3/>).

Course Meetings

- Ten two-hour lectures: Mondays 13:00–15:00 in KSW.G.01
- Ten 1.5-hour computer classes
 - Tuesdays 15:00–16:30 in TW2 4.03
 - Thursdays 14:30–16:00 in STC S018
- No lecture/class in Week 6!
- Office hours
 - Milena: Mondays 15:00–17:00, COL 8.03
 - Ken: By appointment, COL 8.11

Assessment

- In-class assessment (50%)
 - 10 problem sets (due on Mondays of weeks 2-6 and 8-12)
 - Grades available by Friday
- Take-home exam (50%)
 - Substantive project requiring you to demonstrate concepts and skills learned from the course
 - Can choose either Python or R
- Criteria
 - The code runs and does what it is expected to
 - The code is written using the concepts, paradigms, and best practices covered in the course

Collaboration

- Assignments are individual unless we instruct you otherwise
- For individual assignments:
 - You can discuss solutions with peers
 - However, you are not allowed to copy-paste code – you need to write the code yourself
- You can use online resources but always give credit in comments if you borrow code/solutions

Course Outline

Week	Language	Topic
1	–	What is Computation?
2	Python	Data Types
3	Python	Control Flow
4	Python	Functions
5	Python	Classes
6	–	–
7	Python	Testing and Debugging
8	R	Data Types and Control Flow
9	R	Functions and Debugging
10	Python, R	Algorithms and Order of Growth
11	Python, R	Searching and Sorting Algorithms