Syllabus
Python for Bioinformatics – Fall 2020/1

Instructor: Iftach Amir, Eyal Privman
Instructor Office Hours: By appointment (coordinate with Iftach by mail)
Office: 6027 Rabin Building, Department of Psychology, University of Haifa
Email: iftach.amir@gmail.com, eprivman@univ.haifa.ac.il

COURSE DESCRIPTION

This course will provide an introduction to Python programming language for students without programming experience. The goals for the course are to familiarize students with the Python language and programming environment as well as major packages used in Bioinformatics data analysis. Accordingly, the course aims to provide basic skills and knowledge in programming, with and emphasis on working with `string` (text) data. In addition, in-class exercises and completion of home assignments will help students to build a sense of competency and motivation needed to continue learning programming skills by themselves and/or transition to more advanced courses. The course will begin by focusing on fundamental concepts in programming, such as what are variables, operators, conditional statements, functions and loops/iterations. As the course advances, students will learn and practice integrating these basic concepts to create algorithms, especially those focused on processing text files with data such as DNA sequences and BLAST results.

Before class students are expected to read relevant book chapters and complete on-line assignments using a free classroom account provided for the website DataCamp.com (pending approval from the website) and/or repl.it . These readings and assignments will (briefly) introduce students to the programming concepts that will be discussed in class. In class, we first will review these concepts and then expand on them. Second, we will practice implementing these concepts in exercises. Finally, we will briefly discuss next class concepts and prepare for home assignments.

At the end of the semester, students will complete a small capstone project. The project will require integrating the concepts and code learnt in class.

COURSE BOOK

"Think Python" (2nd Edition – Python 3), Allen Downey
https://greenteapress.com/wp/think-python-2e/

Additional reading: Lancaster, A. and Webster, G. 2019. *Python for the life sciences : a gentle introduction to python for life scientists*. Apress, New York, New York

ASSIGNMENTS & EVALUATION (GRADING)

The course is graded based on three components. (1) Attendance and participation is required. Students may miss up to 3 classes during the semester but must inform the

instructor of their absence. (2) Students are required to complete all home assignments by their due date (see Schedule). (3) Submit the final course project at the end of the semester. The final project will be completed in groups of 3 and, after submission, will be reviewed together with the course instructor at a scheduled date.

Attendance & Participation = 20%.
Online assignments = 35%.
Course final project = 45%.

TENTATIVE SCHEDULE OF TOPICS

Will be updated.