

TIGP Bio 2020 Fall Syllabus

Programming (Python) (P1)

Place: Room 108, Old Building of the Institute of Information Science, Academia Sinica.

Time: Friday, 10:00am-12:00pm

Chair: Dr. Wang, John (johnwang@gate.sinica.edu.tw)

Outline:

This course introduces basic aspects of programming language and its application in bioinformatics. First, fundamental programming techniques in Python are introduced. After that, this course focuses on the practical implementation of programs to analyze various biological data. The use of existing available resources from the Internet is also incorporated. Finally, the students implement bioinformatics projects (i.e., motif finding, pattern matching, sequence alignment, biomedical database analysis, etc.)

Lecturers: Dr. John Wang, Dr. Li Su, Dr. Te-Chuan Chiu, Dr. Ching-Fen Chang, Dr. An-Chi Wei, Dr. Guan-Shuo Mai, Dr. Yu-Lun Hsieh

Textbook: Python for Biologists: A complete programming course for beginners

Advanced Python for Biologists

(Reference) Python for Everybody - Exploring Data In Python 3

TA: Chayanika Goswami 祁雅卡 **Email:** chayabinf@gmail.com

Office hours: Wednesday, 14:00pm-16:00pm

Office location: Room 304, Old Building of the Institute of Information Science, Academia Sinica

TA (GSB): Cheng-Kuo Lai 賴政國 **Email:** lihowfun@gmail.com

Office hours: Wednesday, 14:00pm-16:00pm

Office location: B303, Interdisciplinary Research Building, Academia Sinica

Grades: Midterm exam 25%. Final exam 30%. Homework 35%. Class performance (10%)

For the most up-to-date syllabus, please visit <https://tigppb.iis.sinica.edu.tw/tigppbio/index.html>

Week	Date	Topics/Brief Description	Lecturers
1	2020/09/18	Introduction to Python	Dr. John Wang
2	2020/09/23(Wed)	Basic Elements of Python I	Dr. Li Su
2	2020/09/25	Basic Elements of Python II	Dr. Li Su
3	2020/10/02(Holiday) -> 09/30(Wed)	Basic statements I: branching programs and inputs	Dr. John Wang
4	2020/10/09(Holiday) -> 10/07(Wed)	Basic statements II: iterative programs	Dr. John Wang
5	2020/10/16	Functions: scope rules and passing arguments	Dr. John Wang
6	2020/10/23	Modules, Files, and Structured Types	Dr. Te-Chuan Chiu
7	2020/10/30	Exception handling	Dr. Te-Chuan Chiu
8	2020/11/06	Review week (No Class)	
9	2020/11/13	Midterm exam	
10	2020/11/18(Wed)	Introduction to Biopython	Dr. Ching-Fen Chang
10	2020/11/20 -> Moved to 12/02	--	--
11	2020/11/27	Object-oriented programming: classes	Dr. Li Su
12	2020/12/02(Wed) (Moved from 11/20)	Regular expressions	Dr. Ching-Fen Chang
12	2020/12/04	Data analysis toolbox: NumPy, Pandas, Matplotlib	Dr. An-Chi Wei
13	2020/12/11	Machine learning I: scikit-learn	Mr. Guan-Shuo Mai
14	2020/12/18	Machine learning II: scikit-learn & keras	Dr. Yu-Lun Hsieh
15	2020/12/25	Review week (No Class)	
16	2020/12/30(Wed)	Final exam	