TIGP Bio 2023 Fall Syllabus

Programming (Python) (P1)

Latest syllabus: https://idv.sinica.edu.tw/tigpbio/

Place: Auditorium, B1F, Institute of Statistical Science, Academia Sinica
Time: Friday 10:00am-12:00pm
Chair: Dr. Isheng Jason Tsai (ijtsai@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.)

Textbook:
Python for Biologists: A complete programming course for beginners (Martin Jones)
Advanced Python for Biologists (Martin Jones)
(Reference) Python for Everybody - Exploring Data In Python 3 (Charles Russell Severance)

TA: Ping-Yun Ou (s93042@gmail.com)
Office hours: Friday 12:00-14:00 **Office location:** Auditorium, B1F, Institute of Statistical Science, Academia Sinica.

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

【For Non-BP student】

For Non-BP student to register/sit-in any BP course, it is required to gain course chair's permission:

(1) Basic Enrollment Information form https://forms.gle/oK7vJzzrx9EvybbT9
(2) TIGP-BP Course Registration Consent Form
https://idv.sinica.edu.tw/tigpbio/index/TIGP%20Bioinformatics_Class%20Registration%20Consent%20Form.docx

※ Deadline: **the 4th week** of each semester.
※ Signature of the course chair should be collected before submission. Incomplete form will not be accepted.
※ Course grade will NOT be given (even class enrollment is completed at school) if fail to follow the above procedures.

Week	Date	Topics/Brief Description	Lecturers	Evaluation Method	Email
1	2023/9/8	Introduction to Python	Dr. Yueh-Hua Tu	In-class assignment ▶ Sep. 22th	a504082002@gmail.com
2	2023/9/15	Basic Elements of Python	Dr. Yueh-Hua Tu		
3	2023/9/22	Basic statements I: branching programs and inputs	Dr. Yueh-Hua Tu		
4	2023/9/25 (Mon) 14:00-16:00 @R308	Basic statements II: iterative programs	Dr. Jin Yung Wong	HW with a specified deadline: ▶ Nov. 6th	wongjinyung@gmail.com
4	2023/9/27 (Wed) 10:00-12:00	Functions: scope rules and passing arguments	Dr. Jin Yung Wong		
4	2023/9/29	Holiday—Mid-Autumn Festival (no class)	--	--	--
5	2023/10/6 Rescheduled to 9/25	Rescheduled to 9/25	--	--	--
6	2023/10/13	Modules, Files, and Structured Types	Dr. Te-Chuan Chiu	HW with a specified deadline: ▶ Nov. 3rd	theochiu@cs.nthu.edu.tw
7	2023/10/20	Review Week (no class)	--		
8	2023/10/27	Midterm Exam (take-home exams, no class)	--		
9	2023/11/3	Regular expressions	Dr. Chih-Ming Chen	HW with a specified deadline ▶ Dec. 8th	changecandy@gmail.com
10	2023/11/10	Object-oriented programming: classes	Dr. Chih-Ming Chen		
11	2023/11/17	Introduction to Biopython	Dr. Chih-Ming Chen		
12	2023/11/24	Data analysis toolbox: NumPy, Pandas, Matplotlib	Dr. Ching-Cher Yan	HW with a specified deadline: ▶ Dec. 15th, and extra time for revision before Dec. 22th	ccsyan@gmail.com
13	2023/12/1	Machine learning I: scikit-learn	Dr. Chih-Cheng Chang	HW with a specified deadline ▶ Dec. 22th	ccchang12@iis.sinica.edu.tw
14	2023/12/8	Machine learning II: scikit-learn & PyTorch	Dr. Chih-Cheng Chang		
15	2023/12/15	Review Week (no class)	--		
16	2023/12/22	Final Exam	--		