

TIGP Bio 2022 Fall Syllabus

Programming (Python) (P1)

For the latest syllabus, please visit the BP website: <https://tigpbp.iis.sinica.edu.tw>

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

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

Chair: Dr. John Wang (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.)

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(BP): Rodrigo Espinoza Silva **Email:** rodespinosas93@gmail.com

Office hours: Tuesdays 14:00~16:00 pm

Office location: Room R302-7, Institute of Statistical Sciences, 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 (<http://bit.ly/3g22mfl>)

(2) TIGP-BP Course Registration Consent Form (<http://bit.ly/3ubl2Bs>)

※ 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
1	2022/9/7(Wed) 10-12:00	Introduction to Python	Dr. John Wang	HW with specified deadlines: ► Full credit DUE on 11/1/2022 at 23:59. ► Submissions will be accepted up to Tuesday 11/15/2022 at -2% per day.
1	2022/9/9	Holiday-Mid-Autumn Festival (no class)	--	
2	2022/9/16	Basic Elements of Python	Dr. John Wang	
3	2022/9/23	Basic statements I: branching programs and inputs	Dr. John Wang	
4	2022/9/30	Basic statements II: iterative programs	Dr. John Wang	
5	2022/10/7 @Webex Only	Functions: scope rules and passing arguments	Dr. John Wang	
6	2022/10/14	Modules, Files, and Structured Types	Dr. Te-Chuan Chiu	
7	2022/10/21	Review Week (no class)	--	
8	2022/10/28	Midterm Exam (take-home exam, no class)	--	
9	2022/11/4 @Webex Only	Regular expressions	Dr. Chih-Ming Chen	HW with a specified deadline: ► Dec. 29th
10	2022/11/11	Object-oriented programming: classes	Dr. Chih-Ming Chen	HW with a specified deadline: ► Dec. 15th
11	2022/11/18	Introduction to Biopython	Dr. Chih-Ming Chen	
12	2022/11/25	Data analysis toolbox: NumPy, Pandas, Matplotlib	Dr. Ching-Cher Yan	
13	2022/12/2	Machine learning I: scikit-learn	Dr. Li Su	HW with a specified deadline: ► Dec. 23rd
14	2022/12/9	Machine learning II: scikit-learn & keras	Dr. Li Su	
15	2022/12/16	Review Week (no class)	--	
16	2022/12/23	Final Exam	--	