TIGP Bio 2021 Fall Syllabus

Programming (Python) (P1)

For the most up-to-date syllabus, please visit https://tigpbp.iis.sinica.edu.tw/tigpbio/index.html

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): Hsin-Han Lee　　　**Email:** cgjosephlee@gmail.com
Office hours: Tuesday 14:00-16:00 pm
Office location: Room B303, Biodiversity Research Center, Academia Sinica

TA (GSB): Cheng-Kuo Lai **Email:** lihowfun@gmail.com
Office hours: Wednesday 10:00 am-12:00 pm
Office location: B303, Interdisciplinary Research Building, Academia Sinica.
*Due to access control of IRB, please email Cheng-Kuo Lai before you go to TA office.
Grades: Midterm exam 25%. Final exam 30%. Homework 35%. Class performance (10%)
Note: For **Non-BP student** to register/sit-in any BP course, it is required to gain course chair's permission and follow the steps:
(1) Submit the hard copy or PDF file of the completed TIGP Bioinformatics Course Registration Consent Form to the TIGP BP office
(2) Provide the information via the google form at BP Class Enrollment Information.
The deadline for above requirement is the 4th week of each semester. Signature of corresponding BP Course Chair should be collected and 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
1	2021/9/17 @Webex	Introduction to Python	Dr. John Wang
2	2021/9/24 @Webex	Basic Elements of Python	Dr. John Wang
3	2021/10/1 @Webex	Basic statements I: branching programs and inputs	Dr. John Wang
4	2021/10/8 @Webex	Basic statements II: iterative programs	Dr. John Wang
5	2021/10/15	Functions: scope rules and passing arguments	Dr. John Wang
6	2021/10/22	Modules, Files, and Structured Types	Dr. Te-Chuan Chiu
7	2021/10/29	Review Week (no class)	
8	2021/11/5	Midterm Exam (take-home exam, no class)	
9	2021/11/12	Regular expressions	Dr. Ching-Fen Chang
10	2021/11/19	Object-oriented programming: classes	Dr. Li Su
11	2021/11/26 @N101	Introduction to Biopython	Dr. Ching-Fen Chang
12	2021/12/3	Data analysis toolbox: NumPy, Pandas, Matplotlib	Dr. Ching-Cher Yan
13	2021/12/10 @Webex	Machine learning I: scikit-learn	Dr. Li Su
14	2021/12/17 Moved to 12/24	--	--
15	2021/12/24 @Webex	Machine learning II: scikit-learn & keras	Dr. Li Su
16	2021/12/31 (Holiday) Moved to 1/7	Holiday (no class)	
17	2022/1/7	Final Exam	