

**TIGP Bioinformatics Program**  
**Programming (Python) (P1)**  
**Fall 2024 Syllabus**

Latest syllabus: <https://idv.sinica.edu.tw/tigbio/>

**Place:** Room 308, Institute of Statistical Science, Academia Sinica  
**Time:** Friday 10:00am-12:00pm  
**Chair:** Dr. John Wang ([johnwang@gate.sinica.edu.tw](mailto: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:** Shang-Kok Ng ([shangkok@gmail.com](mailto:shangkok@gmail.com))  
**Office hours:** Friday 17:00 pm-19:00pm  
**Office location:** Room 416, Institute of Information 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/oK7vJzrx9EvybbT9>  
 (2) TIGP-BP Course Registration Consent Form  
[https://idv.sinica.edu.tw/tigbio/index/TIGP%20Bioinformatics\\_Class%20Registration%20Consent%20Form.docx](https://idv.sinica.edu.tw/tigbio/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	2024/9/6	Introduction to Python	Dr. John Wang	To Be Announced	<a href="mailto:johnwang@gate.sinica.edu.tw">johnwang@gate.sinica.edu.tw</a>
2	2024/9/13	Basic Elements of Python	Dr. Ching-Fen Chang	To Be Announced	<a href="mailto:janechang.stev@gmail.com">janechang.stev@gmail.com</a>
3	2024/9/20	Basic statements I: branching programs and inputs	Dr. Ching-Fen Chang		
4	2024/9/27	Basic statements II: iterative programs	Dr. Jen-Hung Wang	To Be Announced	<a href="mailto:why2kill@iis.sinica.edu.tw">why2kill@iis.sinica.edu.tw</a>
5	2024/10/4	Functions: scope rules and passing arguments	Dr. Jen-Hung Wang		
6	2024/10/11	Modules, Files, and Exception Handling	Dr. Te-Chuan Chiu	To Be Announced	<a href="mailto:theochiu@cs.nthu.edu.tw">theochiu@cs.nthu.edu.tw</a>
7	2024/10/18	Review Week (no class)	--		
8	2024/10/25	Midterm Exam	--		
9	2024/11/1	Regular expressions	Dr. Chih-Ming Chen	HW with a specified deadline	<a href="mailto:changecandy@gmail.com">changecandy@gmail.com</a>
10	2024/11/8	Object-oriented programming: classes	Dr. Chih-Ming Chen		
11	2024/11/15	Introduction to Biopython	Dr. Chih-Ming Chen		
12	2024/11/22	Data analysis toolbox: NumPy, Pandas, Matplotlib	Dr. Ryandhimas Edo Zezario	To Be Announced	<a href="mailto:ryandhimas@citi.sinica.edu.tw">ryandhimas@citi.sinica.edu.tw</a>
13	2024/11/29	Machine learning I: scikit-learn	Dr. Chih-Cheng Chang	HW with a specified deadline	<a href="mailto:ccchang12@iis.sinica.edu.tw">ccchang12@iis.sinica.edu.tw</a>
14	2024/12/6	Machine learning II: scikit-learn & PyTorch	Dr. Chih-Cheng Chang		
15	2024/12/13	Review Week (no class)	--		
16	2024/12/20	Final Exam	--		