TIGP Bioinformatics Program
Biological Computing (C1)
Fall 2025 Syllabus

Place: Room 308, Institute of Statistical Science, Academia Sinica

Time: Friday 14:00-17:00

Chair: Dr. Huai-Kuang Tsai (hktsai@iis.sinica.edu.tw)

Aim: The aim of the course is to link issues in computer science to biology and thus capture the interest of students in both areas. It is expected that students will acquire and retain important knowledge about computational biology.

Outline: The course provides an introduction to the basic computational concepts and methods used in molecular biology and genetics. It covers classic algorithmic techniques (for examples: divide and conquer algorithm, dynamic programming …), data structures (e.g. queue, tree…), and common computational problems in biology (such as motif finding, sequence alignment …). In addition, Bioinformatics approaches for next generation sequencing and the most up-to-date technology will be addressed as well.

Textbook/Reference book: N/A

TA: Hsin-Ying Chang **Email:** hyhazelchang@gmail.com
Office hours: Wednesday 13:00-15:00
Office location: Room R220, Institute of Plant and Microbial Biology, Academia Sinica
*You can also approach online via the link below:
https://join.slack.com/t/2025fallc1ta/shared_invite/zt-3bixawluo-8UI9EKo4Qu4OZ_H_ROaavQ

Grades: Midterm exam 50%. Final exam 50%.

【**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	2025/9/5	Analysis of Algorithms	Dr. Jia-Ming Chang	Take-home exam with a specified deadline: ► 2025/10/28	chang.jiaming@gmail.com
2	2025/9/12	Recurrence	Dr. Jia-Ming Chang		
3	2025/9/19	Introduction to Data Structure (I)	Dr. Yu-Jung Chang	In-class exam on midterm exam date	abner.yjchang@gmail.com
4	2025/9/26	Class rescheduled to 9/30.	--	--	--
5	2025/9/30 (Tues) 14:00-17:00	Introduction to Data Structure (II)	Dr. Yu-Jung Chang	In-class exam on midterm exam date	abner.yjchang@gmail.com
5	2025/10/3 (No in-person class)	Algorithmic Techniques (Pre-recorded Video) Online Q&A Session on 10/9 17:00	Dr. Chen-Ching Lin	Take-home exam with a specified deadline ► 2025/10/17	chenching.lin@nycu.edu.tw
6	2025/10/8 (Wed) 14:00-17:00 (No in-person class)	Sequence alignment (Recorded Video) Online Q&A Session on 12/15 9:00	Dr. Emily Chia-Yu Su	Take-home exam with a specified deadline: ► 2025/12/19	emilysu@nycu.edu.tw
6	2025/10/10	Holiday—Double Tenth Day (no class)	--	--	--
7	2025/10/17	Review Week (no class)	--	--	--
8	2025/10/24	Midterm Exam rescheduled to 10/31. Make-up Day Off for Retrocession Day (no class)	--	--	--
9	2025/10/27 (Mon) 9:00-12:00 Online Only	Introduction to Data Mining	Dr. Henry Horng-Shing Lu	Take-home exam with a specified deadline ► 2025/11/27	henryhslu@nycu.edu.tw
9	2025/10/31	Midterm Exam	--	--	--
10	2025/11/7 (No in-person class)	Databases: An Overview (Pre-recorded Video) Online Q&A Session on 11/18 14:00	Dr. Yufeng Jane Tseng	Take-home exam with a specified deadline: ► 2025/12/2	yjtseng@csie.ntu.edu.tw
11	2025/11/14 Online Only	Fundamentals of Molecular Evolution and Phylogenetic Tree Construction	Dr. Jinn-Jy Lin	Take-home exam with a specified deadline: ► 2025/12/17	jinnjy@gmail.com
12	2025/11/21	The Analysis of Next Generation Sequencing Data	Dr. Hsin-Nan Lin	In-class exam on final exam date	arith@gate.sinica.edu.tw
13	2025/11/28	Structural Bioinformatics	Dr. Chen-Hsin Yu	Take-home exam with a specified deadline: ► 2025/12/19	albertchyu@gate.sinica.edu.tw
14	2025/12/1 (Mon) 14:00-17:00	Computational Proteomics	Dr. Ching-Tai Chen	In-class exam on final exam date	ctchen@utaipei.edu.tw
14	2025/12/5	Class rescheduled to 12/1.	--	--	--
15	2025/12/12	Review Week (no class)	--	--	--
16	2025/12/19	Final Exam	--	--	--