

**TIGP Bioinformatics Program**  
**Biological Computing (C1)**  
**Fall 2024 Syllabus**

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

<b>Place:</b> Room 308, Institute of Statistical Science, Academia Sinica
<b>Time:</b> Friday 14:00-17:00
<b>Chair:</b> Dr. Huai-Kuang Tsai (hktsai@iis.sinica.edu.tw)
<b>Aim:</b> 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.
<b>Outline:</b> 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.
<b>Textbook/Reference book:</b> N/A
<b>TA:</b> Ping-Yun Ou (s93042@gmail.com)
<b>Office hours:</b> Thursday 12:00pm-14:00pm
<b>Office location:</b> Room 308, Institute of Statistical Science, Academia Sinica
<b>Grades:</b> 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/oK7vJzrx9EvybbT9>

(2) TIGP-BP Course Registration Consent Form  
[https://idv.sinica.edu.tw/tigpbio/index/TIGP%20Bioinformatics\\_Class%20Registration%20Consent%20Form.docx](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	2024/9/6	Analysis of Algorithms	Dr. Jia-Ming Chang	In-class exam on midterm exam date	chang.jiaming@gmail.com
2	2024/9/13	Recurrence	Dr. Jia-Ming Chang		
3	2024/9/20	Introduction to Data Structure (I)	Dr. Yu-Jung Chang	In-class exam on midterm exam date	abner.yjchang@gmail.com
4	2024/9/24 (Tues) 14:00-17:00	Introduction to Data Structure (II)	Dr. Yu-Jung Chang		
5	2024/10/4 @Webex Only	Algorithmic Techniques	Dr. Chen-Ching Lin	Take-home exam with a specified deadline: ▶ Oct. 31st	chenching.lin@nycu.edu.tw
6	2024/10/11	Sequence alignment	Dr. Huai-Kuang Tsai	Take-home exam with a specified deadline: ▶ Nov. 8th	hktsai@iis.sinica.edu.tw
7	2024/10/18	Review week (no class)	--	--	--
8	2024/10/25	Midterm Exam	--	--	--
9	2024/11/1 @Webex Only	Introduction to Data Mining	Dr. Henry Horng-Shing Lu	In-class exam on final exam date	henryhslu@nycu.edu.tw
10	2024/11/8 @Webex Only	Databases: An Overview	Dr. Yufeng Jane Tseng	Take-home exam with a specified deadline: ▶ Dec. 11th	yjtseng@csie.ntu.edu.tw
11	2024/11/15	Fundamentals of Molecular Evolution and Phylogenetic Tree Construction	Dr. Jinn-Jy Lin	Take-home exam with a specified deadline: ▶ Dec. 20th	jinnjy@gmail.com
12	2024/11/22	The Analysis of Next Generation Sequencing Data	Dr. Hsin-Nan Lin	In-class exam on final exam date	arith@gate.sinica.edu.tw
13	2024/11/29	Structural Bioinformatics	Dr. Chen-Hsin Yu	Take-home exam with a specified deadline: ▶ Dec. 20th	albertchyu@gate.sinica.edu.tw
14	2024/12/4 (Wed) 14:00-17:00	Computational Proteomics	Dr. Ching-Tai Chen	In-class exam on final exam date	ctchen@asia.edu.tw
15	2024/12/13	Review Week (no class)	--	--	--
16	2024/12/20	Final Exam	--	--	--
17	2024/12/27	Computational Epigenetics	Dr. Chen-Hsin Yu	No exam	albertchyu@gate.sinica.edu.tw