

TIGP Bio 2021 Fall Syllabus Biological Computing (C1)

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

Place: Room 107, New Building of the Institute of Information Science, Academia Sinica

Time: Friday 14:00-17:00

Chair: Dr. Ting-Yi Sung (tsung@citi.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: Yu-Chun Huang

Email: r01628119@gmail.com

Office hours: Wednesday 16:00-18:00am **Office location:** R314, Institute of Plant and Microbial Biology, Academia Sinica

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

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	Analysis of Algorithms	Dr. Jia-Ming Chang
2	2021/9/24@Webex	Recurrence	Dr. Jia-Ming Chang
3	2021/10/1 Moved to 2021/10/12	--	--
4	2021/10/8@Webex	Introduction to Data Structure (I)	Dr. Yu-Jung Chang
5	2021/10/12 @Webex Move from 2021/10/1	Introduction to Data Structure (II)	Dr. Yu-Jung Chang
5	2021/10/15@Webex	Algorithmic Techniques	Dr. Chen-Ching Lin
6	2021/10/20 (Wed)	Sequence alignment	Dr. Huai-Kuang Tsai
7	2021/10/29	Review week (no class)	--
8	2021/11/5	Midterm Exam	--
9	2021/11/12	Databases: An Overview	Dr. Kai-Chun Liu
10	2021/11/19	Introduction to Data Mining	Dr. Kai-Chun Liu
11	2021/11/26 @N101	Fundamentals of Molecular Evolution and Phylogenetic Tree Construction	Dr. Jinn-Jy Lin
12	2021/12/3	The Analysis of Next Generation Sequencing Data	Dr. Hsin-Nan Lin
13	2021/12/10@Webex	Computational Epigenetics	Dr. Chen-Hsin Yu
14	2021/12/14 (Tues)@Webex	Computational Proteomics	Dr. Ching-Tai Chen
15	2021/12/24	Review Week (no class)	--
16	2021/12/31 (Holiday), Moved to 1/7	Holiday (no class)	--
17	2022/1/7	Final Exam	--
18	2022/1/13@Webex Move from 2021/1/14	Structural Bioinformatics	Dr. Chen-Hsin Yu
18	2022/1/14 Moved to 1/13	--	--