TIGP Bio 2020 Fall Syllabus
Biological Computing (C1)

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

Time: Friday 14:00-17:00

Chair: Dr. Yu Tsao (yu.tsao@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.

Lecturers: Dr. Wen-Lian Hsu, Dr. Yu-Jung Chang, Dr. Kai-Chun Liu, Dr. Huai-Kuang Tsai, Dr. Jinn-Jy Lin, Dr. Ting-Yi Sung, Dr. Hsin-Nan Lin, Dr. Chen-Hsin Yu, Dr. Ching-Tai Chen, Dr. Jung-Hsin Lin

Textbook:

Reference book:

TA: Yu-Hsiang Chen 陳煜翔 **Email**: s871818@gmail.com

Office hours: Wednesday 10:00 am-12:00 pm

Office location: Room 103, Old Building of the Institute of Information Science, Academia Sinica

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

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

Week	Date	Topics/Brief Description	Lecturers
1	2020/09/18	Analysis of Algorithms	Dr. Wen-Lian Hsu
2	2020/09/25	Recurrence	Dr. Wen-Lian Hsu
3	2020/10/02 (Holiday) -> 09/30 (Wed)	Introduction to Data Structure (I)	Dr. Yu-Jung Chang
4	2020/10/09 (Holiday) -> 10/07 (Wed)	Introduction to Data Structure (II)	Dr. Yu-Jung Chang
5	2020/10/16	Algorithmic Techniques	Dr. Wen-Lian Hsu
6	2020/10/23	Databases: An Overview	Dr. Meng-Chang Chen changed to Dr. Kai-Chun Liu
7	2020/10/30	Introduction to Data Mining	Dr. Meng-Chang Chen

			changed to Dr. Kai-Chun Liu
8	2020/11/06	Review Week (no class)	
9	2020/11/13	Midterm Exam	
10	2020/11/18 (Wed)	Sequence alignment	Dr. Huai-Kuang Tsai
10	2020/11/20	Fundamentals of Molecular Evolution and Phylogenetic Tree Construction	Dr. Jinn-Jy Lin
~~11~~	2020/11/25 (Wed) -> Cancelled	Motif finding	----
11	2020/11/27	The Analysis of Next Generation Sequencing Data	Dr. Hsin-Nan Lin
12	2020/12/04	ChIP-seq	Dr. Chen-Hsin Yu
13	2020/12/11	Computational Proteomics	Dr. Ching-Tai Chen
14	2020/12/18	Fundamentals in Structural Bioinformatics	Dr. Jung-Hsin Lin
15	2020/12/25	Review Week (no class)	
16	2020/01/01(Holiday) ~~->01/04(Mon)~~ -> 01/08(Fri)	Final Exam	