

TIGP Bioinformatics Program

Advanced Algorithms (C2)

Spring 2026 Syllabus

For the latest syllabus, please visit the BP website: <https://idv.sinica.edu.tw/tigpbio/>

Place: Room 308, Institute of Statistical Science, Academia Sinica Time: Friday 14:00-17:00 Chair: Dr. Li Su (lisu@iis.sinica.edu.tw) Co-Chair: Dr. Trees-Juen Chuang (trees@gate.sinica.edu.tw) Outline: This course is basically about data mining, machine learning and statistical modeling from data, and some other algorithms and applications.
Resources: There are 7 topics given in the way of Videos Preview (about 2~3 hours) + In-class discussions (about 1~1.5 hours). Please find the link (https://reurl.cc/eGWkoL) that WILL provide the links of the following: (1) the videos to be watched BEFORE the class (2) the questions to be discussed IN the class (3) the homework to be completed AFTER the class
References: 1. Learning from Data- A Short Course (Abu-Mostafa, Magdon-Ismael, Lin, 2012) 2. Learning Pattern Classification (Duda, Harg, and Stork, 2001) 3. An Introduction to Support Vector Machines and Other Kernel-based Learning Methods (Cristianini and Shawe-Taylor, 2000) 4. [DL in Life Science] https://mit6874.github.io/ 5. [ML for Genomics] https://www.classcentral.com/course/youtube-6-047-6-878-machine-learning-for-genomics-fall-2020-48203 TA: Apriandy Angdresey Email: aprihyliem@gmail.com Office hours: Friday, 12:00-14:00 Office location: Room 308, Institute of Statistical Science, Academia Sinica 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/oK7vJzrx9EvvybbT9 (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	Lecture Style	Evaluation Method	Email
1	2026/2/25 (Wed) 14:00-17:00	Data Classification	Dr. Li Su	Lectures	Take-home exam with a specified deadline.	lisu@iis.sinica.edu.tw
1	2026/2/27	Class rescheduled to 2/25. Make-up Holiday for 228 Peace Memorial Day (no class)	--	--	--	--
2	2026/3/6	Convolutional Neural Networks, Recurrent Neural Networks (optional: Graph Neural Networks)	Dr. Li Su	Preview videos + in-class discussions	TBA	chelin@ntu.edu.tw
3	2026/3/13	Hidden Markov Models	Dr. Yu Tsao	Lectures	TBA (was in-class exam on midterm exam date)	yu.tsao@citi.sinica.edu.tw
4	2026/3/20	[DL in Life Science] GWAS and Variants	Dr. Amrita Chattopadhyay	Preview videos + in-class discussions	Take-home exam with a specified deadline.	amrita@ntu.edu.tw
5	2026/3/23 (Mon) 14:00-17:00 @Google Meet Only	Boolean and Bayesian networks	Dr. Henry Horng-Shing Lu	Online lectures	Take-home exam with a specified deadline.	henryhsu@nycu.edu.tw
5	2026/3/27	Class rescheduled to 3/23.	--	--	--	--
6	2026/4/1 (Wed) 14:00-17:00	Single cell RNA-seq	Dr. Yao-Ming Chang	Preview videos + in-class discussions	Take-home exam with a specified deadline.	petitming@ibms.sinica.edu.tw
6	2026/4/3	Class rescheduled to 4/1. Make-up Holiday for Tomb-Sweeping Day and Children's day (no class)	--	--	--	--
7	2026/4/10	Review Week (no class)	--	--	--	--
8	2026/4/17	Midterm Exam	--	--	--	--
9	2025/4/24 @Google Meet Only	Network Analysis	Dr. Hsuan-Cheng Huang	Online lectures	Take-home exam with a specified deadline.	hsuancheng@nycu.edu.tw
10	2026/5/1	Class rescheduled to 5/4. Holiday: International Workers' Day	--	--	--	--
11	2026/5/4 (Mon) 14:00-17:00	[DL in Life Science] Graph Analysis [DL in Life Science] Drug Discovery	Dr. Yueh-Hua Tu	Preview videos + in-class discussions	TBA (was take-home exam with a specified deadline)	a504082002@gmail.com
11	2026/5/6 (Wed) 14:00-17:00	[DL in Life Science] Protein Structure Prediction	Dr. Chien-Yu Chen	Preview videos + in-class discussions	Take-home exam with a specified deadline.	chienyuchen@ntu.edu.tw
11	2026/5/8	Class rescheduled to 5/6.	--	--	--	--
12	2026/5/13 (Wed) 14:00-17:00	Exploring modeling in enzyme kinetics and pharmacokinetics	Dr. An-Chi Wei	Lectures	Take-home exam with a specified deadline: ► 2026/6/12	acwei86@ntu.edu.tw
12	2026/5/15 (To Be Rescheduled)	Advanced Algorithms for Proteomics	Dr. Ching-Tai Chen	Preview videos + in-class discussions	Take-home exam with a specified deadline.	ctchen@utaipi.edu.tw
13	2026/5/22	Class rescheduled to 5/13.	--	--	--	--
14	2026/5/29 @Google Meet Only	Systems Biology and Biological Modeling of Gene Regulation	Dr. Yu-Chao Wang	Preview videos + Online discussions	Take-home exam with a specified deadline: ► 2026/6/12	yuchao@nycu.edu.tw
15	2026/6/5	Make-up Holiday for Dragon Boat Festival / Review Week (no class)	--	--	--	--
16	2026/6/12	Final Exam	--	--	--	--