

LIFS 4320 Data Science for Biology and Medicine

1. Instructor (s) – Name and Contact Details

Jiguang Wang, jgwang@ust.hk

2. Teaching Assistant (s) - Name and Contact Details

TBD

3. Time and Venue – Lectures (L), Tutorials (T)

L1	Monday	13:30	14:50	4502
L1	Friday	09:00	10:20	4502
T1	Monday	09:30	10:20	4502

4. Course Description

Brief description: this course will introduce the basic concept of data science, various types of high-throughput biomedical data, as well as proof-of-concept examples on the application of data science technologies in biology and medicine. Specifically, it will include principles in network biology, statistical analysis, basic machine learning, and practical methods for sequencing data processing and analytics. Students will be evaluated based on Attendance, the mid-term exam, the group project, and the student presentation.

5. Grading Scheme

Assessment

(Percentage + assessment tasks)

10% Attendance

30% Mid-term exam

30% Group project

30% Student presentation

6. Student Learning Resources - Lecture Notes, Readings

Lecture notes and supplementary reading materials will be made available on canvas.

7. Tentative week-by-week course outline

- W1: Introduction
- W2: High-throughput biological data
- W3: Biological networks
- W4: Network analysis
- W5: Correlation analysis
- W6: Sequencing analysis
- W7: Differential expression analysis
- W8: Function enrichment analysis
- W9: Machine learning
- W10: Mid-term Exam
- W11: Holiday
- W12: Precision cancer medicine
- W13-14: Student Presentation