Items of Course Outlines

1. **Instructor (s) – Name and Contact Details**

   Jiguang Wang, jgwang@ust.hk

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

   Yuyan Ruan, yruanaf@connect.ust.hk

   Zhi Huang, zhuangdq@connect.ust.hk

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   Jihong Tang, jihong.tang@connect.ust.hk

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

L1	Monday	12:00	13:20	Rm 4502
L1	Wednesday	12:00	13:20	Rm 4502
T1	Thursday	15:30	16:20	LTK

4. **Course 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**

   <u>Assessment</u>
   (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 (T1)
   - W2: High-throughput biological data (T2)
   - W3: Biological networks (T3)
   - W4: Network analysis (T4)
   - W5: Correlation analysis (T5)
   - W6: Sequencing analysis (T6)
   - W7: Differential expression analysis (T7)

- W8: Function enrichment analysis (T8)
- W9: Mid-term Exam
- W10: Machine learning (T9)
- W11: Machine learning (T10)
- W12: Precision cancer medicine (T11)
- W13-14: Student Presentation