MATH 4432 Statistical machine learning

Course Outline- Fall 2026

1. **Instructor(s)**

   Name: Prof. YANG Can

   Contact Details: macyang@ust.hk

2. **Teaching Assistant(s)**

   Name: Liu Yuyao, Chen Yuheng

   Contact Details: yliuow@connect.ust.hk; ychenlp@connect.ust.hk

3. **Meeting Time and Venue**

   Lectures:

   Date/Time: Tuesday and Thursday (01:30PM - 02:50PM)

   Venue: G001, CYT Bldg

   Tutorials:

   Date/Time: Tu 07:00PM - 07:50PM; Th 06:00PM - 06:50PM

   Venue: Rm 4504, Lift 25-26 (Tuesday); Rm 1410, Lift 25-26 (Thursday)

4. **Course Description**

   Credit Points: 3

   Pre-requisite: Math 2411

   Exclusion: NIL

   Brief Information/synopsis:

   This course is open to senior undergraduates and MSc graduates in applied mathematics, statistics, and engineering who are interested in learning from data. It covers hot topics in statistical learning, also known as machine learning, featured with various applications in computer vision, pattern recognition, computational advertisement, bioinformatics, social networks, finance and etc.

5. Intended Learning Outcomes

Upon successful completion of this course, students should be able to:

No.	ILOs
1	Recognize and use appropriately important concepts in machine learning
2	Understand the methods in machine learning and apply them in concise form.
3	Apply machine learning tools in real data analysis.
4	Be familiar with software, such as R or Python.

6. Assessment Scheme

a. Examination duration: 3 hrs

b. Percentage of coursework, examination, etc.:

Assessment	Assessing Course ILOs
20% by coursework	1, 2, 3, 4
80% by exam	1, 2, 3, 4

c. The grading is assigned based on students' performance in assessment tasks/activities.

7. Student Learning Resources

Recommended Reading:

Textbook (ISLR): An Introduction to Statistical Learning, with applications in R. (Springer 2013, ISBN9781461471370, eISBN: 9781461471387) by Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani.

Book website: https://www.statlearning.com/

8. Teaching and Learning Activities

Scheduled activities: 4 hrs (lecture + tutorial)

9. Course Schedule

Keyword Syllabus:

- Introduction to Statistical machine learning.
- Linear Regression.
- Classification.
- Resampling.
- Linear Model Selection.
- Moving Beyond Linearity.
- Tree-based Methods.
- EM algorithm.
- Case study.