Course Information

Learning Outcomes

At the end of this course, students should be able to:

1. Solve instances of linear programs with the simplex method.

2. Explain and relate the geometry, the algebra, and the tabular form of the simplex method.

3. Explain the optimality of a solution to a linear program, and the infeasibility of a linear program, using linear programming duality.

4. Conduct sensitivity and post-optimality analysis on linear programs.

Instructors

The course coordinator is Asst. Prof. YAN Zhenzhen

- Office: SPMS-MAS-05-19
- Phone: 6513 7466
- E-mail: yanzz@ntu.edu.sg
- Consultation: via e-mail, or by appointment.

Course Policies

The course will adhere to the following policies:

1. Academic conduct

All students are expected to uphold academic integrity.

It is a violation of academic integrity to

- copy another person's work;
- use another person's work or idea without acknowledging;
- cheat on tests and exams.

2. Absentee

A missed test or lab will be given a mark of zero, unless the cause is illness (medical note required) or similarly good reason notified promptly in writing (e-mail is acceptable).

A student who missed a test or lab due to illness must contact the instructor within 7 days after the test or lab.

References

Students may refer to the following textbooks:

1. Introduction to Operations Research,
   by Frederick S. Hillier and Gerald J. Lieberman,
   published by McGraw-Hill.
2. Linear Programming: Foundations and Extensions
   by Robert J. Vanderbei,
   published by Springer.

Class Times

Labs on Weeks 4 (05 Feb, 06 Feb), 6 (19, 20 Feb), 9 (19, 20 Mar), and 12 (9, 10 Apr).

	Date	Time	Venue	Tutor
LA1	Wednesdays	12.30-14.20	COMP LAB 3	Liu Limeng (LIMENG001@e.ntu.edu.sg)
LA2	Wednesdays	13.30-15.20	COMP LAB 2	Teo Wei Xin (weixin.teo@ntu.edu.sg)
LA3	Thursdays	16.30-18.20	COMP LAB 3	Teo Wei Xin (weixin.teo@ntu.edu.sg)

Mode of Instructions

This course follows a traditional lecture-tutorial mode of instructions.

Assessments

Formative assessments (25% of final grade)

- Labs 5%
  - There will be four lab sessions.
  - Successfully completing each of the first two lab sessions earns you 1.5%.
  - Successfully completing each of the last two lab sessions earns you 1%.
  - No partial credits for each test question.
- Online quizzes 20%
  - There will be 3 online quizzes.
  - Quiz #1 covers prerequisites from Linear Algebra; it is due at the end of Week 4; it's worth 6% of the final grade.
  - Quiz #2 covers material in Weeks 2—7; it is due at the end of the recess week; it's worth 6% of the final grade.
  - Quiz #3 covers material in Weeks 8—12; it is due at the end of Week 13; it's worth 8% of the final grade.
  - No partial credits for each quiz question.

Summative assessments (75% of final grade)

- Tests 25%
  - There will be ONE test.
  - The test date: 13 Mar 2025.
- Final exam 50%
  - The final exam date: 30 April 2025.

Course Schedule

The following schedule will be closely followed:

- Week 1 Part I Introduction and Graphic Solution
- Week 2 Part II The Simplex Method (Geometry Foundation)
- Week 3 Home-Based Learning (Formulation of Optimization Model)
- Weeks 4&5 Part II The Simplex Method (Algebraic Foundation)

- Weeks 6--- 8 Part III. The Simplex Method (Tableau and Matric form)
- Weeks 9 --- 13 Part III. Theory of Linear Program