

國立中正大學企業管理學系碩士班教學大綱

115 學年度第 1 學期 (Fall 2026)

科目編號：5205145

科目名稱：管理科學

英文譯名：Management Science

修別／學分數：選修／3

授課老師：陳世彬 (Shih-Pin Chen)

研究室：R445, College of Management

校內分機：34302

E-mail: chensp@ccu.edu.tw

Office hours: Wed. and Fri. 9:10-10:00 (or by appointment)

Course Objective [Learning goal: problem-solving and logical thinking]

Management Science is a key component of a Business Analytics curriculum and AI-enabled decision-making, equipping students with advanced analytical tools to solve real-world business problems. This discipline is incorporated into the Business Analytics programs at the world's most prestigious universities and has a significant impact on modern business strategy. This course is intended to improve students' ability to solve management problems using scientific concepts and methods. Logical thinking, management implications of solutions, and theories underlying solution methods will be emphasized.

Textbook

1. Class notes written by the instructor.
2. Taha, H.A., 2023, Operations Research: An Introduction, 11th ed. (International Edition), Prentice Hall.

Course Outline

- Introduction to Management Science: "The Science of Better"; model-based decision-making in the AI era
- Linear Programming (LP): model formulation, solution concepts, sensitivity analysis, and managerial interpretation
- Computer Solutions: LINGO, Excel Solver, and guided Python/PuLP demonstrations (if time permits)
- LP Applications: applications across management fields; introduction to data envelopment analysis (DEA)
- Transportation Problems and Network Analysis: transportation, assignment, shortest-path, maximum-flow, and related models
- Integer Linear Programming (ILP): binary and general integer decision models and applications
- Nonlinear Programming (NLP): introduction and selected applications (optional)
- Decision Analysis: decision trees, value of information, and the Analytic Hierarchy Process (AHP)
- Probability and Stochastic Processes: review of basic probability and introduction to stochastic models
- Queueing Systems: model assumptions, performance measures, capacity decisions, and applications
- Inventory Systems: basic deterministic and stochastic inventory models and applications
- Reliability: introduction and selected applications (optional)

Grading

Participation and homework	25%
Midterm exam	25%
Term project (written report and oral presentation)	20%
Final exam	30%

Notes

1. How to learn Management Science effectively:
 - Request leave only for irresistible reasons (e.g., illness or injury).
 - Concentrate in class, take notes actively, and try to think logically.
 - Carefully review and thoroughly understand the class notes.
 - Learn by doing. Enjoy doing homework and exercises from class.
 - Regularly review the textbook.
 - Ask questions, if any.
 - Carefully review your mistakes when correcting answers on exercises and exams.
2. **Any dishonesty, violation of university rules, or absence from exams without valid reasons must result in a failing grade on this course.**
3. Learn by doing. Study hard, play hard. As you sow, so will you reap. No pain, no gain.
4. **Learning attitude is everything.**
5. **Grade adjustment policy:** To account for the overall difficulty of the course assessments, the instructor may apply an upward linear adjustment to the final raw scores. A minimum raw-score threshold for adjustment eligibility will first be determined based on the overall class performance. Raw scores below the threshold will not be adjusted. No student's score will be reduced as a result of this adjustment.
6. If an examination must be administered online, the weights of the assessment components may be adjusted. Any adjustment will be announced and applied uniformly to all students.
7. **Please follow the intellectual property instructions and make no illegal copies.**
8. A useful way to contact me is by e-mail.
9. Other information can be found on the Internet at my websites:



Department faculty profile



NSTC research profile

Recommended References

1. Asllani, A., 2014, Business Analytics with Management Science: Models and Methods, Pearson FT Press.
2. Selected international journal articles announced during the semester.
3. 高強，2008，《贏在問題解決力》，天下雜誌。
4. 大前研一，2015，《思考的技術》，商周。
5. Hillier, F.S. and G.J. Lieberman, 2005, Introduction to Operations Research, 8th ed. (International Edition), McGraw-Hill.
6. Winston, W.L., 2004, Operations Research: Applications and Algorithms, 4th ed., Thomson.
7. Ross, S.M., 2003, Introduction to Probability Models, 8th ed., Academic Press.