

Process Management and Decision Science

Title of the course: Process management and decision science

Instructor: Wenzheng MAO

Course code:

Teaching Language: English

Targeted students: Master

Contact Hours: 36

Self-learning Hours: 72

Prerequisites: Introduction to operations management

Number of learners: Less than 55

Academic Year: Spring

Credits: 2

Profile of Teaching Staff

Wenzheng MAO

Wenzheng Mao is an Assistant Professor of Management Science and Engineering in the School of Economics and Management at Tongji University. She received her Ph.D. degree in management and strategy from the University of Hong Kong. After that, she joined Tongji University and served as an assistant professor. Dr. Mao's research interests focus on supply chain management, empirical operations management and industrial organization, and she is interested in using cross-disciplined research methods to analyze practical problems in business.

1. Course Description

Business decision making involves considerable complexity and uncertainty. This course introduces the basic concepts in quantitative analysis to help students gain a clear understanding of the key elements in a business process. We will discuss methods that are used extensively in business organizations. These methods provide you with the tools and the skills to approach, analyze, and solve problems of varying scales. Furthermore, this course aims at improving a decision-maker's overall problem solving ability by stressing approaches to understand and question assumptions, to consider a richer set of solution alternatives, and to consider diverse measures of performance.

2. Course Objectives

- To raise awareness of the various management issues associated with the management of various business processes
- To provide an understanding of key principles of business process management
- To provide a set of systematic approaches to process planning and management
- To provide a toolbox that can be used to solve a variety of practical problems

3. Course Intended Learning Outcomes (ILO)

In this class, you will develop and sharpen your skills to

- ILO1. clearly identify and define a loosely structured operations process,
- ILO2. use systematic approaches to assess operations and quality capability of a process
- ILO3. apply process improvement tools to redesign an operations process, and
- ILO4. develop skills in designing and implementing an effective operations system

4. Course Requirements and Assessment

Assessment	Ratio	Requirements
Individual Report	30%	Individual report will be assigned and the due time will be announced at the class. Report requirements see below. *
Group project	20%	One group project will be assigned and you will have around two-week preparation for presentation. You will complete it in self-selected groups of three to four people. Collaboration is key to learning and doing well on this project. Group members can evaluate each other's performance by providing comments on the peer evaluation form. Those

		who under-contribute may be penalized (up to 100% grade deduction).
Assignments	20%	Two assignments will be assigned and answers will be given after the due time. The assignments include calculations questions that reinforce your skills, as well as a case that help your understanding of the idea. We will discuss the cases in the next class after you submit the assignment. Each assignment accounts for 10%.
Class participation	30%	10%: attendance 10%: active participation 10%: in-class game performance

***Individual Report:**

This essay should involve a specific application of the class concepts to solve (or at least analyze) a business problem. First, find a process that you are interested, e.g., the queue at the Canteen, the walk-in process to see a doctor at the university clinic, the design of a bank near your community. Second, clearly identify the problem about the process, e.g., the long queueing time at the Canteen during the lunch hours, the doctor appointment system at clinic, confusing design within a bank at your local community. Third, investigate potential solutions using the class concepts. You are encouraged to directly collect the data, e.g., by counting the processing time at the Canteen kitchen, and use the data in your analysis. If direct data collection is not available, then specify what kind of data do you need, and you can find aggregate data to approximate the parameters needed for providing potential solutions. Finally, discuss how you are going to implement your potential solutions.

You are encouraged to follow the report outline when you submit your report:

1. Define the process: Supply, demand, the goal, bottlenecks, etc.

2. Identify the difficulties and provide suggestions: Select two to three reasons causing mismatching, and provide "feasible" operations strategies to improve the process.
3. Implement the suggestions: Every suggestion comes with pros and cons. Remember to discuss the financial, operational, and relationship-related impacts, and propose how to implement your suggestions to mitigate the negative impacts.

The report must not exceed 10 single-sided pages including all materials, with margin size of 2.54 cm (for top, bottom, left, and right margins), 12-point Times New Roman font, 1.5-line spacing.

Late report will NOT be graded!

5. Course Arrangement

Course Name		Process Management and Decision Science	Contact Hours	36
Unit	Credit hours	Contents	Assignments	
1	3	Introduction to Business Process Operations strategy and the process view of operations		
2	4	Forecasting Model 1. Basic probability & statistics 2. Forecasting models	Individual Assignment 1	
3	20	Process Planning 1. Process analysis and capacity planning: little's law	Individual Assignment 2	

		2. Impact of variability and safety capacity: queueing model 3. Decision models 4. Linear programming 5. In-class practice game 6. Supply chain management	
4	9	Process Improvement 1. Quality management and statistical process control 2. Lean productions	Group Project and Presentation

6. Textbook and References

Textbook:

- Anupindi, R., S. Chopra, S. D. Deshmukh, J. A. Van Mieghem, and E. Zemel, *Managing Business Process Flow*, (3rd Edition, Pearson New International Edition)

Supplementary materials:

- Krajewski, L. J., Malhotra, M. K., Ritzman, L. P., Malhotra, M. K., & Ritzman, L. P., *Operations management: Processes and supply chains*. (12th Edition, Pearson New International Edition)
- “Introduction to the Theory and Practice of Yield Management,” by Netessine and Shumsky, *INFORMS Transactions on Education*, 3(1), 2002, pp. 34-44.