

IE 409 PROJECT SCHEDULING AND MANAGEMENT Spring 2022

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The Objective of the Course

The objective of this course is to introduce the student to the quantitative aspects of the body of knowledge in project management. Emphasis is given to implementing quantitative techniques already acquired in other courses.

Course Outline

Overview of project management process; project and portfolio selection; project idea generation, formulation, financing, bidding, budgeting, and cash flow analysis; team formation and building; deterministic and stochastic unconstrained project scheduling; resource leveling; resource-constrained project scheduling algorithms; progress and cost control of projects; agile and hybrid project management; examples of management of projects from various sectors.

Learning Outcomes

Upon successful completion of the IE 409 Project Scheduling and Management course, students are expected:

- to grasp the project management process and be able to use quantitative tools of project management;
- to be able to identify, analyze and model management problems suitable for formulation as projects;
- to be capable of participating in practice in the formulation, description, planning, scheduling, control, and proper termination of the project;
- to be able to transform project descriptions into mathematical programming models by employing project networks and solve them using appropriate solution techniques;
- to grasp the essentials of project selection and financial aspects of project management such as financing, bidding, budgeting, and cash flow analysis;
- to learn the use of one major project management software tool (MS Project).

Topics To Be Covered

An introduction to project management
Modeling of projects
The deterministic unconstrained project scheduling process
Time-cost trade-off
Stochastic unconstrained project scheduling
Resource leveling
The resource-constrained project scheduling problem
Progress and cost control of projects
Project contract types, bidding, and payment schedule
Uncertainty and risk issues
Agile and hybrid project management
Project and portfolio selection models

Grading

Group Project 15

Individual Project	15
Midterm Exam	25
Quizzes	20
Final Exam	25

Make-up Policy

Make-up is given only for the midterm exam and only to those with an official excuse, i.e., a medical report issued or approved by the SU Health Center. Those with a valid medical report given or approved by the SU Health Center will be given a make-up exam in the week before the last week of classes covering the scope of the whole term.

Group and Individual Projects

For the group and individual projects, MS Project software will be employed. An MS Project Individual Assignment will be given, counting as 10% of the Individual Project grade. For coding, you will be using gurobi, python, or C++ according to which one you are familiar with.

Quizzes

A large percentage of quizzes will be given during the recitation hours. Seven quizzes will be given, and the best five will be included in your final course grade. There will be no make-up for the quizzes.

Homework is assigned but not graded.

Disclaimer

The instructor reserves the right, when necessary, to alter the grading policy, change examination date, and modify the syllabus and course content. Modifications will be announced on SUCourse+. Students are responsible for the changes announced.

Attendance

Attendance is not compulsory but highly recommended. You must attend the synchronous Zoom lectures, recitations, etc., and real-time online quizzes with your SU email account.

Academic Integrity

Each student in this course is expected to abide by the Sabanci University Academic Integrity Statement (available at <https://www.sabanciuniv.edu/en/academic-integrity-statement>). Cheating is subject to disciplinary action and a null grade.

Textbook

Gündüz Ulusoy and Öncü Hazır, *An Introduction to Project Modeling and Planning*, Springer Nature Switzerland AG, 2021, e-book [HD69.P75 U58 2021].

Reading Material

The Powerpoint presentations, handouts, and journal paper assignments.

Optional Reading

A. Shtub, J. F. Bard, S. Globerson, *Project Management: Processes, Methodologies, and Economics*, Pearson Prentice Hall, Upper Saddle River, 2005. [TA190. S58 2005] [on Reserve]

H. Kerzner, *Project Management: A Systems Approach to Planning, Scheduling, and Controlling*, e-book.