

Systems and Operations Research

Basic information

Code: SCI3077

Extent: 20–25 ECTS

Language: English

Professor in charge: Harri Ehtamo

Administrative contact: [Johanna Bovellán](#)

Target group: All MSc students with sufficient prerequisite knowledge

Application procedure: Open to all students of Aalto University

Quotas and restrictions: No quotas

Prerequisites: BSc minor in Systems Sciences or equivalent knowledge

Objectives

The goal of the minor is to teach students modeling methods and practical skills for problem solving and decision making in complex industrial, managerial, economic and environmental problems. Methods of systems and operations research are used extensively in application areas such as finance, logistics, manufacturing, services, defense, energy, environment and healthcare. Graduates in Systems and Operations Research are in growing demand by firms, consultancies, research institutes and the public sector in many areas ranging from the financial sector to industry, transportation, energy and environment.

Structure

The topics include optimization, simulation, dynamic systems, decision modeling, statistics, forecasting and risk analysis.

Code	Name	ECTS	Period
Core courses (mandatory):		15	
MS-E2121	Linear optimization	5	III-IV
MS-E2122	Nonlinear optimization	5	I-II
MS-E2134	Decision making and problem solving	5	I-II
Select 5–10 ECTS of MS-E2XXX courses, for example:			
MS-E2112	Multivariate statistical analysis	5	III-IV
MS-E2114	Investment science	5	I-II
MS-E2117	Riskianalyysi	5	III-IV
MS-E2129	Systemien identifointi	5	I-II
MS-E2130	Matemaattinen mallijattelu	3–6	I-II
MS-E2133	Systems analysis laboratory II	5	I-II
MS-E2191	Graduate seminar in operations research	5	I-II
MS-E2148	Dynamic optimization	5	III
MS-E2170	Simulation	5	III

