Exchange programme Vrije Universiteit Amsterdam

Vrije Universiteit Amsterdam - Exchange programme Vrije Universiteit Amsterdam - 2024-2025

Exchange

Vrije Universiteit Amsterdam offers many English-taught courses in a variety of subjects, ranging from arts & culture and social sciences, neurosciences and computer science, to economics and business administration.

The International Office is responsible for course approval and course registration for exchange students. For details about course registration, requirements, credits, semesters and so on, please visit the exchange programmes webpages.

Operations Research II

Course Code	E_EOR2_OR2
Credits	6
Period	P4+5
Course Level	200
Language Of Tuition	English
Faculty	School of Business and Economics
Course Coordinator	prof. dr. D. Wozabal
Examiner	prof. dr. D. Wozabal
Teaching Staff	prof. dr. D. Wozabal, dr. D.A. van der Laan
Teaching method(s)	Written partial exam, Lecture, Study Group

Course Objective

To understand the pitfalls of ignoring random data in decision making and the foundational ideas of decision making under uncertainty. Students know about modeling techniques for translating relevant problems from EOR practice into appropriate stochastic optimization models and be able to solve these problems using numerical optimization approaches.

Course Content

This is an introductory course in decision making under uncertainty. It builds upon the basic course in probability theory and Operations Research 1. The first part of the course in Period 4 focuses on classic two-stage stochastic optimization problems with applications in production, supply chain management, transport, and energy. In Period 5, the second part of the course transcends two-stage stochastic optimization and explores multi-stage stochastic optimization in a dynamic programming framework with finite and infinite decision horizons. In particular, the second part focuses on Markov decision processes and reinforced learning. The employed algorithms are dynamic programming, value iteration, policy iteration, and Q-learning.

Additional Information Teaching Methods

Combined lectures and tutorials.

Method of Assessment

1. Case assignments
2. Midterm exam
3. Final exam

Literature

TBA

Additional Information Target Audience

Junior/Senior undergraduates in Applied Mathematics (e.g. Econometrics and Operations Research)

Additional Information

The course is suitable to be taken in an exchange program.

Recommended background knowledge

Introductory courses on Probability Theory and Statistics. Courses on Optimization and Linear Algebra.