Operations Research: A Mathematical Way to Optimize Your World
5 to 19 August 2017 (course starts 7 August)

Nowadays, everyone is talking about the tremendous opportunities offered by “big data” and all kinds of analytics. To really make the difference, though, you need to be able to turn data and analytical insights into better managerial decisions – and that requires rigorous quantitative tools. This course delivers those tools, introducing you to the most successful models and algorithms from operations research (OR), including (integer) linear optimization, network optimization, stochastic optimization and heuristics. Not only do you learn some of the beautiful but basic mathematics behind them, but during computer practicals you gain hands-on experience with up-to-date software applied to practical cases in such domains as logistics and revenue management. The course will enable you to recognize and exploit opportunities for mathematically supported decision making and can help prepare you for an MSc in Operations Research.

Specific topics include:

- The world of optimization, considering both deterministic and stochastic problems (that is, with and without data uncertainty).
- Modelling optimization problems using powerful tools such as integer programming.
- Some insights into the theory that drives the effectiveness of these tools.
- The use of optimization software, such as Matlab, Python, and Gurobi.
- Algorithms for key problems in network optimization, such as finding the cheapest tour through a network.
- Understanding stochastic processes like Markov chains to model uncertainty in operational systems.
• Queueing models and queueing networks.
• Stochastic dynamic programming techniques to determine optimal decisions in operational problems.
• Stochastic computer simulation techniques, enabling you to model and analyse realistic problems in operational systems.

Who Should Join

Students of Engineering, Computer Science, Physics, Mathematics or Quantitative Business Studies.

Course Information

Course level: Advanced Bachelor’s/Master’s
Lecturers: Dr A. A. N. Ridder, Dr D. A. van der Laan, Dr R. A. Sitters, Prof. L. Stougie
Contact hours: 45 (3 ECTS)
Tuition fee: €1000

Included in the tuition fee are:

• Airport pick-up service
• Orientation programme
• Course excursions
• On-site support
• 24/7 emergency assistance
• Transcript of records

Discounts and Scholarships

• Early bird discount of €150 for anyone who applies and pays before 15 March 2017.
• €250 discount for students from partner universities.
• 10 scholarships available that cover the full tuition fee of one course.
• Combine 2 courses: €100 discount
• Combine 3 courses: €200 discount

See website for list of partner universities and terms and conditions.

Housing

Different housing options are available both on and off campus. Find out more online.

VU Amsterdam Summer School

The summer school of Vrije Universiteit Amsterdam offers small-scale courses (max. 25 students) in a wide range of fields. Our courses are designed to provide an intensive, in-depth look at your topic of study. Besides the built-in course excursions we offer an extensive social programme.

Contact

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Excursions

Possible visit to a leading consultancy firm in operations research (to be confirmed).