

Course

Operations Research and Health Care

Date:	25 May / 1 June / 8 June / 15 June 2016
Time:	10.00 – 16.00 h.
Location:	Vergadering Vredenburg, Vredenburg 19, Utrecht
Course leaders:	Prof. dr. ir. Erwin Hans en Prof. dr. Joris van de Klundert
ECTS:	1 (attendance) / 4 (with assignment)
Days:	4
Course fee:	Free for TRAIL/Beta/OML members, others please contact the TRAIL office
Registration:	www.rstrail.nl

Objectives

To familiarize the students with topics, methodology, models and algorithms for health care decision making.

Course description

Global and national developments cause the health of populations and individuals to pose new problems for societies and organizations, for which operations research is often useful to provide the answers. As expectations rise and populations age, the burden of health care cost becomes increasingly difficult to carry. We are presented with tough decision problems regarding the efficient, effective and equitable use of scarce resources to improve our precious health.

In this course, we start by overviewing topics, methodology, models, and objectives for health care decision making. We subsequently provide an in depth and rigorous mathematical treatment of operations research applications in a variety of prominent domains. Partly, the material will be based on application of advanced methods in e.g. combinatorial optimization or queuing theory, as dealt with in the respective courses. Another part of the course will extend the standard theory, and show how the theory and techniques are extended to deal with health care specific issues.

The course will be organized by topic:

- Health services research methodology
- Outpatient planning (Queuing, Scheduling)
- Resource Planning & Scheduling (Scheduling, Branch-and-Price, Stochastic Programming),
- Human resource planning (Rostering, Crew Scheduling)
- Planning of integral care pathways (Supply Chain Planning, Hierarchical planning and control, Combinatorial Optimization, Queuing)
- Performance analysis and benchmarking (Data Envelopment Analysis, Stochastic Frontier Analysis)
- Medical decision making (Non Linear Optimization, Markov Decision Modeling)

Assignment

Take home assignments.

Program

See above

Course material

Handouts (scientific papers).

Methodology

Various combinatorial and stochastic Operations Research models and techniques, benchmarking, hierarchical planning, operations management, health services research methodology.

Prerequisite

Understanding of queuing theory and combinatorial optimization at M.Sc. level.