



**T-808-NOLI**

**APPLYING MODELS IN MANAGEMENT**

**8 ECTS**

**Year of study:** 5<sup>th</sup> year (2<sup>nd</sup> year MSc).

**Semester:** Fall.

**Level of course:** 6. Second cycle, advanced.

**Type of course:** Elective. *Recommended elective for MSc Engineering Management.*

**Prerequisites:** Calculus I (T-101-STA1), Statistics I (T-302-TOLF), Operation Research (T-403-ADGE), Simulation (T-502-HERM). The students must have a good knowledge in the field of Operations Research and Operations Management, including courses like Operations Research, Simulation, Operational Analysis and Management II, or a similar knowledge from other courses. It is assumed that the students have already learned OR methods like Linear Programming, Simulation, Network Models, Queueing Theory, Forecasting Models, Integer Programming, Nonlinear Programming, Decision Theory etc. Also, that they have been exposed to some fields of Management like Quality Management, Production Management, Project Management and Financial Management.

**Schedule:** Runs for 12 weeks - 6 teaching hours a week.

**Supervisor:** Páll Jensson.

**Lecturer:** Páll Jensson, Matthías Sveinbjörnsson.

**Learning outcome:** Upon completion of the course the student should be able to demonstrate knowledge and skills in the following:

- Understanding the fundamentals of the application of models in management.
- Be able to develop and use models and know about the possibilities and limitations of these.
- Have an overview over the most important types of practical models in Operations Research and training in designing them and applying in the various fields of management.
- Be able to develop OR models for managers with Excel and other tools like MPL and Simul8, having had the training and developed the necessary insight to use mathematical models in real life situations.

**Content:** This course is thought as a final course in the field of Operations Research and Operations Management. Very few new methods will be covered, the objective is rather to train students in designing and applying mathematical OR models in real life management. In each week we study a particular field of management, we analyze the role of this manager and his needs for quantitative methods and we try to search for his possibilities of applying mathematical models more than is done today. These particular fields will be marketing, inventory management, production, distribution, service, financing, quality, executive manager and finally government. This takes 8 sessions with one home assignment after each session. There is also group work where students solve a self-selected real-life case

**Reading material:** *Management Science Modeling*, Winston & Albright Note that we will not follow the textbook chapter by chapter as it is organized in a different way than the course. Further reading: *Optimization in Operations Research*, Ronald L. Rardin.

**Teaching and learning activities:** Lessons will mostly be used for discussions. The teacher will start the discussions with examples/case studies that show applications of models in real life management. After that there will be discussions analyzing the needs for models in the field of management under consideration. Each session will end with a discussion about next home assignment.

**Assessment methods:** The Revenue Management is 25% of the final grade, weekly home assignments are 50% and group project is 25%, i.e. report and a presentation.

**Language of instruction:** English.

**All course descriptions may be subject to change.** Revised information on the course schedule, reading material, teaching and learning activities, and assessment methods will be introduced in the learning management system Canvas at the beginning of the semester.