



Course manual

02435 - Decision-making under uncertainty

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1 Goal of the course

Decisions are an integral part of human life. We are constantly required to make choices for our companies and for our personal lives, but the future outcomes of our choices are often shrouded in uncertainty. The overall goal of this course is to constitute the student able to reason about how uncertainty can be modeled and quantified and to provide the student with the skills to tackle decision-making problems with uncertain information.

2 Prerequisites

In this course, we assume a basic knowledge of linear programming and mixed-integer programming (as taught for example in the courses 42112, 42002 or 42111).

3 Software

We use the Gurobi solver with the Pyomo library in Python. For the assignments, you can alternatively use a different solver, if you prefer. You need to bring a laptop with you to participate in the coding exercises. **Install the software before the first class.**

If you need support with Python, consider the DTU Python Support:
<https://pythonsupport.dtu.dk/>

To install and use Gurobi, follow the instructions on
<https://www.gurobi.com/features/academic-named-user-license/>
Important! Use your DTU email address to sign-up for an account.

4 Communication

By default, all communication is handled through DTU Learn. Make sure that you receive notifications from the activity feed and announcements so that you are always up-to-date. You can enable notifications in “My Course → Announcements → More Actions → notifications” in the DTU Learn course. All news regarding the course will be published via announcements. Outside class hours, please use the discussion forum in DTU Learn to ask questions. This allows us a more efficient reply to your questions. **You can ask anonymously** if you choose to.

5 Assessment (a.k.a. “Grade determination”)

There is no final exam in this course. The overall assessment is based on two group assignments. Both assignments feature an individual assessment module, i.e., different members of the same group may receive different points/grades, depending on their contributions, to prevent “free-riding”. The details will be explained in the assignments’ text. Be aware of the due dates for the reports, which can always be seen at Content → Course Schedule.

The first assignment can give you up to 70 points and the second assignment up to 30 points. Each student needs to achieve a total minimum of 50 points to be able to pass the course. Your final overall grade in the Danish grading system (i.e. -3, 00, 02, 4, 7, 10, 12) is ultimately determined by the instructor after carefully considering your overall presence and performance.

6 Forming groups for the group assignments

You must enroll yourself in a group via DTU Learn, for each Assignment, in order to participate. Groups are up to 4 members each. There will be no automatic enrollment. For the first Assignment, you can enroll in a group until February 14th; but it is strongly recommended that you enroll before, or shortly after, the first lecture. If you are already in a group and looking for additional members, you can use the Discussions section to let your colleagues know. If you are looking for a group to enroll, prioritize groups that have open requests in the Discussions. Once enrolled with a group, contact your group through DTU Learn or via email right away.

So, welcome on board. Hopefully, you will enjoy this journey!