UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

COURSE SYLLABUS

Applied Operations Research G2F

6 credits

Course code: PR505G
Version number: 9
Valid from: 1 January 2021
Ratified by: Curriculum Committee for Engineering Science
Date of ratification: 5 October 2020

1. General information about the course

The course is provided by the University of Skövde and is named Applied Operations Research G2F (Tillämpad operationsanalys G2F). It comprises 6 credits and is a first-cycle course. The level of progression is G2F.

The course is a part of the main field of study in Industrial Engineering. The disciplinary domain of the course is Technology.

2. Entry requirements

The course has the following entry requirements: passed IT136G Procedural Programming for Engineers G1N and passed PR316G Efficient Workflows G1F and passed MA304G Linear Algebra - Geometric Transformations G1F or passed MA303G Linear Algebra II G1F (or the equivalent).

3. Course content

The course is a operations research course and aims at preparing students with an overview of the application of different operations research techniques, methods and tools. This course will introduce the students to deterministic models and methods. In this course, the students will learn to formulate, analyze, and solve mathematical models that represent real life problems by applying appropriate optimization tools and techniques.A collection of industrial and non-industrial problems will be discussed during the course, and different solution methods will be tried.

The course combines a theoretical and a practical part. The theoretical part focuses on the process of developing mathematical models and learning different solution/optimization methods/techniques. These will be covered during lectures and examined through assignment and written exam. The practical part's concentration will be on learning optimization software to solve mathematical models. This part of the course will be satisfied by several lab sessions and examined by assignments presented orally and in written reports in English.

4. Objectives

After completed course the student should be able to:

- argue for the importance and value of operations research (OR) and mathematical modeling in solving real world engineering problems,
- demonstrate understanding of definition, scope, objectives, phases, models and limitations of Operations Research,
- formulate basic decision problems into mathematical models for quantitative analysis,
- solve mathematical models using appropriate solution techniques,
- use computer tools to solve mathematical models in OR,
- effectively communicate ideas, explain procedures and results in written and oral presentation in the English Language.

5. Examination

The course is graded A (Excellent), B (Very good), C (Good), D (Satisfactory), E (Sufficient) or F (Fail).

The examinations of the course consist of the following modes of assessment:

- **Supervised written exam**
  2 credits, grades: A/B/C/D/E/F (determines the final grade)
- **Written assignment and oral presentation**
  4 credits, grades: G/U

Students with a permanent disability who have been approved for directed educational support may be offered adapted modes of assessment.

6. Types of instruction and language of instruction

The teaching is comprised of presentations, laboratory sessions and lectures.

The teaching is conducted in English.

7. Course literature and other educational materials

Hamdy, A. T. (2013). *Operations Research: An Introduction* (9th ed.). Pearson. ISBN 933251822X.

Hillier, F. S. & Lieberman, G. J. (2014). *Introduction to Operations Research* (10th ed.). New York: McGraw-Hill. ISBN 1259162982.

8. Student influence

Student influence in the course is ensured by means of course evaluation. The students are informed about the results of the evaluation and potential measures that have been taken or are planned, based on the course evaluation.

9. Additional information

Further information about the course, as well as national and local governing documents for higher education, is available on the website of the University of Skövde.