

**SYLLABUS**

# **Applied Operations Research 7.5 credits D0001B**

**Tillämpad operationsanalys**

**Course syllabus admitted: Spring 2024 Sp 3 - Present**

**DECISION DATE  
2023-06-02**

# Applied Operations Research 7.5 credits D0001B

## Tillämpad operationsanalys

### First cycle, D0001B

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Underhållsteknik	Other Subjects within Technology

## Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and M0043M Mathematics II - Calculus and linear algebra or corresponding course and good knowledge in English, equivalent to English 6

## Selection

The selection is based on 1-165 credits.

## Course Aim

This course provides basic knowledge on the theory and application of Operations Research techniques. After the course, the participant should be able to understand the application of modern mathematical modelling techniques for planning and analysis of various unit operations in a system.

## Contents

The course include:

- Problem modelling: Introduction to Operations Research, different types of models, art of modelling-development and construction of models.
- Linear programming: Formulation and graphical solution to different optimisation problems, Simplex method, and transportation model
- Decision theory: Decision under risk and uncertainty, forecasting techniques.
- Network problems: Methods for formulating and solving network problems, network models, PERT-CPM
- Queuing models: Basic elements of queuing model, queuing decision models application of queuing model in industries, inventory control models

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

The students will work in groups to apply Operations Research Principles solving real life problems. The teaching will include lectures, assignments and project work. Active participation in lectures is expected.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Course objectives are assessed by assignments, active participation in lectures, and written exam. Classroom participation (10%), assignments (20%), and final exam (70%) contribute to the final grade. All the assignments must be submitted before posted deadline.

## Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term “unauthorized aids” refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

## Overlap

The course D0001B is equal to ABD003

## Course offered by

Department of Civil, Environmental and Natural Resources Engineering

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Written exam	G U 3 4 5	4.5	Mandatory	A07	
0002	Assignments	U G#	3	Mandatory	A07	

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Last revised

by Assistant Director of Undergraduate Studies Eva Gunneriusson, Department of Civil, Environmental and Natural Resources Engineering 2023-06-02

## Syllabus established

The plan is established by the Department of Civil and Environmental Engineering 2007-01-31 and is valid from H07.