1 Name, Scope and Level of the Course
The course is provided by the University of Skövde and is named Optimization Methods for Industry A1N. It comprises 4 credits and is on advanced level. The level of progression of the course is A1N.

2 Objectives
After completed course the student should be able to:

- demonstrate a good understanding of different types of optimization techniques, including classical, metaheuristic and simulation-based methods,
- formulate optimization problems based on industrial scenarios and relate them to standard optimization models,
- suggest appropriate optimization methods for various industrial applications,
- apply software available for industry to solve optimization problems.

3 Course Content
The course is composed of five major parts: lectures, laboratory (hands-on) assignments and project work. The course will cover the following topics: classical optimization methodologies and standard optimization models, metaheuristic algorithms for solving single and multi-objective optimization problems, simulation-based optimization and their industrial applications, industrial applications of optimization and decision analysis.

4 Forms of Teaching
For distance courses/programmes, the teaching comprises lectures and laboratory sessions. The teaching comprises lectures, laboratory sessions and individual project work. Laboratory exercises are mandatory. The individual project work consists of a presentation at the end of the course.

The teaching is conducted in English.

5 Examination
The course is graded G (Pass) or U (Fail).

Registration of examination results:

<table>
<thead>
<tr>
<th>Name of examination</th>
<th>Credits</th>
<th>Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory assignment</td>
<td>2 credits</td>
<td>G/U</td>
</tr>
<tr>
<td>Project presentation(^1)</td>
<td>2 credits</td>
<td>G/U</td>
</tr>
</tbody>
</table>

\(^1\) Determines the final grade of the course.

Students with a permanent disability who have been approved for special educational support may be offered adapted or alternative examinations.

6 Admission Requirements
The prerequisites for this course are a Bachelor degree of at least 180 higher education credits (equivalent to 180 ECTS) within the fields of integrated product development or production engineering or automation engineering or mechanical engineering or information technology or similar, and a minimum of 12 months of documented work experience in relevant domain.
A further requirement is proof of skills in English equivalent of studies at upper secondary level in Sweden, known as English course 6 / English course B. This is normally demonstrated by means of an internationally recognized test, e.g., IELTS or TOEFL or the equivalent.

If you do not fulfill the academic prerequisites, you can apply to be assessed based on your work experience.

7 Subject, Main Field of Study and Disciplinary Domain

The course forms a part of the academic subject area of Virtual Product Realization. The course is a part of the main field of study in Virtual Product Realization at the University of Skövde. The disciplinary domain of the course is Technology.

Every course at the University of Skövde belongs to a subject. The division of subjects is used for follow-up and quality assurance. A main field of study is an area in which a degree can be awarded. Disciplinary domain is a division which is used by the government for the allocation of resources for studies at basic level and advanced level.

8 Approval of Course and Course Syllabus

The course was approved by the Curriculum Committee for Engineering Science on 7 October 2019. This course syllabus was approved by the Curriculum Committee for Engineering Science on 7 October 2019. It is valid from 1 January 2020.

9 Overlapping with Another Course

This course cannot constitute a part of a degree also containing a course the content of which is totally or partly equivalent to the content of this course.

10 Additional Information

Further information will be available on the university’s website before a course is given.

National and local regulations for higher education are available on the university’s website.

Upon completion of the course there will be a follow-up. The main purpose of this follow-up is to contribute to improvements of the course. The students’ experiences and views constitute one of the criteria for the follow-up and are gathered by means of course evaluations. The students will be informed of the results of the follow-up and any decisions regarding actions that are to be taken.

11 Course Literature and Other Educational Materials


Course material and scientific articles will be provided by the instructor during the course.