UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

COURSE SYLLABUS

Modern Manufacturing Technologies and Applications A1N

6 credits

Course code: VP772A
Version number: 2
Valid from: 1 January 2026
Ratified by: Curriculum Committee for Engineering Science
Date of ratification: 11 September 2025

1. General information about the course

The course is provided by the University of Skövde and is named Modern Manufacturing Technologies and Applications A1N (Moderna tillverkningsteknologier och tillämpningar A1N). It comprises 6 credits and is a second-cycle course. The level of progression is A1N.

The course is a part of the main field of study in Virtual Product Realization. The disciplinary domain of the course is Technology.

2. Entry requirements

A Bachelor's degree equivalent to a Swedish kandidatexamen of 180 credits, within the main fields of integrated product development or production engineering or automation engineering or mechanical engineering or information technology (or the equivalent)

A further requirement is proof of skills in English equivalent of studies at upper secondary level in Sweden, known as English course 6 or English level 2 (or the equivalent). This is normally demonstrated by means of an internationally recognized test, e g IELTS or TOEFL or the equivalent.

3. Course content

The course includes the following areas: Basic properties of different material types such as metals, ceramics, plastics and various composite materials, including their overall physical and chemical properties linked to the selection of manufacturing processes. Material selection principles and computerized materials selection of materials linked to, among other things, quality and environmental aspects is also mentioned. Advanced machining processes such as for example, additive manufacturing, laser technology, electron beam processing, powder technology, chemical and electrical processing, jet processing, hybrid processes, nano-processing, micro-electronics manufacturing, thermal spraying, polymer composite manufacturing and its equipment forms an important part in the course. Advanced tools for interacting with manufacturing technology will also be explored including Augmented and Virtual Reality. Furthermore, cost aspects and the environmental impact of certain processes will be presented.

4. Objectives

After completion of the course, the student shall be able to:

- compare and contrast different manufacturing methods in the context of different materials,
- reflect on the potential impact, practical applications, and potential difficulties related to future manufacturing technologies,
- discuss the impact of different manufacturing methods and automation on the production of products, including; value, environmental impact and cost,
- make material selection of a product based on for exemple customer requirements or simulation of the product.

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 examination**
  4 credits, grades: A/B/C/D/E/F (determines the final grade)
- **Individual written and oral presentation**
  2 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 comprises lectures and study visits.

The teaching is conducted in English.

7. Course literature and other educational materials

Kalpakijan S. & Schmid S. R (2022). *Manufacturing Engineering and Technology in SI Units* (8th ed). Pearson Education. ISBN 9781292422244.

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.