UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

COURSE SYLLABUS

Scientific Theory in Industrial Informatics A1N

6 credits

Course code: VP741A
Version number: 6.1
Valid from: 1 July 2026
Ratified by: Curriculum Committee for Engineering Science
Date of ratification: 5 February 2026

1. General information about the course

The course is provided by the University of Skövde and is named Scientific Theory in Industrial Informatics A1N (Vetenskaplig teoribildning inom industriell informatik 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. It can also be a part of the main field of study in Informatics. 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, production engineering, automation engineering, 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 the Swedish course English 6 or English level 2 (or the equivalent). This is normally demonstrated by means of an internationally recognized language test, e.g. IELTS or TOEFL.

3. Course content

The course addresses central scientific theories in informatics. At the University of Skövde, informatics is defined as the discipline that addresses how information is represented, processed, and communicated in artificial and natural systems. As such, it is the study of the design and development of systems that effect the timely, effective, and efficient provision of information for individuals, organizations, and society. A representative sample of core theories and fundamental techniques are drawn from the body of knowledge in the discipline of informatics. The content will include the philosophical background of the nature of scientific theory in the field of informatics, some core theories from within traditional information technology, some core theories from within artificial intelligence and examine the issue of digitisation in modern engineering organisations.

4. Objectives

Upon completion of the course, a student should have accomplished the following learning outcomes and be able to:

- explain the scientific method of problem abstraction, hypothesis formation and test, experimentation, and analysis,
- explain the importance of being objective when conducting research, discuss actions that can be taken to remain objective and give examples of ethical issues that can arise due to not being objective enough,
- explain the difference between descriptive and normative models,
- apply a working knowledge of a representative sample of core theories and fundamental techniques in informatics, in general, and in computational and socio-technical systems, in particular,
- compare and contrast competing theories and complementary techniques in the context of typical computer-based information systems,
- describe some possibilities and limitations of science and the scientific method, and the role of engineering science in modern society.

5. Examination

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

The final grade is determined by grade for Written report.

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

- **Written report**
  3 credits, grades: A/B/C/D/E/F
- **Written exercise 1**
  1 credit, grades: G/U
- **Written exercise 2**
  1 credit, grades: G/U
- **Written exercise 3**
  1 credit, 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, seminars, and tutorials. Group discussion features in all three modes of delivery.

The teaching is conducted in English.

7. Course literature and other educational materials

The course literature consists of a set of chosen scientific articles and book chapters. A list of these are provided by the course director and are listed on the course home page for each time the course is given. Further, the students choose additional relevant literature for the individual essay, the individual written assignment and the oral presentation.

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.