1 Name, Scope and Level of the Course

The course is provided by the University of Skövde and is named Scientific Theory in Informatics A1N. It comprises 6 credits and is on advanced level. The level of progression of the course is A1N.

2 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 distinction between modelling methodology and instances of specific theories and models,
- 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.

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. These topics may include the following:

- The scientific method
- Modelling methodology
- Complexity theory
- Computability & automata theory
- Organizational theory
- Discrete probability
- Management theory
- Algorithmic strategies
- Simulation Modelling
- Optimisation Theory

This list of topics will be revised periodically to optimise the student learning experience.
4 Forms of Teaching
The teaching comprises lectures, seminars, and tutorials. Group discussion features in all three modes of delivery.

The teaching is conducted in English.

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

<table>
<thead>
<tr>
<th>Name of examination</th>
<th>Credits</th>
<th>Grading</th>
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</thead>
<tbody>
<tr>
<td>Written assignment</td>
<td>6 credits</td>
<td>A/B/C/D/E/F</td>
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</tbody>
</table>

Registration of examination results:

1 Contains three written assignments.

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

6 Admission Requirements
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.

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, TOEFL or the equivalent.

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 course can also be a part of the main field of study in Informatics. 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 5 February 2018. This course syllabus was approved by the Curriculum Committee for Engineering Science on 5 February 2018. It is valid from 1 July 2018.

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
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.