UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

PROGRAMME SYLLABUS

Bachelor of Science in Engineering – Industrial Informatics

180 credits

Programme code: HINDG
Version number: 1
Valid from: Autumn term 2027
Ratified by: Faculty Board at the University of Skövde
Date of ratification: 2 September 2026

1. General information about the study programme

The study programme is provided by the University of Skövde and is named Bachelor of Science in Engineering – Industrial Informatics (Högskoleingenjör i industriell informatik). It comprises 180 credits and is a first-cycle programme. The specialisation is Industrial Informatics.

2. Entry requirements

General entry requirements.
Additional requirements: Physics 2, Chemistry 1, Mathematics 3c or Mathematics D
Or:
Physics level 2, Chemistry level 1, Mathematics Further level 1c (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 equivalent). This is normally demonstrated by means of an internationally recognized test, e.g. IELTS, TOEFL or the equivalent.

The entry requirements above are applicable for admission to the study programme. For further studies within the programme, the entry requirements according to the programme syllabus must be met.

3. Study programme content

The programme educates graduate engineers who can integrate information technology, mechanical engineering and electrical engineering to develop, analyse and improve industrial processes and systems. The programme is organized around three integrated knowledge tracks: information technology, industrial systems and physical engineering systems. These are supported by a continuous mathematical and analytical foundation.

During the first year, fundamental knowledge is established in mathematics, programming, production systems and electrical systems. During the second year, knowledge is deepened in mechanical systems, materials and manufacturing, statistics, databases, programming, quality management and project management. During the third year, the knowledge tracks are integrated in courses in production systems development, industrial IoT, sensors and data acquisition, data-driven AI and robotics.

The progression of the programme moves from fundamental knowledge and skills towards analysis, integration and autonomous development of industrial systems. Laboratory work, programming assignments and multidisciplinary projects are used to integrate theory and application. Ethics, sustainable development, language and communication, and teamwork are developed recurrently

throughout the programme.

The programme concludes with a 15-credit degree project in which the student autonomously addresses an engineering problem within Industrial Informatics. Semester six also includes an elective course. Parts of the programme may be completed abroad, and semester six provides a possible mobility window.

The following courses are included in the programme

Introduction to Industrial Informatics 7.5 credits

Single-Variable Calculus 7.5 credits

Production Systems 7.5 credits

Linear Algebra 7.5 credits

Humans in Production 7.5 credits

Programming for Data Analysis and AI 7.5 credits

Electrical Engineering 7.5 credits

Discrete Mathematics 7.5 credits

Mechanics and Strength of Materials 7.5 credits

Statistics 7.5 credits

Materials and Manufacturing Technology 7.5 credits

Database Systems 7.5 credits

Quality Management 7.5 credits

Industrial Programming 7.5 credits

Project Management and Leadership 7.5 credits

Multivariable Calculus 7.5 credits

Production Systems Development 7.5 credits

IoT and Distributed Systems 7.5 credits

Sensors and Data Acquisition 7.5 credits

Data-Driven AI 7.5 credits

Robotics 7.5 credits

Elective Course 7.5 credits

Degree Project for Bachelor of Science in Engineering with Specialization in Industrial Informatics 15 credits

The following applies when selecting the elective course

- the course may be selected from the University of Skövde's course offering; courses at other higher education institutions may also be selected and transferred for credit,
- the course content must be relevant to the programme,
- the course content must not substantially correspond to the content of another course included in the programme,
- preparatory courses for higher education may not be counted as the elective course.

4. General objectives

Objectives for education at the first-cycle level in The Higher Education Act

First-cycle courses and study programmes shall develop:

- the ability of students to make independent and critical assessments,
- the ability of students to identify, formulate and solve problems autonomously, and
- the preparedness of students to deal with changes in working life.

In addition to knowledge and skills in their field of study, students shall develop the ability to:

- gather and interpret information at a scholarly level,
- stay abreast of the development of knowledge, and
- communicate their knowledge to others, including those who lack specialist knowledge in the field.

5. Study programme objectives

Objectives for Degree of Bachelor of Science in Engineering according to the Higher Education Ordinance

The programme's specialization is Industrial Informatics.

After completion of the programme, the student shall demonstrate the knowledge and skills required to work autonomously as a graduate engineer.

Knowledge and understanding

After completion of the programme, the student shall

- demonstrate knowledge of the disciplinary foundation of the field of engineering or technology chosen and proven experience in this field as well as awareness of current research and development work, and
- demonstrate broad knowledge in the field of engineering or technology chosen and relevant knowledge of mathematics and the natural sciences.

Competence and Skills

After completion of the programme, the student shall

- demonstrate the ability to identify, formulate and deal with issues autonomously and creatively using a holistic approach and to analyse and evaluate technological solutions,
- demonstrate the ability to plan and using appropriate methods undertake tasks within predetermined parameters,
- demonstrate the ability to use knowledge critically and systematically to model, simulate, predict and evaluate series of events on the basis of relevant information,
- demonstrate the ability to design and manage products, processes and systems while taking into account the circumstances and needs of individuals and the targets for economically, socially and ecologically sustainable development set by the community,
- demonstrate the capacity for teamwork and collaboration with various constellations, and
- demonstrate the ability to present and discuss information, problems and solutions in speech and writing and in dialogue with different audiences.

Judgement and Approach

After completion of the programme, the student shall

- demonstrate the ability to make assessments informed by relevant disciplinary, social and ethical aspects,
- demonstrate insight into the possibilities and limitations of technology, its role in society and the responsibility of the individual for how it is used, including social and economic aspects as well as environmental and occupational health and safety aspects, and
- demonstrate the ability to identify the need for further knowledge and undertake ongoing development of his or her skills.

6. Language of instruction

The teaching is conducted in English.

7. Degree qualification

A student who passes the courses in the programme fulfils the requirements for obtaining a Degree of Bachelor of Science in Engineering.

The Programme Coordinator decides whether a course may be replaced and whether the replacement course fulfils the requirements for a Degree of Bachelor of Science in Engineering.

Degree certificates are issued after application. Information about how to submit an application can be found on the website of the University of Skövde.

8. Changes to the programme syllabus

The programme syllabus and its courses may be changed, within the framework of the objectives for the study programme.

9. Student influence

Student influence in the study programme is ensured by means of programme evaluations. The students are informed about the results of the evaluations and potential measures that have been taken or are planned, based on the course evaluations.

10. Additional information

For a student to progress from year one to year two, at least 37.5 credits from the programme's courses are required.

For a student to progress from year two to year three, at least 82.5 credits from the programme's courses are required, of which at least 50 credits must be from year one. In addition, the following courses must have been passed: Single-Variable Calculus, 7.5 credits; Linear Algebra, 7.5 credits; Programming for Data Analysis and AI, 7.5 credits; and Database Systems, 7.5 credits.

To begin the degree project, at least 120 credits from the programme's courses are required. In addition, at least 15 credits from semester five must have been passed.

Components of the studies, such as company visits and project work, may involve costs for the student.

Further information about the study programme, as well as national and local governing documents for higher education, is available on the website of the University of Skövde.