JÖNKÖPING UNIVERSITY
School of Engineering

COURSE SYLLABUS

Fundamentals of Industrial design, 15 credits

Grunderna i industridesign, 15 högskolepoäng

Course Code:	TGIR25	Education Cycle:	Second-cycle level
Confirmed:	Feb 01, 2025	Disciplinary domain:	Technology
Valid From:	Sep 01, 2025	Subject group:	Design
		Specialised in:	A1N Second cycle, has only first-cycle course/s as entry requirements
		Main field of study:	Product Development

Intended Learning Outcomes (ILO)

On completion of the course the student shall:

Knowledge and understanding

- display knowledge of the creative process and its practical application in industrial design work.
- demonstrate comprehension of the interaction between humans and objects, as well as an understanding of design thinking.
- display knowledge of both scientific and practical aspects of design work, including design philosophy.
- display knowledge of basic visualization methods, including sketching and surface modelling.

Skills and abilities

- demonstrate skills in sketching and ideation work.
- demonstrate proficiency in developing an idea into a concept proposal and expressing it through form, text, oral presentation, and imagery.
- demonstrate the ability to build models in various materials.

Judgment and approach

- demonstrate the ability to create their own unique design expressions.
- demonstrate an understanding of how design decisions impact sustainability and user ergonomics.

Content

This course will provide students with a comprehensive introduction to industrial design, covering both foundational knowledge and practical skills. Students will gain an understanding of design thinking, processes, methods, and practices, and will learn how to apply industrial design tools through assignments and projects. The focus will be on aligning designs with user requirements and addressing user needs effectively through targeted assignments. Students will be equipped to implement their acquired knowledge and skills throughout an industrial design process in project work.

In addition to practical design skills, students will develop a deeper understanding of design philosophy, including key theories on form, structure, and their impact on product design. They will explore concepts such as three-dimensional visual analysis, the evolution of forms in space, and Gestalt laws, learning how to apply these principles in real-world contexts. The course will also incorporate sustainability considerations, ergonomics, and human-centered design, encouraging students to factor in environmental and social impacts when creating design solutions.

Through a mix of theoretical learning and hands-on exercises, students will refine their ability to communicate design concepts effectively, both visually and verbally, while gaining proficiency in basic

industrial design tools like sketching, surface modeling, and prototyping. This course will set the stage for students to develop essential skills that will support their future work in industrial design.

The course includes the following elements:

- Elements of design
- Design philosophy
- Design methodology
- Design history
- Introduction to sustainability
- Analog sketching
- Digital sketching
- Surface modelling
- Rendering
- Physical prototyping
- Ergonomics and user-centered design

Type of instruction

Teaching consists of lectures, exercises, assignments, and individual project.

Language of instruction is in English.

Entry requirements

Passed courses of at least 150 credits in the program Industrial Product Realisation, or a bachelor's degree (i.e the equivalent of 180 ECTS credits at an accredited university) with at least 90 credits in Mechanical Engineering, Civil Engineering, Industrial Design, Product Development, Innovation, Production Engineering, Industrial Engineering or the equivalent. The bachelor's degree should comprise a minimum of 15 credits in Mathematics. Proof of English proficiency is required.

Examination and grades

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

Registration of examination:

Name of the Test	Value	Grading
Assignment	5 credits	G/U
Presentation	5 credits	G/U
Project	5 credits	G/U

Course literature

Please note that changes may be made to the reading list up until eight weeks before the start of the course.

Title: Product Design and Development, Seventh Edition

Author: Karl T. Ulrich. Steven D. Eppinger. Maria C. Yang

ISBN: 978-1-260-566-43-7

Title: Elements of Design (Rowena Reed Kostellow and the Structure of Visual Relationships)

Author: Gail Greet Hannah

ISBN : 9781616891749, 1616891742

Title: Delft Design Guide

Author: BIS Publishers

ISBN: 9789063695408, 9063695403