JÖNKÖPING UNIVERSITY
School of Engineering

COURSE SYLLABUS

Prototyping in Industrial Design, 7.5 credits

Prototypframtagning i industridesign, 7.5 högskolepoäng

Course Code:	TPIS26	Education Cycle:	Second-cycle level
Confirmed:	Feb 01, 2025	Disciplinary domain:	Technology
Valid From:	Jan 19, 2026	Subject group:	Design
		Specialised in:	A1F Second cycle, has second-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

- demonstrate an understanding of advanced prototyping techniques and their application in industrial design.
- show familiarity with ergonomic and usability considerations essential for product design evaluation.
- demonstrate an understanding of how engineering principles and production constraints influence design decisions.

Skills and abilities

- demonstrate the skill of creating detailed physical prototypes using various materials and methods.
- demonstrate the ability to iterate and refine design concepts based on prototype testing and feedback.

Judgment and approach

- demonstrate the ability to critically assess prototypes for user comfort, usability, and overall design.
- demonstrate an understanding of design, ensuring that prototypes not only meet aesthetic and functional requirements but are also feasible for production.

Content

On completion of the course, students will have deepened their knowledge of industrial design and its tools, building on the foundations laid in *Fundamentals of Industrial Design* and *Visualization in Industrial Design*. This course emphasizes the practical application of prototyping, where students will create both rough prototypes and refined design mock-ups to explore and communicate their concepts effectively.

Students will work with rough prototypes to quickly evaluate key aspects such as ergonomics, functionality, and user interaction. These early-stage models will help them test and refine their ideas before committing to more detailed designs. Toward the end of the course, they will develop high-quality design mock-ups that accurately represent the final product's form, materials, and aesthetics.

Throughout the process, students will refine their skills in sketching, surface modeling, and rendering while evaluating their prototypes primarily from an ergonomic perspective. Additionally, they will consider manufacturability and material choices, integrating mechanical engineering principles to ensure their designs are not only visually appealing and user-friendly but also feasible for production. By the end of the course, students will be able to develop prototypes that effectively balance aesthetics, user experience, and production requirements.

The course includes the following elements:

- Design methodology
- Ergonomy
- Analog sketching
- Digital sketching
- Surface modelling
- Rendering
- Prototyping
- Evaluation and user testing
- Mechanical engineering and material choices

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 passed courses of 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. Taken course Visualization in Industrial design, 7,5 credits, or the equivalent. 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	3.5 credits	G/U
Project	4 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: Delft Design Guide

Author: BIS Publishers

ISBN: 9789063695408, 9063695403