



## COURSE SYLLABUS

# Production preparation and industrialization, 7.5 credits

*Produktionsberedning och industrialisering, 7,5 högskolepoäng*

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| <b>Course Code:</b> TPBR23                            | <b>Education Cycle:</b> Second-cycle level      |
| <b>Confirmed by:</b> Dean Oct 15, 2022                | <b>Disciplinary domain:</b> Technology          |
| <b>Revised by:</b> Director of Education Oct 25, 2023 | <b>Subject group:</b> MT1                       |
| <b>Valid From:</b> Jan 1, 2025                        | <b>Specialised in:</b> A1N                      |
| <b>Version:</b> 2                                     | <b>Main field of study:</b> Product Development |

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### Intended Learning Outcomes (ILO)

After a successful course the student shall;

Knowledge and understanding

- show familiarity of methods used in the design, production preparation and industrialization to ensure producibility from a technological perspective as well as from a social-, ecological- and economical sustainability perspective.
- display knowledge of workflows and organizational work procedures in design, production preparation and industrialization with regards to producibility in the product design stage.
- demonstrate comprehension of the tools used in the design process to ensure, assess, and improve producibility.
- display knowledge of the effects of the design and material selection on producibility.

Skills and abilities

- demonstrate skills in utilizing methods and tools to evaluate the producibility throughout the design process.
- demonstrate the ability to generate design ideas, explore designs and create prototypes in an applied project.

Judgement and approach

- demonstrate the ability to critically judge the effects of a product design on producibility from a technological perspective as well as from a social-, ecological- and economical sustainability perspective.

### Contents

This course provides an opportunity to learn hands on about working procedures, tools and methods used in design, production preparation and industrialization in order to ensure, assess and improve producibility from a product design perspective. Producibility here includes the fabrication of components of a product as well as the assembly of said components into the final product. The course includes the following elements:

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- Analysis of information flows between product development and production development.
- Company visits with a look on the companies' workflow, design process and cross-functional team meeting structure.
- Tooling, simulation of tooling process, design guidelines
- FMEA
- DFA, manual, semi-auto and automatic assembly
- Prototyping using a chosen manufacturing technique. Company visits to learn various manufacturing techniques.
- Labs to design assembly equipment
- Industry 4.0 concepts, design guidelines for digital industrialization

### **Type of instruction**

The teaching is conducted in English.

### **Prerequisites**

The applicant must hold the minimum of a bachelor's degree (i.e the equivalent of 180 ECTS credits at an accredited university) with at least 90 credits in Mechanical Engineering, Industrial Engineering and Management, Civil Engineering (with relevant courses in construction), or equivalent. The bachelor's degree should comprise a minimum of 15 credits in mathematics and 7.5 credits in CAD, or equivalent. Proof of English proficiency is required.

### **Examination and grades**

The course is graded 5,4,3 or Fail.

The course examination is continuous, through project deliverables, project gate presentations and mandatory study visits.

Registration of examination:

| Name of the Test | Value       | Grading |
|------------------|-------------|---------|
| Project          | 7.5 credits | 5/4/3/U |

### **Course literature**

The literature list for the course will be provided eight weeks before the course starts.

The student is provided with relevant literature at the start of the course.