



## COURSE SYLLABUS

# Human Factors in Product Realization, 7.5 credits

*Human Factors i produktframtagning, 7,5 högskolepoäng*

---

<b>Course Code:</b>	TPEN11	<b>Education Cycle:</b>	First-cycle level
<b>Confirmed by:</b>	Dean Dec 1, 2020	<b>Disciplinary domain:</b>	Technology (75%) and social sciences (25%)
<b>Revised by:</b>	Director of Education Oct 29, 2021	<b>Subject group:</b>	AE1
<b>Valid From:</b>	Jan 1, 2022	<b>Specialised in:</b>	G2F
<b>Version:</b>	2		

---

## Intended Learning Outcomes (ILO)

After a successful course, the student shall;

Knowledge and understanding

- display knowledge of physical and cognitive human functions, abilities and limitations in using products and at work
- display knowledge of the influence of the work organization on humans, their needs and the results of work
- display knowledge of different methods for product and process development used within ergonomics
- display knowledge of Swedish and international legislation regarding the work environment.

Skills and abilities

- demonstrate the ability to independently design and develop products and work processes based on people's different preconditions and the ongoing technology development
- demonstrate the ability to identify, formulate and critically analyze problems regarding the interaction human – technology – organization.

Judgement and approach

- demonstrate the ability to independently propose and compare different options for ergonomic design and development of products and processes and assess their consequences and risks
- demonstrate the ability to briefly assess whether a work situation is sustainable with a focus on relevant societal and ethical aspects.

## Contents

The course provides knowledge and insights about how products and industrial systems can be designed to make effective use of human natural strengths and limitations and result in usability, efficiency and endurance. This also includes in-depth knowledge of the interaction and interplay between humans and products, humans at work and the influence of the surrounding technology and organization.

The course includes the following elements:

- Human abilities in product and work design: physiology, physical aspects, workload, cognition
- Anthropometry and product design
- Design of system interface human – technology
- Automation – allocation of functions human – technology
- Sociotechnical systems: theoretical foundations, system models and applications
- Work organization, the psychosocial work environment and the impact of different work organizational solutions
- Social sustainability and worker motivation and engagement
- Swedish and international work environment legislation: the act, the provisions and the system supervision

### Type of instruction

The teaching consists of lectures, exercises, laboratory sessions, seminars and project work.

The teaching is conducted in English.

### Prerequisites

General entry requirements and completed courses 60 credits in first cycle including Sustainable Product Realization, 7,5 credits, Integrated product and Production Development, 7,5 credits and Industrial Production Systems, 7,5 credits (or the equivalent).

### Examination and grades

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

The final grade for the course is based upon a balanced set of assessments. The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

Name of the Test	Value	Grading
Examination	2.5 credits	5/4/3/U
Seminars and laboratory work	2.5 credits	U/G
Project work	2.5 credits	5/4/3/U

### Course literature

The literature list for the course will be provided 8 weeks before the course starts.

Title: Production Ergonomics – Designing work systems to support optimal human performance. Authors: Berlin, C. & Adams, C. (2017). Publisher: London - Ubiquity Press. ISBN: 978-1-911529-14-9.

Excerpts from: Work and Technology on Human Terms. Authors: Bogard, M. et al (2009). Publisher: Stockholm - Prevent. ISBN: 9789173650588.