

EE-600

**Usability engineering**

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<b>Cursus</b>	<b>Sem.</b>	<b>Type</b>
Electrical Engineering		Opt.

Language of teaching	English
Credits	3
Session	
Exam	Project report
Workload	90h
<b>Hours</b>	<b>45</b>
Lecture	24
Exercises	9
Project	12
<b>Number of positions</b>	

**Frequency**

Every year

**Remark**

Next time: Spring 2025

**Summary**

Human Factors Engineering theory and research methods will be covered through an interdisciplinary focus on human cognition, behavior and physiology (ergonomics) in the design, development and evaluation of product technology. A final applied projects will demonstrate HFE skills.

**Content**

Introduction to Human Factors/Usability Engineering theory and research methods.

Human Factors Engineering/Usability is interdisciplinary and focuses on human cognition, behavior and physiology (ergonomics) in the design, development and evaluation of product components and complete products. Usability Engineering focuses on the testing/evaluation of product components and complete products to ensure users can use the product safely and effectively.

This course will focus on human systems integration and human functions in human-machine/product systems:

- Examples of devices with reference to their usability: both complete and in design
- Definitions of Devices' Usability and related Human Factors Engineering
- Human Cognition and Product Design:
- Human Perception, Human Learning, Human Memory and Attention
- Human Physiology and Product Design:
- Ergonomics
- Human Factors and the Product Design and Development Process
- Human Factors and Usability Research Methods
- Human Factors and:
- Software Applications
- Transportation
- Medical Devices
- Consumer Products
- Human Factors and Usability Research Methods

**Note**

Introduction to Human Factors theory and research methods that are used to design and evaluation usable, safe, and effective devices. Application of these Human Factors methods and theories will be accomplished by means of course exercises and a final project.

Master students are welcome.

### Keywords

Usability, design, human factors, biomedical.

### Learning Prerequisites

#### Required courses

Statistics, Engineering Design Course, System design Course.

### Learning Outcomes

By the end of the course, the student must be able to:

- Design at the system level a product that takes into account Human cognitive processes
- Design at the system level a product that takes into account Human physiological characteristics: ergonomics
- Design a usability research test.
- Complete a usability research test.
- Use different Human Factors standards and best practices to design a system in the following area: Software Application, Transportation, Medical Devices, Consumer Products, etc.

### Assessment methods

Project report.

### Resources

#### Bibliography

- Book: Norman, D. (2013), The Design of Everyday Things. MIT Press.
- Book: Sanders, M. S., & McCormick, E. J. (1993). Human factors in engineering and design (7th ed.). McGraw-Hill Book Company

#### Ressources en bibliothèque

- [Human factors in engineering and design \(7th ed.\) / Sanders](#)
- [The Design of Everyday Things / Norman](#)

#### Moodle Link

- <https://go.epfl.ch/EE-600>