



## COURSE SYLLABUS

# Cognitive Psychology for HCI, 7.5 credits

*Kognitiv psykologi för HCI, 7,5 högskolepoäng*

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| <b>Course Code:</b> TKPR24                            | <b>Education Cycle:</b> Second-cycle level |
| <b>Confirmed by:</b> Dean Mar 1, 2024                 | <b>Disciplinary domain:</b> Technology     |
| <b>Revised by:</b> Director of Education Apr 30, 2024 | <b>Subject group:</b> IF1                  |
| <b>Valid From:</b> Aug 1, 2024                        | <b>Specialised in:</b> A1N                 |
| <b>Version:</b> 2                                     | <b>Main field of study:</b> Informatics    |

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### Intended Learning Outcomes (ILO)

After a successful course, the student shall:

Knowledge and understanding

- show familiarity with the foundations of cognitive psychology
- display a broad knowledge of evolutionary and social approaches to cognitive psychology
- demonstrate comprehension of the major features of cognitive processes (perception, attention, memory, learning, reasoning, decision-making and problem-solving)

Skills and abilities

- demonstrate the ability to apply cognitive psychology concepts to analyse user interface design, considering effects on user behaviour, attention allocation, and memory retention
- demonstrate the ability to identify the interplay between cognition and emotion in the context of HCI
- demonstrate the ability to explain design choices based on the principles of cognitive psychology

Judgement and approach

- demonstrate the ability to critically evaluate user interface designs from a cognitive psychology perspective, considering factors such as information processing, attention management, and memory load
- demonstrate the ability to ethically evaluate the implications of interface design on user emotions, decision-making, or well-being

### Contents

In this intense course, students are provided with a deep understanding of cognitive psychology and its relevance to the field of Human-Computer Interaction (HCI). The course briefly introduces the topics of the historical and philosophical foundations of cognitive psychology and the basics of evolutionary and social approaches in cognitive science. The topics of key cognitive processes, such as perception, attention, memory, learning, reasoning, decision-making, and problem-solving, are discussed in detail. Through lectures, readings, discussions, and practical

exercises, students gain the knowledge and skills necessary to apply cognitive psychology principles to their professional careers and assess the ethical implications that the design might have on individuals and society at large.

The course includes the following elements:

1. Historical and philosophical foundations of cognitive psychology (including topics of monism, dualism, knowledge acquisition, and consciousness)
2. Key figures and theories in cognitive psychology (including voluntarism, structuralism, functionalism, Gestalt psychology, psychoanalytic approach, and behaviourism)
3. Cognitive processes:
  - a. Perception and object recognition (including visual and auditory perception, multimodal perceptions, and object recognition)
  - b. Memory and attention (including models of memory and models of attention)
  - c. Reasoning, decision-making, and problem-solving (including but not limited to inductive and deductive reasoning, dual system approach to thinking, problem representation, experts vs. novices, and creative problem-solving)
4. Evolutionary and social approaches in cognitive psychology (including but not limited to evolution and cognitive processes, behavioural economics, attitudes, cognitive dissonance, impressions, stereotyping and prejudice)
5. Language and HCI (including but not limited to language acquisition and grammar)
6. Emotion and ethical considerations (including topics such as how emotion and moods affect cognitive processing, emotional design principles, affective computing, promotion of emotional well-being and reduction of negative effects of design)

### Type of instruction

Lectures and seminars.

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 Informatics, Computer Engineering, Computer Science, or equivalent. Proof of English proficiency is required.

### Examination and grades

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

Registration of examination:

| Name of the Test        | Value       | Grading |
|-------------------------|-------------|---------|
| Assignment <sup>1</sup> | 5 credits   | 5/4/3/U |
| Seminar                 | 2.5 credits | U/G     |

<sup>1</sup> Determines the final grade of the course, which is issued only when all course units have been passed.

### Course literature

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

Cognitive Psychology - 2nd Edition  
E. Bruce Goldstein/Johanna C. van Hooff  
ISBN: 9781473774353

In addition to that there will also be articles handed out during the course.