

# HFS105e Cognition and Information Processing

**Level:** 1

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY SEMESTER

**E-Learning:** BLENDED - Learning is done MAINLY online using interactive study materials in Canvas. Students receive guidance and support from online instructors via discussion forums and emails. This is supplemented with SOME face-to-face sessions. If the course has an exam component, this will be administered on-campus.

## **Synopsis:**

Designing artifacts, products and systems that improve human performance requires a good understanding of human information processing capabilities and limitations. This course provides an essential introduction to several important areas in cognitive psychology. Students are firstly introduced to lower level cognitive processes such as sensation and perception, attention and memory. In the later part of the course, students will study higher level cognitive processes such as decision making, learning and languages. The relevance of each topic to the design and evaluation of systems and human factors studies will be highlighted and discussed.

## **Topics:**

- 1.1.1: Cognition & Human Factors; 1.1.2: The Information-Processing Model; 1.2.1: Partial Report Procedure; 1.2.2: Types of Sensory Memory; 1.2.3: Word Superiority Effect
- 1.3.1: Bottleneck Theories of Attention; 1.3.2: Capacity Theories of Attention; 1.3.3: Automatic Processing
- 1.3.4: Applying Attention in Task Performance; 2.1.1: Functions and Characteristics of Short Term Memory (STM); 2.1.2: Failures of STM; 2.1.3: Baddeley's Working Memory Model
- 2.2.1: Functions and Characteristics of Long Term Memory (LTM); 2.2.2: Failures of LTM
- 3.1.1: Classifying Problems; 3.1.2: Newell & Simon's Theory; 3.1.3: General Problem-Solving Strategies
- 3.2.1: Making Choices; 3.2.2: Probabilities; 3.2.3: Risk Dimensions; 3.2.4: Decision-Making Applications

## **Textbooks:**

Stephen K. Reed: Cognition: Theories and Applications (eBook) 9th Edition Wadsworth Publishing (Cengage)  
ISBN-13: 9789814844949

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**Learning Outcome:**

- Define capabilities and limitations in human cognition.
- Describe cognitive theories involved in human factors.
- Discuss different cognitive demands of various tasks and how to address them during design.
- Explain cognitive issues and how it affects task performance.
- Apply cognitive theories in design of systems to enhance safety and performance.
- Illustrate solutions to design problems utilizing cognitive theories.

**Assessment Strategies:**

<b>Continuous Assessment Component</b>	<b>Weightage (%)</b>
TUTOR-MARKED ASSIGNMENT	24
PRE-CLASS QUIZ	2
PRE-CLASS QUIZ	2
PRE-CLASS QUIZ	2
<b>Sub-Total</b>	<b>30</b>

<b>Examinable Component</b>	<b>Weightage (%)</b>
Written Exam	70
<b>Sub-Total</b>	<b>70</b>

**Weightage Total** **100**