

UNI250 INTRODUCTON TO COGNITIVE SCIENCE

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REQUIRED TEXTS

An Invitation to Cognitive Science, 2nd edition, volume 3, Thinking. (Smith and Osherson 2). Available on-line at MIT press.

An Invitation to Cognitive Science, 1st edition. (Smith and Osherson 1). Available in Laidlaw reference library.

Artificial Intelligence: The Very Idea by John Haugeland, available online at MIT Press. (Haugeland)

Relevance Realization and the Emerging Framework in Cognitive Science by John Vervaeke, Tim Lillicrap, and Blake Richards. Copies available in second term from instructor.

Recommended. The Naturalistic Imperative in Cognitive Science by John Vervaeke. Available on-line. (Naturalistic Imperative.)

FALL SEMESTER

PART 1: PSYCHOLOGY

1st week (Sept 8)

Introduction to cognitive science: the naturalism imperative.
Introduction to psychology. Central topic: the psychology of thinking.

Categorization and Concepts: the study of why things belong together.

Required readings:
Smith and Osherson 2, Chapter 1

Recommended:

Naturalistic Imperative Chapter 1 pp. 1–11, Chapter 2.1

2nd week (Sept 15)

Categorization and concepts continued.

Required readings: same as previous week.

Recommended; Naturalistic Imperative: 2.2

3rd week (Sept 22)

Memory: how is information stored?

Required readings:

Smith and Osherson 1, Chapter 1

Recommended readings:

Naturalistic Imperative Chapter 3

4th week (Sept 29)

Memory continued.

Readings: same as previous week

5th week (Oct 6)

Reasoning and Problem Solving: how is information transformed?

Required readings:

Smith and Osherson 2, Chapter 8

Naturalistic Imperative Chapter 4

6th week (Oct 20) October 13 is Thanksgiving.

Reasoning and Problem Solving continued

Readings: same as previous week

7th week (Oct 27)

Test #1

8th week (Nov 3)

Rationality: how well do humans think?

Required readings:

Smith and Osherson 1, Chapter 7

Stanovich and West (2000) Individual differences in reasoning:
Implications for the rationality debate?

9th week (Nov 10)

Rationality continued. Readings as above.

10th week (Nov 17)

Summing up psychology: recurring themes, problems and dual-process theories of the mind

11th week (Nov 24)

The difficulties in naturalized thinking

Perhaps A.I. can break the circle in psychological theory. The Pre-history of A.I.

Readings: Haugeland chapter 1

12 week (Dec 1)

Formal Automated Systems and Computer Architecture: the basics of A.I.

Required readings:
Haugeland, Chapters 2 & 4

SPRING SEMESTER

PART 2: ARTIFICIAL INTELLIGENCE

1st week (Jan 5)

Formal Automated Systems etc. continued.

Readings:
Same as 12th week

2nd week (Jan 12)

The computational solution to the paradox of mechanical reasoning: problems.

Required readings:
Haugeland, Chapters 3 & 5

3rd week (Jan 19)

The computational solution etc. continued.

Readings:
Same as above.

4th week (Jan 26)

Connectionism: Possible Alternative?

Required readings:
Smith and Osherson 1, pages 199 – 221, and pages 267 – 282

Recommended readings:

Connections and Symbols, edited by Steven Pinker and Jacques Mehler.

5th week (Feb 2)

Connectionism continued

Readings:
Same as above.

6th week (Feb 9)

Test #2

Reading Week Feb. 16– Feb.20

7th week (Feb 23)

Philosophy of Psychology: The Nature of Psychological theory and explanation.

Special topic: The Simulation problem and the criterion of the cognitive.

Recommended: Naturalistic Imperative 1.1

9th week (Mar 2)

Philosophy of Mind: Materialism and Computational Functionalism.

10th week (Mar 9)

Philosophy of Mind: Problems with Computational Functionalism.
Dynamical Systems Theory.

11th week (Mar 16)

Philosophy of Mind: Computationalism: Qualia and consciousness problems.

12th week (Mar 23)

Philosophy of Mind: Computationalism: problems with representation and content.

Recommended: Naturalistic Imperative 6.1.

13th week (March 30)

The Frame Problem and a Theory of Relevance Realization

Required Reading:

Relevance Realization and the Emerging Framework in Cognitive Science: copies available from instructor.

Recommended: Naturalistic imperative 6.3

14th week (Apr 6)

Applying the framework to consciousness and content.

Evaluation

Test 1 October 27 10%

Essay 1 November 24 15%

Test 2 February 9 15%

Essay 2 March 30 20%

Final Exam 40%

First test: Short essay answers.

First essay: 2000 words on assigned topics.

Second test: Short essay answers, one long essay answer.

Second essay: 2500 words on topic proposed by student.