

Syllabus 830:305 Cognition - Section 1

Fall, 2005

Text: Mayer, R. E. *Thinking, Problem Solving, Cognition*. Second Edition. New York: W. H. Freeman, 1992.

Place: Room PH 115, Busch Campus

Time: Monday & Thursday 1st Period (8:40 - 10:00 A.M.)

Instructor: Prof. Charles Schmidt

Office: Room 135A, Psychology Bldg, Busch Campus

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Email: cfs@rci.rutgers.edu

Course URL: <http://www.rci.rutgers.edu/~cfs>

Office Hours: Monday, 12:00 - 1:00 PM or by appointment

T.A.



[Click here](#) for PDF version of the Syllabus

Course Outline

Part I. Historical Perspectives and Basic Approaches to the Study of Thinking

Introduction

Reading: Chapter 1. Beginnings. pp 3-18.

Website: [Introduction](#)

Associationism and Behaviorism

Reading: Chapter 2. Associationism: Thinking as Learning by Reinforcement. pp. 19-38.

Website: [Associationism and Behaviorism](#)

Productive Thinking...the Gestalt Emphasis

Reading: Chapter 3. Gestalt: Thinking as Restructuring Problems. pp. 39-78.

Website: [Productive Thinking...the Gestalt Emphasis](#)

Experimental Decomposition of Thinking

Reading: Chapter 7. Mental Chronometry: Thinking as a Series of Mental Operations. pp. 203-224

Website: [Experimental Decomposition of Thinking](#)

EXAM 1

Computational Approach to the Study of Thinking

Reading: Chapter 6. Computer Simulation: Thinking as a Search for a Solution Path. pp. 167-202.

Website: [Computational Approach to the Study of Thinking](#)

Cognitive Development and Learnability

Reading: Chapter 10. Cognitive Development: Thinking as Influenced by Growth. pp. 283-323.

Website:

Part II. Aspects of Thinking

Deduction

Reading: Chapter 5. Deductive Reasoning: Thinking as Logically Drawing Conclusions. pp. 283-323.

Website: [Deduction](#)

EXAM 2

Induction, Concepts, and Reasoning under Uncertainty

Reading: Chapter 4. Inductive Reasoning: Thinking as Hypothesis Testing. pp. 81-113.
Chapter 9. Question Answering: Thinking as a Search of Semantic Memory. pp. 259-279

Website: [Induction, Concepts, and Reasoning under Uncertainty](#)

Understanding, Interpreting and Remembering Events

Reading: Chapter 8. Schema Theory: Thinking as an Effort after Meaning. pp. 225-258.

Website: [Understanding, Interpreting and Remembering Events](#)

Problem Solving and Planning

Reading: Chapter 14. Analogical Reasoning: Thinking as Based on Analogs, Models and Examples. pp. 415-

454.

Chapter 13. Expert Problem Solving: Thinking as Influenced by Experience. pp. 387-414.

Chapter 15. Mathematical Problem Solving: Thinking as Based on Domain-Specific Knowledge. pp. 455-489.

Chapter 16. Everyday Thinking: Thinking as Based on Social Contexts. pp. 490-507.

Website: [Problem Solving and Planning](#)

Final Exam (Dec 17 8-11AM)

Homework, Grading, Etc.

Exams

The exams will cover the material presented in the text, lectures, and the website.

Assignments

The website will often include for a section some assignments, exercises or questions to be considered. These activities are primarily intended to focus your thinking about the course material being covered. In many cases there may be no obviously correct answer. In other instances, the primary purpose of the exercise is to help you to reflect upon your own thinking and performance when doing a cognitive task. The assignments may be discussed in class.

Class Participation

The lecture material for much of this course is provided on the [website](#). The purpose of this is not to relieve you of the onerous task of attending class. The purpose is to:

- Allow you to read over the material before it will be presented and discussed in class so that you can determine which aspects of the material you may not understand;
- Relieve you of the necessity of taking extensive notes in class and giving you the freedom to follow the lecture and discussion actively and critically;
- Relieve me from covering in detail the material, allowing me to emphasize the main points of the material as well as add additional information;
- Provide additional time and opportunity for questions and discussion in class;
- Finally, you will notice that the material in the website often includes examples of the ideas under discussion. It is important for you to not only work through the examples, but also to make sure that you understand the basic ideas or concept that the example is being used to illustrate. The examples will, at times, include a great deal of detail since this can easily be included in the web pages. The detail is there to help you develop your intuitions concerning the ideas presented. It is not presented as something that you are expected to be able to reproduce.

If at all possible, I suggest that you at least skim the material on the website prior to the class in which the material will be presented. If there are aspects that you do not understand but you are reluctant to ask about it in class, then you might want to let me know about this via Email (cfs@rci.rutgers.edu) prior to the class in which the material will be presented. I will make it a point to read this directory prior to class.

Extra Credit

If you wish to do an extra credit project for the course, then this project should be approved no later than the third week in October and turned in to the instructor no later than Monday, Dec. 12. Some possible extra credit projects include:

- creating content related to the course that could potentially be included in the course website. This might involve creating examples or experiments related to the course material, extending either the depth with which a topic is covered, or adding additional related topics.

- creating additional tools for use of the website.
- participating in some research on problem solving. In this case, you would analyze and discuss your own data in relation to various ideas about human problem solving.
- ...

Course Grade

Your course grade will mainly be determined by your performance on the exams. In addition to these exams, your participation in class - questions formulated, discussion, and assignments - may also contribute to the determination of your grade for the course. And, of course, any extra credit work will also be considered when assigning the final course grade.

Printing the pages on this site

If for some reason you decide that you wish to print one or more of these pages then be sure that the print setup is in **landscape** mode. Note, however, that these HTML pages have not been constrained to have any particular vertical limit. Consequently, a page may print onto several pages and the page breaks may occur at arbitrary points. If at all possible, I recommend making every effort to use these pages on line rather than printing since they were developed under the assumption that this would be the primary mode of use. Using them on line will allow you to view the animations, JavaScript related features as well as view the most recent updates of the pages.

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