

# SYLLABUS

## PSCH 352 (Cognition & Memory); CRN 20937

### Instructor:

Professor Stellan Ohlsson

Email: *stellan@uic.edu*

### Teaching Assistants:

Taylor Strickland

Andriana Christofalos

Email: *tstric3@uic.edu*

*achris29@uic.edu*

### Dates:

The course is taught in the spring semester, 2021. It runs for 15 weeks.

Instruction begins Monday, January 11, and ends Friday, April 30.

Final Exam Week is from Monday, May 3, to Friday, May 7.

### Format:

The course is taught remotely, through the associated Blackboard site. There are no in-person components.

The instruction is asynchronous. All 15 subject matter units (see below) are accessible to the students from the beginning to the end of the course. However, students who have *no* prior course work in Cognitive Psychology are recommended to access the 15 Units in the order they are presented on this web site.

Each subject matter unit is presented through (a) A specified set of pages in the textbook; (b) a narrated video lecture, and (c) one or more questions on four quizzes that become accessible during the semester.

### Textbook:

The textbook is Daniel Reisberg, “Cognition: Exploring the science of the mind”, 7<sup>th</sup> edition (7e), 2019. W.W. Norton & Co. Notice that page references in the course schedule refer to the 7<sup>th</sup> edition, specifically. In each unit, there is a specification of the relevant textbook pages or chapters that pertain to that unit. Students are not mandated to read the textbook, but it is highly recommended that they do so. Because the course is asynchronous, the relevant textbook passages can be read in any order, but it is recommended that the lectures and textbook passages are studied in close proximity in time. Whether a student uses a text-first or lecture-first learning strategy matters is a matter of personal preference.

### Grading:

Quizzes: There are four quizzes with a total of 16 quiz questions. Each correct answer contributes 1 point toward the student’s final grade. The student can take each quiz multiple times at any time after they open. Each answer will receive right/wrong feedback (but not content feedback). All quizzes will open at times listed on the schedule (below) and quizzes will close and be due on **Friday, April 30<sup>th</sup> at 11:59PM Central Time**. Late quizzes will NOT be accepted.

Assignments: There will be four assignments worth a total of 20 points towards the student’s final grade. Due dates are listed in the schedule (below) and assignment

instructions are posted in the “Assignments” tab on Blackboard. All assignments must be submitted via the appropriate SafeAssign submission portal on Blackboard.

**Final Exam:** There is a Final Examination with a total of 48 questions. Each correct answer contributes 2 points toward the student’s grade. The Final Examination can only be taken once, and only during Finals Week. The Final Exam will open and become available on **Monday, May 3<sup>rd</sup> at 8:00AM Central Time**. The Final exam will close and be due on **Friday, May 7<sup>th</sup> at 5:00PM Central Time**. Late Exams will NOT be accepted.

Grading Point Breakdown:

| Item                      | Points     |
|---------------------------|------------|
| Quiz 1                    | 2          |
| Quiz 2                    | 6          |
| Quiz 3                    | 3          |
| Quiz 4                    | 5          |
| Memory Diary              | 12         |
| Chunking Lab              | 2          |
| Reverse Alphabet Lab      | 2          |
| Deductive Reasoning 1 Lab | 2          |
| Deductive Reasoning 2 Lab | 2          |
| Final Exam                | 64         |
| <b>TOTAL</b>              | <b>100</b> |

**Objectives:**

The objective of the *Cognition and Memory* course is to give the student a basic understanding of the cognitive functions of the human mind. The most central cognitive functions are attention, memory, and thinking. There are other cognitive functions as well, such as imagery, perception, and so on, but they are not covered in this course (but the interested student will find some material about them in the textbook). In the cognitive approach, the operation of the cognitive functions is explained in terms of information processes. For each function, researchers ask what information is processed, and how. The answers are related to everyday experience as well as findings from the research literature. Some cognitive phenomena are familiar from everyday life; others are more surprising or unexpected. At the end of the course, the student should be able to use the cognitive concepts and principles taught in the course to understand cognitive phenomena. The secondary objective is that the student should come to understand the methods that are used to study human cognition, interpret findings, and read research reports.

Study Strategy Recommendations

The subject matter is divided into 15 Units. The units are grouped into four topics: background; (long term) memory; attention and capacity limits; and thinking (problem solving). The content is presented

through four streams of instruction: textbook pages; narrated lectures; homework assignments; and four quizzes.

The simplest way to study for this course is to study the units in sequence 1 – 15, one subject matter unit per week. For each Unit, read the indicated textbook pages, listen to the relevant lecture, carry out the associated homework assignment(s), if any, and take the quiz for that topic.

You can take a quiz multiple times, so the quizzes serve as a feedback mechanism: If you answer all items correct on a quiz, then you have obviously acquired the knowledge associated with that topic. If not, then go back and study that Unit some more; then re-take the quiz. Eventually, you will get all correct on that quiz; then it is time to move on to the next Unit.

Notice that at the end of the semester, your highest score on a quiz is added to your Total score, so the quiz scores contribute to your final grade. Because we add the *highest* score, you cannot lose by re-taking a quiz where you missed an item or two.

So: Pick a Unit; read; listen; do the homework (if any); test yourself by taking the quizzes; go on to the next Unit. That's the straightforward way to approach this course.

But you don't have to follow this sequence. One consequence of the course being totally asynchronous is that you can study in other ways. Try this: As soon as a quiz becomes available (there are four of them and they pop up at the ends of the topics), take the quiz. You might have prior knowledge from other psych classes or some other source that enables you to do well on a quiz. If you score the maximum on a quiz, then you know that you don't have to spend much effort studying that Unit/topic. Perhaps you can think of other ways to use the asynchronous aspect of the course to your advantage.

At the end of the semester, there is a Final Exam. It is not a good idea to delay taking the Final until the last day of Finals week. It is tempting to do so, because it gives you extra time to study. But something might go wrong, leaving your exam answers hanging in cyberspace. It is safer to take the Final Exam no later than the afternoon of Thursday in Finals week.

The subject matter is divided into 15 units:

Unit 1:

A brief historical overview of how Cognitive Psychology developed in the last one hundred years.

Unit 2:

The three main cognitive functions in long-term memory. The factors that determine the efficiency of encoding include repetition, depth of processing, and amount of relevant prior knowledge. Encoding works by linking new information to information that is already encoded.

Unit 3:

Information can always be represented in different ways, using different 'codes'. Some representations might be more useful than others for a particular task or situation.

Unit 4:

Information has to be retained in memory, if it is to be used at some later time. A strong hypothesis about retention is that information, once encoded, is affected more by interference than by passive fading.

Unit 5:

Information has to be retrieved from memory when it is to be used. Retrieval happens through spread of activation.

Unit 6:

Memories tend to change over time, so what is retrieved is represented in memory in a distorted form.

Unit 7:

Sources of memory distortions include lack of source monitoring and encoding specificity.

Unit 8:

Both selective and divided attention are subject to capacity limitations.

UNIT 9:

The capacity of short-term time memory (STM) is often studied with the Digit Span Task. People escape the low capacity of STM by, in part, by representing information in chunks, i.e., familiar patterns of information.

Unit 10:

Working Memory has multiple parts, including the central executive, the rehearsal loop, and the visual scratchpad.

Unit 11:

Problems tend to be difficult to solve because the total number of possible solution paths that need to be evaluated is very large.

Unit 12:

Problems can be difficult to solve because the problem solver creates the wrong initial representation of the problem.

Unit 13:

People sometimes solve problems via analogy.

Unit 14:

People probably do not draw conclusions with content-free, logical inference rules.

Unit 15:

Systematic biases influence people's judgments about probabilities.

| <b>Schedule</b> |             |   |                                |  |
|-----------------|-------------|---|--------------------------------|--|
| <b>Week</b>     | <b>Date</b> | <b>Topics</b>   | <b>Pages to Read</b>           | <b>Assignments Due</b>   |
| 1               | 1/11        | Unit 1: Learning goal; perspective; practical information   | Chapter 1                      |  |
| 2               | 1/18        | Unit 2: Memory: Encoding<br>How information enters memory.<br><i>Quiz 1 opens 1/18 at 8:00 AM</i> | Chapter 6,<br>begin on p. 214. |  |
| 3               | 1/25        | Unit 3: Memory: Representation<br>How is information stored?                                      | Chapters 7 and 8               | Reverse Alphabet Lab Due Monday 1/25 at 5:00 PM (Central Time) |
| 4               | 2/01        | Unit 4: Memory: Retention<br>Information stays in memory - or?                                    | Chapters 7 and 8               |  |
| 5               | 2/08        | Unit 5: Memory: Retrieval<br>How information is accessed.<br><i>Quiz 2 opens 2/08 at 8:00 AM</i>  | Chapters 7 and 8               |  |
| 6               | 2/15        | Unit 6: Memory: Distortion - 1  | Chapters 7 and 8               |  |
| 7               | 2/22        | Unit 7: Memory: Distortion - 2  | Chapters 7 and 8               | Memory Diary Due on Friday 2/26 at 5:00 PM (Central Time)      |
| 8               | 3/01        | Unit 8: Attention: Taking in information  | Chapter 5                      |  |
| 9               | 3/08        | Unit 9: Short-term memory:<br>Chunking information.<br><i>Quiz 3 opens 3/08 at 8:00 AM</i>        | Chapter 6 (pp. 194-214)        | Chunking Lab Due on Monday 3/08 at 5:00 PM (Central Time)      |
| 10              | 3/15        | Unit 10: Working memory:<br>Processing information.   | Chapter 6 (pp. 194-214)        |  |
| 11              | 3/22        | SPRING BREAK  |                                |  |
| 12              | 3/29        | Unit 11: Thinking:<br>Problem space search  | Chapters 12, 13 & 14           |  |

|    |      |  |                      |  |
|----|------|--|----------------------|--|
| 13 | 4/05 | Unit 12: Thinking:<br>Insight & creativity   | Chapters 12. 13 & 14 |  |
| 14 | 4/12 | Unit 13: Thinking:<br>Deductive reasoning 1<br><i>Quiz 4 opens 4/12 at 8:00 AM</i> | Chapters 12. 13 & 14 | Deductive Reasoning 1 Lab<br>Due Monday 4/12 at 5:00 PM (Central Time)   |
| 15 | 4/19 | Unit 14: Thinking:<br>Deductive reasoning 2  | Chapters 12. 13 & 14 |  |
| 16 | 4/26 | Unit 15: Judgment:<br>Systematic biases  | Chapters 12. 13 & 14 | Deductive Reasoning 2 Lab<br>Due Monday 4/26 at 5:00 PM (Central Time)<br><br>All Quizzes Due Friday 4/30 at 11:59 PM (Central Time) |
| 17 | 5/03 | FINAL WEEK<br><i>Final Exam opens 5/03 at 8:00 AM</i>                              |                      | Final Exam Due Friday 5/07 at 5:00 PM (Central Time)   |

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