“A common man marvels at uncommon things; a wise man marvels at the commonplace.” ~ Confucius

Course Description
This course is about thinking and learning. In it, we will review central (and, at times, competing) theories of cognitive psychology and how they might be leveraged to understand learning in both formal (classroom) and informal (everyday) environments. As students, we have ample experience with the learning process, but chances are that opportunities to reflect on and evaluate such processes have been far harder to come by. This course is one such opportunity.

Through readings, lectures, discussions, videos, and assignments, we will explore the cognitive structures and processes involved in what it means to think, to learn, to know, and to understand. Among the issues we will address are:

1. **Foundations.** What is cognitive psychology in the first place? Where did it come from and where is it heading? What does it mean to study ‘thinking’?
2. **Computational Theory of Mind.** How do we think, learn, and remember? How do we solve problems? What are the models used to understand how we process information?
3. **Cognitive Development.** What is constructivism? How does the mind of the individual evolve over time with experience?
4. **Distributed Cognition.** What is the role of social interaction in thinking and learning? Where does action in the material world fit in to models of cognition?
5. **Implications.** How do these theoretical perspectives bear on contemporary educational issues? What is intelligence? Motivation? What is the role of assessment? Technology?

Required Texts
The reader *required* for this course is available at Bob’s Copy Shop on University Square. A hard copy of the reader is also on 3-hour reserve in the CIMC and digital copies are available through electronic reserve.

resource, especially for education majors. And, better yet, the full text is available online for free at www.nap.edu/html/howpeople1/.

Course Assessments

70 points = (14 days) x (5 pt assignment each class)
30 points = (2 exams) x (15 pt each exam)
100 points total possible.

Grading Scale: 
93 - 100 points = 93% - 100% = A
88 - 92 points = 88% - 92% = A/B
83 - 87 points = 83% - 87% = B
78 - 82 points = 78% - 82% = B/C
70 - 77 points = 70% - 77% = C
60 - 69 points = 60% - 69% = D
less than 60 points = below 60% = F

Attendance. Attending class is strongly recommended since we will do an activity/assignment worth 5 points every day during class period. These activities will vary by topic and will range from written responses to assigned articles to collaborative problem-solving and reflection sessions. Please come prepared by completing the assigned readings before class. They will be crucial to your success in the assignments.

Exams. We will have two exams during the semester. Each exam will cover course content covered in both lecture and readings since the last exam. There will be no comprehensive exams. Make up exams will be scheduled only when notification and arrangements are made before the scheduled exam day and time.

Extra Credit: Sometimes valuable learning experiences beyond the course assignments arise, such as participating in a research study, attending and reporting on some lecture on campus, or completing outside work on some topic relevant to the course. As long we can insure that all students in the class have an equal chance to participate, we will consider giving extra credit points for such work. We will announce such opportunities if and when they arise.

Special Accommodation
We wish to fully include persons with disabilities in this course. If you need any special accommodations in the curriculum, instruction, or assessments of this course, please contact us so that we can enable you to fully participate. We will try to maintain the confidentiality of the information you share with us. Contact the McBurney Disability Resource Center for more information on resources and policies.

Academic Misconduct and Plagiarism
We expect all students to maintain the highest standards of academic honesty throughout the course. Anyone involved in dishonesty will receive a failing grade and will be reported to the Dean of Students. See the Student Handbook or http://www.wisc.edu/students/conduct.htm for further information on academic misconduct.
**Course Syllabus**

Summer courses are always intense. This course is no exception. We will be covering a lot of material in-depth throughout our four weeks together. Each class will consist of:

- 75 minute lecture
- 15 minute break
- 60 minute group work

The syllabus below is tentative. Sometimes it may not be possible (or in our own best interest) to stick rigidly to the schedule outlined. Therefore, we reserve the right to change lecture topics, assignments, and/or due dates when necessary. We will make every effort to ensure that any changes to the syllabus will be with adequate notice, for good reason, and in consultation with the class.

**Tentative Schedule of Topics**

<table>
<thead>
<tr>
<th>Part One. Foundations of Cognitive Psychology</th>
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<td>There is no department of knowledge in which so little progress has been made as in that of mental philosophy. No attempt, indeed, has been made to examine its phenomena by the light of experiment and observation... The human mind escapes from the cognizance of sense and reason, and lies, a waste field with a northern exposure...”</td>
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<tr>
<td>~ Brewster (1854)</td>
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**Monday, July 12**

**Introduction to the Course**
- Course description & requirements
- How to succeed in this course
- Gather student information
- Why this class is important

**Foundations of Cognitive Psychology**
- History of Cognitive Psychology
- What is Cognitive Psychology?
- Science of the Mind vs. Science of the Brain

**Tuesday, July 13**

**Overview of Computational Theory of Mind**
- vs. Connectionism

**Memory**
- Perception
- Attention & Performance
- Encoding & Storage
- Retention & Retrieval

**READING DUE:**
Wednesday, July 14

**Memory** (con't.)

**Mental Representations**
- Perception-Based: visual, spatial
- Meaning-Based: propositional networks, semantic networks, schema

**READING DUE:**

Thursday, July 15

**Problem Solving**
- Problem Spaces: States & Operators
- Problem-Solving Strategies

**READING DUE:**

**Part Three. Cognitive Development**

“The principle goal of education in the schools should be creating men and women who are capable of doing new things, not simply repeating what other generations have done; men and women who are creative, inventive and discoverers, who can be critical and verify, and not accept, everything they are offered. " ~ Piaget (1896-1980)

Monday, July 19

**Cognitive Development: Piaget**
- Genetic Epistemology (the Kantian Biologist)
- Assimilation, Accommodation, Equilibrium
- Stages of Development

**Knowledge Construction**
- Constructivism
- Conceptual Change: Naïve Conceptions, p-prims, uncoordinated schemata

**READINGS DUE:**

Tuesday, July 20

**Cognitive Development: Vygotsky**
- Dialectical Constructivism
- Social Origins of Higher Mental Functions
- Internalization
- Zone of Proximal Development
- Modeling & Scaffolding

**READINGS DUE:**
Part Four: Distributed Cognition

“Cognition as (inter)action in the social and material world.”
~ Derry & Steinkuehler (2003)

Wednesday, July 21

Distributed Cognition: The Social
• Social Constructivist Theory of Learning: Piaget, Vygotsky
• Institutional, Interpersonal, Discursive Analyses

READINGS DUE:

Thursday, July 22

Distributed Cognition: Body & Tools/Artifacts
• Embodied Cognition: Symbols Grounded in Perception & Action
• The Environment: Constraints & Affordances
• Mediation: Tools & Artifacts

READINGS DUE:

Part Five: Implications

“Education is a social process ... Education is growth....
Education is, not a preparation for life; education is life itself.” ~ John Dewey

Monday, July 26

Comparing the Two Theories
• Symbols: Meaning, Not Just Information
• Unit of Analysis: Cognition in the Head vs. Distributed Cognition

Exam One

READINGS DUE:

Tuesday, July 27

Transfer
• From a Computational Theory of Mind Perspective

READINGS DUE:
**Wednesday, July 28**

**Transfer (con’t.)**
- From a Distributed Cognition Perspective

**READINGS DUE:**

**Thursday, July 29**

**Intelligence**
- From a Computational Theory of Mind Perspective
- From a Distributed Cognition Perspective

**READINGS DUE:**

**Monday, August 2**

**Assessment**
- From a Computational Theory of Mind Perspective
- From a Distributed Cognition Perspective

**READINGS DUE:**
- STEP Knowledge Web: *Assessment & Forms of Assessment.*

**Tuesday, August 3**

**Motivation/Engagement**
- From a Computational Theory of Mind Perspective
- From a Distributed Cognition Perspective

**READINGS DUE:**

**Wednesday, August 4**

**Technology - GUEST LECTURER: Dr. Kurt Squire**
- From a Computational Theory of Mind Perspective
- From a Distributed Cognition Perspective

**READINGS DUE:**

**Thursday, August 5**

**Exam Two**

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State Standards:

Teacher Education Certification Standards this Course Fulfills

This course is part of the University of Wisconsin-Madison Teacher Education Certification Program; as such, we are required by the Wisconsin Department of Public Instruction to provide detailed explanation of how this course meets state certification standards. This course addresses four of these standards, as described below.

Standard #1: Incorporates Understanding of Human Learning and Development

Teachers design learning environments and pedagogical practices for students that are grounded in concepts and interpretive frameworks provided by disciplines that study human development and learning.

• **Opportunity to Learn.** Students will learn about major theories of cognitive psychology, including: behaviorism, information processing, Piaget’s theory of development, constructivism, Vygotsky’s theory of development, and distributed/situated cognition. Each theory will be presented in its historical context so students will understand the questions and problems the theory was designed to address. Through lectures, videos, and readings students will also learn about the structure of memory, knowledge construction, the nature of problem-solving, intelligence, creativity, individual differences, and the problem of transfer. Course lectures and readings will explicitly describe each theory and give examples of its connection to actual behavior. Students will also be challenged to consider the implications of each theory for education.

• **Opportunity to Demonstrate.** Students will demonstrate their understanding of course content through daily in-class activities (formative assessment) and two exams (summative assessment). The latter method will evaluate students’ memory for and understanding of important course content and their ability to apply such information to reasoning about educational issues and educational design. The former method will evaluate student’s ability to apply critical concepts from the course to their own personal learning experiences (as educators or students) in writing.

Standard #7: Understands and Adapts to Multiple Forms of Communication

Teachers understand and adapt to students’ multiple forms of expressing and receiving experiences, ideas, and feelings.

• **Opportunity to Learn.** Through lectures, readings, discussions, videos, and other activities, students will gain an understanding of theory and research on individual differences in learning, problem-solving, intelligence, creativity, classroom discourse, cooperative learning, and other topics. Students will be challenged to consider the implications of such topics for educational processes.

• **Opportunity to Demonstrate** Individual differences and diversity in expression and communication is discussed throughout each topic covered in the course. Students will demonstrate their understanding of these issues through class participation and activities, discussion, and exams.
Standards #8: Employs Varied Assessment Processes
Teachers understand and thoughtfully use formal and informal evaluation strategies to assess students’ achievements, strengths, challenges and learning styles for continuous development.

- **Opportunity to Learn.** Students will learn about the bases and rationales for various educational teaching and assessment practices (e.g. discovery learning, drill & practice, collaborative learning, portfolio development). Course content will highlight the roles of different theories of cognition (e.g. Information Processing, Piagetian/Constructivism, Distributed/Situated Cognition) in such practices. Students will learn how different perspectives on intelligence, motivation, and learning relate to teaching and assessment decisions. Students will also be challenged to reflect on the justifications for various practices (e.g. intelligence testing, ability grouping).

- **Opportunity to Demonstrate.** Students will demonstrate their memory for and understanding of the assessment practices discussed in class and rationale of each through class participation and activities, discussion, and exams.

Standard #11: Uses Technologies
Teachers appropriately incorporate new and proven technologies into instructional practice. They understand the major social, cultural, and economic issues surrounding their implementation.

- **Opportunity to Learn.** Through lecture and group discussion, students will be challenged to think about the range and practicality of available technologies in the classroom as well as technologies for teacher professional development. Consideration will be given to understanding the major social, cultural, and economic issues surrounding the implementation of such technologies. Students will have the opportunity to experience and informally evaluate selected educational technologies used in class, such as email listserves, the Internet, games, simulations, and instant-chat.

- **Opportunity to Demonstrate.** Again, students will demonstrate their memory for and understanding of technology issues through class participation, discussion, and exams.