



**Learning & Memory  
Psychology 461 (CRN: 11028)  
Fall 2017**



Arlo Clark-Foos, Ph. D.

**Lecture**

**Location:** 1041 CB

**Time:** TR, 11:00 AM – 12:15 PM

**Instructor**

**Office:** 4056 CB

**Office Hours:** By Appointment

**Phone:** 313-583-6341

**Email:** [acfoos@umich.edu](mailto:acfoos@umich.edu)

**Text (Required):**

Gluck, M. A., Mercado, E., & Myers, C. E. (2016). *Learning and Memory: From Brain to Behavior* (3rd ed.). New York, NY : Worth Publishers.

**Course Website (also on Canvas):** <http://www-personal.umd.umich.edu/~acfoos/Courses/461.html>

**Course Overview:** The course catalog states that this course will include “a consideration of major theories and research results related to learning and memory in humans and animals.” I would like to modify this statement for the current course. While we will certainly consider models of learning in animals (mostly as a precursor to human models), the purpose will be to learn more about human learning and memory. The goal of this course is to understand theories about how human beings learn (encode), store, and retrieve (remember) all of the amazing things we are able to remember. To do this (and to gain historical perspective), we will discuss the research experiments which led to these theories. To wit, it is important that you are able to read and understand psychological research articles and interpret results of experiments as supporting or refuting specific theories.

Although several methods of instruction will be used in this course (including potential film and journal article discussions), lecture will be the primary means. You will read chapters in Eichenbaum’s (2008) *Learning & Memory* textbook in addition to reading and discussing several primary research articles. In addition to readings and class discussion, you will have several exams and one major research paper.

**Course Objectives:**

- Understand the scientific approach to the study of thinking, learning, and behavior.
- Understand the abilities and limitations in how organisms acquire information from their environments and bodies (i.e., the information processing perspective).
- Be able to understand and apply current theory, research in, and applications of the scientific study of thinking, learning, and behavior.

**Disability Statement:** The University will make reasonable accommodations for persons with documented disabilities.

Students need to register with Counseling & Disability Services (DS) every semester they are enrolled. DS is located in 2157 UC ([http://www.umd.umich.edu/cs\\_disability/](http://www.umd.umich.edu/cs_disability/)). To be assured of having services when they are needed, students should register no later than the end of the add/drop deadline of each term. If you have a disability that necessitates an accommodation or adjustment to the academic requirements stated in this syllabus, you must register with DS as described above and notify your professor.

**Academic Integrity Policy:** The University of Michigan-Dearborn values academic honesty and integrity. Each student has a responsibility to understand, accept, and comply with the University’s standards of academic conduct as set forth by the Code of Academic Conduct (<http://umdearborn.edu/697817/>), as well as policies established by each college. Cheating, collusion, misconduct, fabrication, and plagiarism are considered serious offenses and violations can result in penalties up to and including expulsion from the University. Disciplinary action will be taken in cases of plagiarism. At the instructor’s discretion, the penalty may be a grade of zero on the assignment up to and including recommending that the student be expelled from the University. It is the sole responsibility of the student to understand and follow academic guidelines regarding plagiarism.

**Drop/Add**

It is your responsibility to be aware of the drop/add dates for this course. The instructor will not grant withdrawal requests made after that date unless extenuating circumstances are presented (i.e., failing due to lack of effort does not qualify).

### **Late Assignments**

The final copy of any assignment is due at the beginning of class. Your grade on that assignment will be penalized 10 points for any day, or part of a day, that it is late.

### **Attendance**

A student is expected to attend every class and laboratory for which he or she has registered. Each instructor may make known to the student his or her policy with respect to absences in the course. It is the student's responsibility to be aware of this policy. The instructor makes the final decision to excuse or not to excuse an absence. An instructor is entitled to give a failing grade (E) for excessive absences or an Unofficial Drop (UE) for a student who stops attending class at some point during the semester.

There is no attendance policy in this course. Please keep in mind, however, that all exams are based on a combination of lecture-only, book-only, and lecture and book material.

### **Make-Up Exams**

Make-up exams will *not* be given. The *only* way you may take an exam at another time is with a *preapproved* excuse or a *documented* medical emergency. Should a make-up exam be necessary because of a medical emergency, an alternative (typically essay based) version of the exams will be used.

### **Religious Observances**

If there is an academic requirement stated on this syllabus that conflicts with a religious observance for your faith, you must notify me in writing no later than the end of the add/drop deadline. Upon receipt of your written notification, we can discuss a reasonable accommodation.

### **University-Sponsored Activities**

If your athletic schedule or your schedule for another University-sponsored extracurricular activity will interfere with your participation in this class in any way, please bring me a letter from the director of the relevant program, specifying the reason and the affected dates, no later than the end of the add/drop deadline. Upon receipt of your official written notification, we can discuss a reasonable accommodation.

### **Plagiarism Checking**

All written assignments (literature review papers and lab reports) must be submitted in a paper copy (for grading) and an electronic copy, via Canvas, for plagiarism checking. Any paper that is not checked, or does not pass the check, for plagiarism, will receive a zero for the assignment.

### **Emergency Preparedness**

All students are encouraged to program 911 and UM-Dearborn's University Police phone number (313) 593-5333 into personal cell phones. In case of emergency, first dial 911 and then if the situation allows call University Police.

The Emergency Alert Notification (EAN) system is the official process for notifying the campus community for emergency events. All students are strongly encouraged to register in the campus EAN, for communications during an emergency. The following link includes information on registering as well as safety and emergency procedures information:

<http://umdearborn.edu/emergencyalert/>.

If you hear a fire alarm, class will be immediately suspended, and you must evacuate the building by using the nearest exit. Please proceed outdoors to the assembly area and away from the building. Do not use elevators. It is highly recommended that you do not head to your vehicle or leave campus since it is necessary to account for all persons and to ensure that first responders can access the campus.

If the class is notified of a shelter-in-place requirement for a tornado warning or severe weather warning, your instructor will suspend class and shelter the class in the lowest level of this building away from windows and doors.

If notified of an active threat (shooter) you will Run (get out), Hide (find a safe place to stay) or Fight (with anything available). Your response will be dictated by the specific circumstances of the encounter.

## Grading

There will be **five** closed-book, closed-note exams. Each exam will be worth 15% of your total grade (150 points each). None of these exams is cumulative, per se, but later models of learning often imply knowledge of previous models. The exams will cover material presented in lectures and in the book but heavily weighted towards lecture. Note that some material will come from both book and lecture, but some will come from lecture only and some will come from book only. I will announce this distribution in class. You will also complete one major research paper on a topic of your choosing (and my approval) worth 25% of your grade (250 points). This paper will be well researched (and cited) and will require submission to Turnitin.com before it will be graded. **NO PAPERS WILL BE GRADED THAT HAVE NOT BEEN SUBMITTED BOTH ELECTRONICALLY (VIA CANVAS) AND IN PAPER FORM (IN CLASS)!!**

Exam 1	150 points	15 %
Exam 2	150 points	15 %
Exam 3	150 points	15 %
Exam 4	150 points	15 %
Exam 5	150 points	15 %
Research Paper	250 points	25 %
Total	1000 points	100 %

I will usually round up, for example from 79.5% to 80%, but do not count on it. As a general principle, I will never work harder for your grade than you do. Students who have poor attendance and participation should not expect me to “make up” points for them. Students who have done all that is in their power to do their best can be assured that will be carefully considered in making any borderline decision. I try to apply consistent standards and treat students fairly, as well as fulfill my responsibilities to UMD in making difficult decisions about grades.

## UM-D Writing Center

The Writing Center offers support in all stages of the writing and research process. Consultants are not editors, but experienced readers able to offer students guidance on a range of issues relevant to improving their communication effectiveness. Consultants can help students in many ways, including understanding assignment goals; formulating an approach to an assignment; developing confidence for new writing tasks; considering audience, purpose, and context; developing a focus/thesis; articulating and organizing ideas; discussing supporting evidence and whether additional evidence is needed; generating revision strategies; identifying and using appropriate resources; improving control of grammar and mechanics; and becoming more skilled in using APA, MLA, Chicago, and other documentation styles. Let me know how helpful this service is for you.

Drop-in sessions are sometimes available, but it is best to make an appointment. During midterms and finals, consulting sessions are by appointment only.

Contact information for the Writing Center:

**Phone:** 313-593-5543

**Website:** [http://www.casl.umd.umich.edu/writ\\_center/](http://www.casl.umd.umich.edu/writ_center/)

**Writing Center Extra Credit:** It is because I feel that the Writing Center can help any writer of any ability that I will award you ten extra credit points on any ONE assignment for visiting the writing center for help and providing proof (email from the Writing Center is typical) that you visited them for assistance.

**Policies on Incomplete Grades for CASL from the Registration and Records website:**

<http://umdearborn.edu/casl/687370/>

## Psychology Program Goals

This class is designed to teach you content unique to this course (Cognitive psychology) as well as any skills necessary to conduct yourself as a professional in the field. Doing so will allow you to attain the goals we, as psychology faculty, have set out for you as a psychology student. For more information on these goals, visit the following link:

[https://umdearborn.edu/casl/fileadmin/casl/departments/behavioralsciences/public/psychology/forms/Psychology\\_Program\\_Goals\\_\\_1\\_.pdf](https://umdearborn.edu/casl/fileadmin/casl/departments/behavioralsciences/public/psychology/forms/Psychology_Program_Goals__1_.pdf)

### Supplemental Instruction for Cognitive Psychology (PSYC 363)

Supplemental Instruction (SI) sessions are offered as a free service for students in this class. Because SI targets both introductory and other courses perceived as having difficult material, sessions are for all learners from straight A to struggling students. SI helps you to integrate diverse concepts, retain information effectively, reduce the time you need to study because you will be more efficient in what and how to study, and generally tend to improve the performance of anyone who attends 5 or more sessions!

A Supplemental Instruction (SI) component is provided for all students who want to improve their understanding of the material taught in this course. SI sessions are led by a student who has already mastered the course material and has been trained to facilitate group sessions where students can meet to compare class notes, review and discuss important concepts, develop strategies for studying, and prepare for exams. Attendance at SI sessions is free, voluntary, and anonymous to the professor. Students may attend as many times as they choose. SI sessions begin by the second week of class and continue throughout the semester. Session schedules will be announced in class. For information about SI, visit:

<http://www.umkc.edu/asm/umkcsi/index.cfm>

Your SI leader is: Nicholas Paron

His e-mail address is: [nparon@umich.edu](mailto:nparon@umich.edu)

THE  
INCREDIBLE  
HUMAN  
LEARNING &  
CREATIVITY  
LABORATORY



CONTACT: [UMDMEMORY@GMAIL.COM](mailto:UMDMEMORY@GMAIL.COM)

### Research with Dr. Clark-Foos in the Incredible Human Learning & Creativity Laboratory

The Incredible Human Learning & Creativity (HULC) Laboratory is actively immersed in both basic and applied research on issues related to human memory. Our particular areas of expertise include emotion and memory, source monitoring, prospective memory, cryptomnesia, and general kick-assery. Although the HuLC lab is particularly suited for individuals aiming to move onto graduate programs in Cognitive Psychology, we are able to offer a range of research experiences that can benefit any student with post-graduate plans. If you find you are particularly well-suited to understanding and conversing about Cognitive Psychology (your exam grades may be an indication), then please feel free to complete an application to become a research assistant in the Incredible HuLC Lab!

Human Learning & Creativity (HuLC) Lab Website: <http://www-personal.umd.umich.edu/~acfoos/lab/index.html>

Research Assistant Application: [http://www-personal.umd.umich.edu/~acfoos/lab/resasst\\_app.doc](http://www-personal.umd.umich.edu/~acfoos/lab/resasst_app.doc)

Lab Email Contact: [umdmemory@gmail.com](mailto:umdmemory@gmail.com)

## Topic Outline / Course Calendar

### Module I.

- *Introduction to the Study of Learning & Memory (Ch. 1)*
- *Neural Bases of Learning & Memory (Ch. 2)*

**Exam 1 (September 26<sup>th</sup>)**

### Module II.

- *Habituation and Sensitization (Ch. 3)*
- *Classical Conditioning (Ch. 4)*
- *Instrumental Conditioning (Ch. 5)*

**Research Article Analysis (October 3<sup>rd</sup>)**

**Exam 2 (October 10<sup>th</sup>)**

**Visit Library October 12. (1216L Mardigian Library)**

### Module III.

- *Episodic Memory (Ch. 7)*
- *Semantic Memory (Ch. 7)*
- *Skill Memory (Ch. 8)*

**Exam 3 (October 31<sup>st</sup>)**

**First Draft (optional) of Literature Review (November 2<sup>nd</sup>)**

### Module IV.

- *Introduction to Conscious Learning & Memory (No Chapter)*
- *Short-term and Working Memory (Ch. 12)*

**Exam 4 (November 14<sup>th</sup>)**

**Thanksgiving Recess (November 22-26)**

### Module V.

- *Emotional Learning & Memory (Ch. 10)*
- *Development and Aging (Ch. 12)*
- *TIME PERMITTING: Social Learning and Memory (Ch. 11)*
- *TIME PERMITTING: Memory Improvement (Clark-Foos Chapter will be on Canvas)*

**Final Draft of Literature Review (December 7<sup>th</sup>)**

**Exam 5 (December 12<sup>th</sup>)**

**\*\* Chapter-to-lecture correspondence is approximate, not exact. There may be times where lecture material is found split between several chapters. For examination purposes, you will be responsible for knowing any material from assigned chapters as well as any material from lecture.**

**This syllabus is a general plan for the course. Deviations to this plan may be necessary and will be announced by the instructor.**

## References

### **Exam 1**

Bower, G. H. (2000). A brief history of memory research. In E. Tulving & F. I. M. Craik (Eds.), *The Oxford Handbook of Memory* (pp. 3-32). New York: Oxford University Press.

\*Crystal, J.D. (2010). Episodic-like memory in animals. *Behavioral Brain Research*, 215, 235-243.

### **Exam 2**

\*Cohen, N. J., & Squire, L. R. (1980). Preserved learning and retention of pattern-analyzing skill in amnesia: Dissociation of knowing how and knowing that. *Science*, 210, 207-210.

Cohen, T. E., Kaplan, S. W., Kandel, E. R., & Hawkins, R. D. (1997). A simplified preparation for relating cellular events to behavior: Mechanisms contributing to habituation, dishabituation, and sensitization of the *Aplysia* gill-withdrawal reflex. *The Journal of Neuroscience*, 17, 2886-2899.

Dworkin, B. R., & Dworkin, S., (1990). Learning of physiological responses: I. Habituation, Sensitization, and Classical Conditioning. *Behavioral Neuroscience*, 104, 298-319.

Karni, A., Meyer, G., Jezard, P., Adams, M. M., Turner, R., & Ungerleider, L. G. (1995). Functional MRI evidence for adult motor cortex plasticity during motor skill learning. *Nature*, 377, 155-158.

Karni, A., Tanne, D., Rubenstein, B. S., Askenasy, J. J., & Sagi, D. (1994). Dependence on REM sleep of overnight improvement of a perceptual skill. *Science*, 265, 679-682.

Poldrack, R. A. (2002). Neural systems for perceptual skill learning. *Behavioral and Cognitive Neuroscience Reviews*, 1, 76-83.

### **Exam 3**

Thorndike, E. L. (1898). Animal intelligence: An experimental study of the associative processes in animals. *Psychological Review*, 2, 1-113.

Thorndike, E. L. (1934). Learning without awareness of what is being learned or intent to learn it. *Journal of Experimental Psychology*, 17, 1-19.

\*Skinner, B. F. (1953). Operant Behavior. In B. F. Skinner, *Science and human behavior* (pp. 59-90). London: Collier-Macmillan Limited.

\*Kensinger, E. A. (2009). Remembering the details: Effects of emotion. *Emotion Review*, 1, 99-113.

### **Exam 4**

\*Baddeley, A.D., & Hitch, G.J. (1974). Working memory. In G. H. Bower (Ed.), *Recent advances in learning and motivation* (Vol. 8, pp. 47-90). New York: Academic Press.

Brown, J. (1958). Some tests of the decay theory of immediate memory. *Quarterly Journal of Experimental Psychology*, 10, 12-21.

Conrad, R. (1964). Acoustic confusions in immediate memory. *British Journal of Psychology*, 55, 75-84.

\*Craik, F. I. M., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning & Verbal Behavior*, 11, 671-684.

Peterson, L., & Peterson, M. J. (1959). Short-term retention of individual verbal items. *Journal of Experimental Psychology*, 58, 193-198.

Keppel, G., & Underwood, B. J. (1962). Proactive inhibition in short-term retention of single items. *Journal of Verbal Learning & Verbal Behavior*, 1, 153-161.

### **Exam 5**

Jennings, J. M., & Jacoby, L. L. (1993). Automatic versus intentional uses of memory: Aging, attention, and control. *Psychology and Aging*, 8, 283-293.

\*Mitchell, K. J., & Johnson, M. K. (2009). Source monitoring 15 years later: what have we learned from fMRI about the neural mechanisms of source memory? *Psychological Bulletin*, 135, 638-677.

Nyberg, L., Sandblom, J., Jones, S., Stigsdotter Neely, A., Magnus Petersson, K., Ingvar, M., & Bäckman, L. (2003). Neural correlates of training-related memory improvement in adulthood and aging. *Proceedings of the National Academy of Sciences of the United States of America*, 100, 13728-13733.

\*Salthouse, T. A. (2003). Memory aging from 18 to 80. *Alzheimer Disease & Associated Disorders*, 17, 162-167.

Smith, M. A., Riby, L. M., van Eekelen, J. A. M., & Foster, J. K. (2011). Glucose enhancement of human memory: A comparative research review of the glucose memory facilitation effect. *Neuroscience and Biobehavioral Reviews*, 35, 770-783.

Verhăghen, P., Marcoen, A., & Goossens, L. (1993). Facts and fiction about memory aging: A quantitative integration of research findings. *Journal of Gerontology*, 48, 157-171.

## Learning & Memory (PSYC 461/561) Literature Review

**Assignment:** You will complete a thorough literature review on a topic of your choosing. Your topic can be on anything related to human (or animal) learning and memory, including research on artificial intelligence. All topics must be approved or the resulting papers will not be graded. The goal is to select a topic that interests you and then to conduct library and online research to learn as much about the topic as possible. You will then communicate your findings back to me through your written literature review. As should be intuitive, a literature review should attempt to synthesize all published research related to a given topic (i.e., it reviews the literature). To wit, literature reviews most often culminate with a tentative research proposal for a new study to be conducted on the topic. As such, it is best to begin your research with a specific question about human behavior that might be answered through a new study. For example, how do humans use memory for prior experiences when interpreting complex visual stimuli (i.e., how does our past help us figure out what we are looking at now?).

Completing this assignment will require you to use numerous research journals (both empirical and review) and possibly your textbook. Utmost care should be taken to avoid plagiarism (i.e., if it was not your original insight or language, cite the original). That being said, this paper is to be written by you, the student, and not by the authors of your sources. Please avoid using quotations whenever possible. Part of your college education and requirement for this assignment is to be able to synthesize and summarize others' work in your own words while still giving credit where it is deserved.

There is no formal requirement for sections to this paper. That is, you can structure the paper similar to a long introduction section from an empirical research article. If you choose to implement section headers, please be careful to do only when necessary and useful and do so according to APA style. Abstracts are not required for this assignment but are strongly encouraged as good practice.

### **Diabolus in singulis est** (*The Devil is in the Details*):

- APA 6<sup>th</sup> ed., 12pt Times New Roman, Double Spaced, 1" margins
- 8-12 pages, not counting references, appendices, or title page
- Minimum of 8 cited sources (at least 5 must be empirical articles, no website-only sources)
- **Research Article Analysis of your research topic: Due electronically by October 17<sup>th</sup> (worth 10 points).**
- Final draft of your paper must be turned in by the start of class on December 7<sup>th</sup>.
- Any students wishing to receive advanced feedback on their paper must turn in a draft or outline no later than November 2<sup>nd</sup>.

### **Choosing a Topic**

In order to start writing this paper you will need to seek approval for a topic related to this course. This can be a very broad and even stretched relationship but it must still be there for you to write about it in this class. When searching for a topic it may help to browse the contents of the textbook and ask yourself what questions you might have about the various topics we will cover in the class. Here are some examples to help get you started:

- *What are the components of working memory and how do they allow us to multitask? Are second languages represented in memory as a second lexicon or are they integrated in existing semantic networks? Why do we experience infantile amnesia? How does hypoxia or other insults to the brain affect memory? Can brain training games and apps improve basic memory function in health individuals?*

Be smart and creative and do not just use the examples that I provided. Think about what interests you most as that will make this the best paper for you to write and for me to read. Come up with several possible questions that interest you and I will help to guide you in the best direction in terms of available research and depth of topic. Good luck!

Literature Review Rubric	Rating				Score
	Excellent	Good	Fair	Poor	
<i>ASSIGNMENT STRUCTURE (75 points)</i>					
<b>Quantity and Quality of Articles</b>	Information is gathered from multiple (8), research-based (5) sources.	Information is gathered from multiple sources.	Information is gathered from a limited number of sources.	Information is gathered from a single source.	<b>/15</b>
Length	Adheres to 8-12 page criteria.	Unnecessarily exceeds or does not meet page criteria by a page.	Unnecessarily exceeds or does not meet page criteria by more than 1 page.	Unnecessarily exceeds or does not meet page criteria by multiple pages.	<b>/15</b>
<b>Format</b>	Font, spacing, and APA format are correct.	Font and spacing, font and APA, or spacing and APA are correct.	Font, spacing, or APA format is correct.	Font, spacing, and APAP format are incorrect.	<b>/15</b>
Grammar	There is 1 or less grammatical error.	There are 2 grammatical errors.	There are 3 grammatical errors.	There are 4 or more grammatical errors.	<b>/15</b>
<b>Reference Sheet</b>	Information is cited properly and in APA format.	Information is cited, but has a few small errors.	Information is cited, but has multiple errors.	Information is not cited at all or is completely incorrect.	<b>/15</b>
<i>LITERATURE REVIEW CONTENT (175 points)</i>					
Theme/Research Problem	The topic is introduced and the groundwork is laid as to the direction of the report.	Readers are aware of the problem, challenge, or topic that is to be examined	Readers are vaguely aware of the overall problem but not much detail is given.	Neither implicit nor explicit reference is made to the topic that is to be examined.	<b>/30</b>
Flow/Structure	Well organized, demonstrates logical sequencing and structure.	Well organized, but demonstrates illogical sequencing or structure.	Weakly organized with no logical sequencing or structure.	No organization, sequencing, or structure.	<b>/30</b>
<b>Background/Foundation</b>	Thorough (theoretical and empirical) review of existing research findings.	Adequate coverage of existing literature with some attention to theory and data.	Fair review of some findings (perhaps not empirical) with some attention to theory or data.	Existing research is sparsely covered with little attempt to explain theory or data	<b>/80</b>
<b>Research Questions and Conclusions</b>	Conclusion(s) are well formed through the literature review and clearly stated. Research question(s) may be posed.	Conclusions(s) are formed through the literature review.	Conclusion(s) were not formed, roughly formed, or unclearly stated (but could have been formed through the literature review).	No conclusions are apparent from the literature review.	<b>/35</b>
<b>MISCELLANEOUS</b>	Failure to complete the Research Article Analysis on time will result in a ten point deduction Late papers will be penalized 10 points for any day, or part of a day, that it is late. Did you cheat or plagiarize? What does Turnitin.com have to say about it?				
<b>TOTAL POINTS</b>					<b>/ 250</b>

## Extra Credit Assignment - Make a Mnemonic

**Background:** As students you engage in a variety of strategies aimed at helping you to learn material for your classes. Most of us passively re-read material, quiz ourselves, and sometimes even study in groups. A few of us go further to create unique methods for helping us to learn the material. For example, someone may have once taught you the colors of the rainbow by asking you to remember the name, Roy G. Biv. Each of the letters in the name correspond to the first letter in the color of the rainbow (Red, Orange, Yellow, Green, Blue, Indigo, & Violet). Similarly, you may have learned the various classification levels of organisms by remembering that *King Phillip Came Over From Germany Saturday* (Kingdom, Phylum, Class, Order, Family, Genus, & Species). Each of these, and many many more, are called mnemonics, techniques that aim to improve memory retention. There are a variety of types of mnemonics that one may employ to help aid in studying and some are more appropriate for certain types of to-be-remembered information (e.g., Method of Loci). Note that not all mnemonics are language based. One might remember the number of days in each month by counting the months across one's knuckles, see below. Any mnemonic you create for material in this class is acceptable for this assignment, as long it passes a simple evaluation to ensure it is actually helpful and not just something you came up with on the day it was due.



Knuckle mnemonic for the number of days in each month of the Gregorian Calendar. Each projecting knuckle represents a 31-day month (Wikipedia).

**Assignment Details:** If you have created any mnemonics to aid in your studying this semester, please take this opportunity to earn points for them AND to share them with your peers. For every mnemonic that is submitted (and passes an evaluation by myself and the TA), you will receive **two points** on your final exam grade. You are allowed to submit **up to 5** different mnemonics and they can be on the same material. With each mnemonic, I would like you to *estimate the mnemonic's effectiveness* in helping you study the material. Please do so using a 0-100% scale, where 0% indicates it was not helpful at all and 100% indicates that it was very helpful. If you did not actually use it in studying then please indicate that it was not used. Please note that we will be checking these online for authenticity so please do not attempt to plagiarize someone else's work and pass it off as your own for this assignment. Doing so would represent a violation of the university's academic integrity policy.

In addition to earning you points for each mnemonic you submit, the best of these (as determined by myself and a TA or lab manager) will be returned to the class for evaluation. The three selected as the *most effective* (as averaged across class rankings) will earn additional points on their final exam, commensurate with their ranking. The mnemonic that is rated as the *funniest* will also earn 2 additional points on their final exam.

**Due Date:** All mnemonics must be **typed** and submitted via email by the end of the semester.