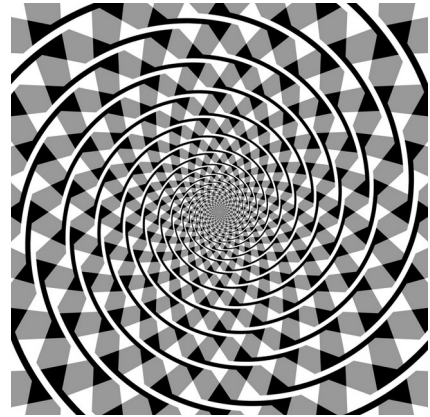


The external world seems immediately available to our senses. Unlike other “higher” cognitive functions like memorizing or problem solving, the act of perceiving does not seem to require any effort. Yet the feat achieved by the perceptual system becomes immediately clear when one tries to build an artificial system that can perceive. Today, artificial vision systems have made great strides toward a high level of functionality in certain domains (e.g., autonomous driving), yet we are still far away from a truly general vision system like ours. Why is it so?

Through this course, we will gain some appreciation of the enormous task of perception and the underlying processes that realize it. The central question we investigate is the following: how do our senses transform the external world into information that our brains/minds can understand and reliably interpret?

Sensation and Perception is an area of scientific inquiry that spans psychology, biology, physics, and computer science. We will examine the perceptual process at a number of different levels, from the sensory signal, to single neurons and neural systems, to behavior and subjective experience. You will have the opportunity to find answers to many questions about yourself and the world around you. Most of all, you will have the opportunity to gain practical knowledge about perception that can enrich your everyday life.



Basic information

Time: Monday & Wednesday 12:40-2:00 pm

Place: Natural Sciences Bldg 116

Textbook: Sensation and Perception, Goldstein & Cacciamani, Cengage Learning, 11th Edition (2021), MindTap course bundle accessed via D2L (paid subscription necessary)

Assignment: Online interactive activities via MindTap

Instruction Team

Instructor: Taosheng Liu PhD

Email: tsliu@msu.edu

Virtual office: <https://msu.zoom.us/j/7786539856>

Physical office: 289A Psychology Bldg

Office hours: Mon 3-4pm (and by appointment)

Teaching assistant: Jamie Shi

Email: shijiami@msu.edu

Online office: <https://msu.zoom.us/j/4499401376>

Physical office: 4044 ISTB

Office hours: Wed 2:30-3:30pm (and by appointment)

Undergrad assistant: Morgan Dodd

Email: doddmorg@msu.edu

Virtual office: <https://msu.zoom.us/j/92945129816>

Physical office: 298C Psychology Bldg

Office hours: Thur 2:30-3:30pm (and by appointment)

Evaluation criteria

Raw grades (total=100%) are calculated based on a weighted average of the following components:

- Exams (3 exams, 25% per exam) 75%
- Assignments (participation only) 16%
- Quizzes (3 quizzes, 3% each) 9%
- Attendance extra credit 5%

Note attendance provides extra credit (beyond 100%); it will be taken as frequently as possible. The conversion from attendance rate to credit is the following:

Attending percentage Credit

>=80%	5%
70 – 79%	4%
60 – 69%	3%
50 – 59%	2%
40 – 49%	1%
<40%	0

Exams:

There will be three exams. Each exam will be composed of multiple choices and short answers.

Exams will be in-person during scheduled class times (see schedule table below).

Assignments:

You will complete 16 interactive activities on MindTap. These hand-on activities reinforce the concepts introduced in the class. There are multiple choice questions at the end of each assignment. However, we only count your participation, not your performance on these questions. For each assignment, you earn 1% toward the final grade. Note there are three due dates for the assignments and no late submissions are allowed.

Quizzes:

There will be 3 online quizzes with multiple choice questions. You will earn points based on your actual performance. Quizzes are available on D2L on the designated dates (see schedule below) for a 48-hr period (0:00 on Day 1 to 23:99 on Day 2). You have 15 min to complete it once you start. Late quiz will incur a 25% deduction per 24 hr period.

Grade scale:

Final numeric grade is based on a weighted sum of the four components listed above, and the conversion from the raw score to the numeric grade follows the scale below:

<i>Raw percentage</i>	<i>Numeric grade</i>
>=90	4.0
85.00 – 89.99	3.5
80.00 – 84.99	3.0
75.00 – 79.99	2.5
70.00 – 74.99	2.0
65.00 – 69.99	1.5
60.00 – 64.99	1.0
<60	0

Class schedule (tentative, subject to change)

Date	Topic	Reading	Assignment and due
Jan 13	Introduction	Chap 1	
Jan 15 & 22	Physiology and Psychophysics	Chap 1, 2 Appendix	
Jan 27 & 29	Eye and Retina	Chap 3	
Feb 3 & 5	Visual cortex (I & II)	Chap 4	
Feb 10 & 12	Object recognition (I & II)	Chap 5	
Feb 17	<i>Catch up & Review</i>		
Feb 17 - 18	Quiz 1		Feb 18: A1-A5
Feb 19	Exam 1 (in-class)		
Feb 24 & 26	Color perception (I & II)	Chap 9	
Mar 10 & 12	Depth perception (I & II)	Chap 10	
Mar 17 & 19	Motion perception (I & II)	Chap 8	
Mar 24	Attention	Chap 6	
Mar 26	<i>Catch up & Review</i>		
Mar 26-27	Quiz 2		Mar 27: A6-A10
Mar 31	Exam 2 (in-class)		
Apr 2 & 7	Sound and auditory system	Chap 11	
Apr 9 & 14	Hearing in the environment	Chap 12	
Apr 16	Speech	Chap 14	
Apr 21	Body and chemical senses	Chap 15, 16	
Apr 23	<i>Catch up & Review</i>		
Apr 23-24	Quiz 3		Apr 24: A11-A16
Apr 28	Exam 3 (12:45 – 2:45 pm)		

* *Spring break: Mar 2 - Mar 9*

* *Final exam week: Apr 28 - May 2*

List of Assignments

- A1 Exploration: Visual Path Within the Eyeball (Chap 3)
- A2 Exploration: Lateral Inhibition in the Hermann Grid (Chap 3)
- A3 Exploration: Pyramid Illusion (Chap 3)
- A4 Concept Clip: Impossible Motion: Antigravity Ramps (Chap 5)
- A5 Concept Clip: Newborn Hearing and Vision (Chap 5)
- A6 Concept Clip: Gestalt Principles Exploited by Magicians (Chap 6)
- A7 Exploration: Change Detection: Gradual Change (Chap 6)
- A8 Exploration: Motion Binding (Chap 6)
- A9 Exploration: Corollary Discharge Model (Chap 8)
- A10 Exploration: Biological Motion 2 (Chap 8)
- A11 Exploration: Frequency Response of the Ear (Chap 11)
- A12 Exploration: Periodicity Pitch: Eliminating the Fundamental and Lower Harmonics (Chap 11)
- A13 Exploration: Interaural Level Difference as a Cue for Sound Localization (Chap 12)
- A14 Exploration: Layering Naturalistic Sounds (Chap 12)
- A15 Exploration: Timbre of a Piano Tone Played Backward (Chap 13)
- A16 Concept Clip: Phonemic Restoration (Chap 14)

Course Policies:

Make-up Exams: Make-up exams can be granted under special circumstances. This can include, for example, 1) a documented medical emergency, 2) a schedule conflict that you know about in advance such as a religious holiday or sports travel, or 3) other life challenges such as accidents/emergencies etc. In all cases, please inform me ASAP and *provide documentation*. All claims are subject to verification. In case of a schedule conflict, you must inform me at least a week in advance of exam day. Do not assume I have gotten your email unless I have responded to you.

Quizzes and Assignments: Both the quizzes and assignments are available online for extended period of time. The 15 min quizzes are available for a 48 hr period, while the assignments are always available until the due date. You have ample time to complete both activities. Thus, *we will adopt a stringent criterion if you request exceptions/extensions*. You need to demonstrate a compelling cause. Computer and network problems are not considered legitimate causes because you can always find alternatives for use (e.g., library, computer lab, McDonald's).

Academic Honesty: The Psychology Department adheres to the policies on academic honesty as specified in General Student Regulations 1.0, *Protection of Scholarship and Grades*; the all-University Policy on *Integrity of Scholarship and Grades*; and Ordinance 17.00, Examinations. (See [Spartan Code of Honor Academic Pledge](#) and/or the MSU Web site: splife.studentlife.msu.edu). Therefore, unless authorized by your instructor, you are expected to complete all course assignments, including homework, lab work, quizzes, tests and exams, without assistance from any source. You are expected to develop original work for this course; therefore, you may not submit course work you completed for another course to satisfy the requirements for this course. Contact your instructor if you are unsure about the appropriateness of your course work. (See also <https://www.msu.edu/~ombud/academic-integrity/index.html>).

Accommodations for Students with Disabilities: Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations by persons with disabilities may be made by contacting the Resource Center for Persons with Disabilities at 517-884-RCPD or on the web at rcpd.msu.edu. Once your eligibility for an accommodation has been determined, you will be issued a Verified Individual Services Accommodation ("VISA") form. Please present this form to us at the start of the term and/or two weeks prior to the accommodation date (test, project, etc.). *Requests received without sufficient lead time may not be honored due to logistic issues that can arise.*