



ARIZONA STATE UNIVERSITY  
GENERAL STUDIES COURSE PROPOSAL COVER FORM

**Course information:**

Copy and paste current course information from Class Search/Course Catalog.

|   |  |            |  |
|---|--|------------|--|
| Academic Unit   | <u>Human Systems Engineering</u>                                 | Department | <u>The Polytechnic School</u>  |
| Subject   | <u>EGR</u>   | Number     | <u>323</u>   |
|   |  | Title      | <u>Perception and Human Systems</u><br>(to be HSE 323 when new prefix is approved) |
| Units:  | <u>3</u>   |            |  |
| Is this a cross-listed course?<br>If yes, please identify course(s) | (Choose one)<br><u>No</u>  |            |  |
| Is this a shared course?<br>Course description:                     | (choose one) If so, list all academic units offering this course |            | <u>No</u>  |

**Requested designation:** (Choose One)

Note- a separate proposal is required for each designation requested

**Eligibility:**

Permanent numbered courses must have completed the university's review and approval process.  
For the rules governing approval of omnibus courses, contact [Phyllis.Lucie@asu.edu](mailto:Phyllis.Lucie@asu.edu) or [Lauren.Leo@asu.edu](mailto:Lauren.Leo@asu.edu).

**Submission deadlines dates are as follow:**

For Fall 2015 Effective Date: October 9, 2014

For Spring 2016 Effective Date: March 19, 2015

**Area(s) proposed course will serve:**

A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

**Checklists for general studies designations:**

Complete and attach the appropriate checklist

- [Literacy and Critical Inquiry core courses \(L\)](#)
- [Mathematics core courses \(MA\)](#)
- [Computer/statistics/quantitative applications core courses \(CS\)](#)
- [Humanities, Arts and Design core courses \(HU\)](#)
- [Social-Behavioral Sciences core courses \(SB\)](#)
- [Natural Sciences core courses \(SQ/SG\)](#)
- [Cultural Diversity in the United States courses \(C\)](#)
- [Global Awareness courses \(G\)](#)
- [Historical Awareness courses \(H\)](#)

**A complete proposal should include:**

- Signed General Studies Program Course Proposal Cover Form
- Criteria Checklist for the area
- Course Catalog description
- Course Syllabus
- Copy of Table of Contents from the textbook and list of required readings/books

**Respectfully request that proposals are submitted electronically with all files compiled into one PDF. If necessary, a hard copy of the proposal will be accepted.**

**Contact information:**

|           |                       |         |                       |
|-----------|-----------------------|---------|-----------------------|
| Name      | <u>Nancy J. Cooke</u> | Phone   | <u>480-727-5158</u>   |
| Mail code | <u>2880</u>           | E-mail: | <u>ncooke@asu.edu</u> |

**Department Chair/Director approval:** (Required)

|                              |                    |       |                |
|------------------------------|--------------------|-------|----------------|
| Chair/Director name (Typed): | <u>Ann McKenna</u> | Date: | <u>2/10/15</u> |
| Chair/Director (Signature):  | <u></u>            |       |                |

**Arizona State University Criteria Checklist for**  
**SOCIAL-BEHAVIORAL SCIENCES [SB]**

**Rationale and Objectives**

Social-behavioral sciences use distinctive scientific methods of inquiry and generate empirical knowledge about human behavior, within society and across cultural groups. Courses in this area address the challenge of understanding the diverse natures of individuals and cultural groups who live together in a complex and evolving world.

In both private and public sectors, people rely on social scientific findings to consider and assess the social consequences of both large-scale and group economic, technological, scientific, political, ecological and cultural change. Social scientists' observations about human interactions with the broader society and their unique perspectives on human events make an important contribution to civic dialogue.

Courses proposed for a General Studies designation in the Social-Behavioral Sciences area must demonstrate emphases on: (1) social scientific theories, perspectives and principles, (2) the use of social-behavioral methods to acquire knowledge about cultural or social events and processes, and (3) the impact of social scientific understanding on the world.

Revised April 2014

Proposer: Please complete the following section and attach appropriate documentation.

| <b>ASU--[SB] CRITERIA</b>  |                             |   |  |                             |   |
|--|-----------------------------|---|--|-----------------------------|---|
| <b>A SOCIAL-BEHAVIORAL SCIENCES [SB] course should meet all of the following criteria. If not, a rationale for exclusion should be provided.</b> |                             |   |  |                             |   |
| YES  | NO                          |   | Identify Documentation Submitted   |                             |   |
| <input checked="" type="checkbox"/>  | <input type="checkbox"/>    | 1. Course is designed to advance basic understanding and knowledge about human interaction.   | Course description, syllabus, & table of Contents from the textbook  |                             |   |
| <input checked="" type="checkbox"/>  | <input type="checkbox"/>    | 2. Course content emphasizes the study of social behavior such as that found in:<br><br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> <li>• ANTHROPOLOGY</li> <li>• ECONOMICS</li> <li>• CULTURAL GEOGRAPHY</li> <li>• HISTORY</li> </ul> </td> <td style="width: 50%; vertical-align: top;">                     Psychology<br/><br/>Sociology                 </td> </tr> </table> | <ul style="list-style-type: none"> <li>• ANTHROPOLOGY</li> <li>• ECONOMICS</li> <li>• CULTURAL GEOGRAPHY</li> <li>• HISTORY</li> </ul> | Psychology<br><br>Sociology | Course description, syllabus, & table of Contents from the textbook |
| <ul style="list-style-type: none"> <li>• ANTHROPOLOGY</li> <li>• ECONOMICS</li> <li>• CULTURAL GEOGRAPHY</li> <li>• HISTORY</li> </ul>           | Psychology<br><br>Sociology |   |  |                             |   |
| <input checked="" type="checkbox"/>  | <input type="checkbox"/>    | 3. Course emphasizes:<br>a. the distinct knowledge base of the social and behavioral sciences (e.g., sociological anthropological).<br><b>OR</b><br>b. the distinct methods of inquiry of the social and behavioral sciences (e.g., ethnography, historical analysis).  | Course description, syllabus, & table of Contents from the textbook  |                             |   |
| <input checked="" type="checkbox"/>  | <input type="checkbox"/>    | 4. Course illustrates use of social and behavioral science perspectives and data.   | Course description, syllabus, & table of Contents from the textbook  |                             |   |
|  |                             | <b>THE FOLLOWING TYPES OF COURSES ARE EXCLUDED FROM THE [SB] AREA EVEN THOUGH THEY MIGHT GIVE SOME CONSIDERATION TO SOCIAL AND BEHAVIORAL SCIENCE CONCERNS:</b>   |  |                             |   |
|  |                             | • Courses with primarily arts, humanities, literary or philosophical content.   |  |                             |   |
|  |                             | • Courses with primarily natural or physical science content.   |  |                             |   |
|  |                             | • Courses with predominantly applied orientation for professional skills or training purposes.  |  |                             |   |
|  |                             | • Courses emphasizing primarily oral, quantitative, or written skills.  |  |                             |   |

| Course Prefix | Number | Title                        | General Studies Designation |
|---------------|--------|------------------------------|-----------------------------|
| EGR           | 323    | Perception and Human Systems | SB                          |

Explain in detail which student activities correspond to the **specific** designation criteria.  
Please use the following organizer to explain how the criteria are being met.

| Criteria (from checksheet) | How course meets spirit (contextualize specific examples in next column)   | Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)  |
|----------------------------|--|--|
| 1                          | This course is designed to provide students with a profound understanding of how we receive and interpret information from the natural and social environments. The sensory and perceptual mechanisms not only connect us to the physical world, but also let us understand the feelings, emotions and thoughts of others. Many social topics have been interwoven into this course. These topics include face recognition (Chap 5 & Chap 12 from Harris' book), speech perception (chap 13), perceiving other people's intention and action (Chap 7), perceiving pain in social situations (Chap 14), and the perception of emotions (Chap 13 from Harris' book). | The classes on 09/22/2015, 09/29/2015, 10/20/2015, 11/05/2015, & 11/10/2015 will focus particularly on the perceptual processes involved in social interaction, for example, face recognition, speech perception, understanding of other people's action and intention, pain perceived in social situations, and perception of emotions. |
| 2                          | While the emphasis is put on understanding basic sensation and perception from individual's perspective, another theme of this course is the perception of information from social interaction.  | See the table of content from the textbook and the list of additional reading assignments. Chapters 6, 7, 11, 12, 13, & 14 of the textbook address the perceptual problems in the context of social interaction such as perception of attention,   |

|   |  |  |
|---|--|--|
|   | <p>It will cover how we perceive sounds and speech, how we understand other people's intention and action, and how we feel touch and pain in social situations. These topics will be beneficial for students in neuroscience, psychology, anthropology, and sociology</p>                                  | <p>understanding of other people's intention and action, speech perception, music perception, and feeling of pain in social situations. Chapters 12 &amp; 13 from Harris' Sensation &amp; Perception explain the perceptual mechanisms underlying face recognition (Chapter 12) and emotions (Chapter 13).</p>   |
| 3 | <p>The course will extensively cover the behavioral aspects of perception and use many real-world illustrations and illusions to show how our perceptual systems work. It also teaches students the techniques and methods used to investigate human behavior (see Chap 1 &amp; Appendix).</p>             | <p>The class on 08/27/2015, for example, will address specifically the research methods used to study human perception. Signal detection theory will be covered, which has been used in a wide range of research areas in psychology, sociology, and neuroscience.</p>   |
| 4 | <p>This course emphasizes the integration of behavioral research with potential applications to engineering practice. The covered topics will include the application of perceptual theories to real-world problems like computer vision, display technologies, graphic design, sound processing, etc.</p> | <p>Throughout this course we will discuss the application of perceptual theories to real-world problems, for example, shape/object recognition by computer (Chap 5) and computer understanding of speech (Chap 13). Social studies are also included, for example, social effects of subliminal perception and priming (class on 09/24/2015), and the use of virtual reality to promote prosocial behavior in real world (class on 10/22/2015)</p> |

## Course Catalog Description

### EGR 323: Perception and Human Systems

In-depth exploration of methods by which humans receive and interpret information from the world by vision, audition, taste, smell, touch, and movement. Emphasizes the integration of behavioral research with potential applications to engineering practice. Topics will cover a wide range from the biological basis of sensory information processing, to the behavioral and social aspects of perception, and to the applications of perceptual theories to disciplines like computer vision, display technologies, graphic design, and sound processing. Upon successful completion of this course, students will have a solid foundation for further coursework and research in neuroscience or psychology, but also gain knowledge that could be useful in various professions.

# EGR-323: Perception and Human Systems

Arizona State University  
Fall semester 2015  
Course line # 12345

## Instructor Information:

Dates of classes: Tues & Thurs, Aug. 20 - Dec. 3  
Instructor: Bing Wu, Ph.D.  
Human System Engineering Program  
Email: [Bing.Wu@asu.edu](mailto:Bing.Wu@asu.edu) (*preferred contact method*)  
Work Phone: 480-727-3716 (O)  
Office Hours: Tues & Thurs, 4:30 – 5:30 or by appointments through email  
Office Location: 150E, Santa Catalina Hall, Polytechnic campus

## Course Information:

**Pre-requisites:** EGR 103 or PSY 101 and junior or senior standing

**Course Format:** Lectures. The class will meet on **Tuesdays and Thursdays from 12:00 to 1:15 pm at Room 310, Peralta Hall.**

**Course description:** In-depth exploration of methods by which humans receive and interpret information from the world by vision, audition, taste, smell, touch, and movement. Emphasizes the integration of behavioral research with potential applications to engineering practice. Topics will cover a wide range from the biological basis of sensory information processing, to the behavioral and social aspects of perception, and to the applications of perceptual theories to disciplines like computer vision, display technologies, graphic design, and sound processing. Upon successful completion of this course, students will have a solid foundation for further coursework and research in neuroscience or psychology, but also gain knowledge that could be useful in various professions.

## Required Course Texts, Materials and Resources:

The required textbook is as follows:

Goldstein, E.B. (2009). *Sensation and Perception* (8th Edition). Belmont, CA: Wadsworth Publishing.

Dr. Goldstein's book is excellent, but it covers relatively little of social perception. I have yet found a good text that extends from basic sensation and perception to the social domain, and I do not want you to buy two texts. I will supplement the text with additional reading materials, including research articles and chapters from other books. These reading materials and other course materials like PowerPoint presentations and study guides for the exams will be available on the Blackboard (<http://myasucourses.asu.edu>).

## Student Objectives and Learning Outcomes

After completing this course, students should be able to:

- Describe how our perceptual systems operate and how sensory and perceptual processes shape the experience of “reality”;
- Identify the classical and modern research techniques, and their roles in the science of perceptual systems;
- Critically analyze original research in perception;
- Gain a good understanding of the capabilities and limitations of human perceptual systems and apply such knowledge to engineering problems such as the design of effective human-machine interfaces.

## Tentative Course Calendar

| <i>Date</i> | <i>Class Topic &amp; Required Reading</i>   |
|-------------|---|
| 08/20/2015  | <i>Syllabus &amp; class introduction</i>  |
| 08/25/2015  | <i>Introduction to perceptual systems</i><br>Reading: Textbook, Chap 1 (pp. 3 - 12)   |
| 08/27/2015  | <i>Research methods &amp; techniques</i><br>Reading: Textbook, Chap 1 (pp. 12 - 20);<br>Signal detection theory: Textbook, <i>Appendix (401-406)</i>  |
| 09/01/2015  | <i>The physiological hardware of our senses</i><br>Reading: Textbook, Chap 2 (pp. 23 - 39)  |
| 09/03/2015  | <i>Vision as information processing: From the retina to the brain</i><br>Reading: Textbook, Chap 3 (pp. 43 - 68), Chap 4 (pp. 73 - 87)  |
| 09/08/2015  | <i>Vision as information processing: Higher order visual centers</i><br>Reading: Textbook, Chap 4 (pp. 88 - 95)<br>Goodale, M.A. & Milner, A.D. (1992). Separate visual pathways for perception and action. <i>Trends in Neurosciences</i> , 15, 20-25.   |
| 09/10/2015  | <i>Seeing color</i><br>Reading: Textbook, <i>Chap 9 (pp. 201 - 225)</i>   |
| 09/15/2015  | <i>Review (1)</i>   |
| 09/17/2015  | <b>Exam 1</b>   |
| 09/22/2015  | <i>Object &amp; face recognition</i><br>Reading: Textbook, Chap 5 (pp. 99 - 127)<br>"Chapter 12: Recognising faces" in J. Harris, (2014). <i>Sensation &amp; perception</i> . SAGE Publications.  |
| 09/24/2015  | <i>Attention &amp; subliminal perception</i><br>Reading: Textbook, Chap 6 (pp. 133 - 150)<br>Bar, M., & Biederman, I. (1998). Subliminal visual priming. <i>Psychological Science</i> , 9(6), 464-469.  |
| 09/29/2015  | <i>Perception of action and interaction</i><br>Reading: Textbook, Chap 7 (pp. 155 - 172)  |
| 10/01/2015  | <i>Perceiving biological and non-biological motion</i><br>Reading: Textbook, Chap 8 (pp. 177 - 196)   |
| 10/06/2015  | <i>Visual spatial perception &amp; 3D-display technology</i><br>Reading: Textbook, Chap 10 (pp. 229 - 255)  |
| 10/08/2015  | <i>Auditory perception: Perception of pitch &amp; music</i><br>Reading: Textbook, Chap 11 (pp. 259 - 287)<br>"Chapter 11: Music and Speech Perception " (pp 303-308) in Wolfe, J. M., et al. (2012). <i>Sensation &amp; perception</i> (3rd ed.). Sunderland, MA: Sinauer Associates, Inc.  |
| 10/13/2015  | <b>Fall Break – Classes Excused</b>   |
| 10/15/2015  | <i>Auditory perception: Sound localization &amp; auditory scene analysis</i><br>Reading: Textbook, Chap 12 (pp. 291 - 307)  |
| 10/20/2015  | <i>Verbal communications: Speech perception</i><br>Reading: Textbook, Chap 13 (pp. 311 - 325)   |
| 10/22/2015  | <i>Perception and virtual reality technology</i><br>Reading: "Chap 1. Introduction to Virtual Reality" in Craig, A. B., Sherman, W. R., & Will, J. D. (2009). <i>Developing virtual reality applications: Foundations of effective design</i> . Burlington, MA: Morgan Kaufmann.<br>Armbrüster, C., Wolter, M., Kuhlen, T., Fimm, B. & Spijkers, W. |



|            |  |
|------------|--|
|            | (2008). Depth perception in virtual reality: distance estimations in peri- and extrapersonal space. <i>Cyberpsychology &amp; Behavior</i> , 11(1), 9–15.<br>Rosenberg, R.S., Baughman, S.L., & Bailenson, J.N. (2013) Virtual Superheroes: Using Superpowers in Virtual Reality to Encourage Prosocial Behavior. <i>PLoS ONE</i> . 8(1): e55003. |
| 10/27/2015 | Review (2)   |
| 10/29/2015 | <b>Exam 2</b>  |
| 11/03/2015 | <i>The senses of Touch</i><br>Reading: Textbook, Chap 14 (pp. 329 - 349)   |
| 11/05/2015 | <i>Perception of physical and social pain</i><br>Reading: Textbook, Chap 14 (pp. 343 - 351)<br>Kross, E. et al. (2011). Social rejection shares somatosensory representations with physical pain. <i>Proceedings of the National Academy of Sciences</i> , 108, 6270–6275 (2011).  |
| 11/10/2015 | <i>Perceiving emotions</i><br>Reading: "Chapter 13: Perceiving emotions and attractiveness" in J. Harris, (2014). <i>Sensation &amp; perception</i> . SAGE Publications.   |
| 11/13/2015 | <i>Olfaction: Smelling</i><br>Reading: Textbook, Chap 15 (pp. 355 - 366)   |
| 11/17/2015 | <i>Gustation: Tasting</i><br>Reading: Textbook, Chap 15 (pp. 366 - 375)  |
| 11/19/2015 | <i>Vestibular system</i><br>Reading: "Chapter 15: Spatial Orientation and the Vestibular System" in Wolfe, J. M., et al. (2012). <i>Sensation &amp; perception (3rd ed.)</i> . Sunderland, MA: Sinauer Associates, Inc.  |
| 11/24/2015 | <i>Sensory integration &amp; substitution</i><br>Reading: Beeli, G., et al. (2005). Synaesthesia: When coloured sounds taste sweet. <i>Nature</i> , 434, 38.<br>Castiello, U. et al. (2006). Cross-Modal Interactions between Olfaction and Vision When Grasping. <i>Chemical Senses</i> , 31(7) 665-671.  |
| 11/26/2015 | <b>Thanksgiving – Classes Excused</b>  |
| 12/01/2015 | <i>How infants sense their world: Development of perceptual systems</i><br>Reading: Textbook, Chap 16 (pp. 379 - 397)  |
| 12/03/2015 | Review (3)   |
| 12/08/2015 | <b>Exam 3</b>  |

## Course Assignments

For each topic, there will be lectures and assigned readings. The course requirements are (1) participation in class; (2) homework; (3) quizzes, and (4) three exams.

**Readings:** Reading assignments will be posted on the Blackboard or come from the textbooks. You should do the assigned reading before class.

**Homework:** Homework assignments will be posted on the Blackboard.

**Quizzes:** Quizzes will be given at the beginning of each class (excluding the review and exam days). They are designed to test your understanding of the reading assignment and ensure that you come prepared. Each quiz will account for 1% of the total grade. The quizzes also serve as an attendance record. NO make-up quizzes will be given. If a student misses a quiz, he or she will receive NO point for that quiz.

**Exams:** There will be three exams based on the materials covered in the classroom. The exams will be closed-book, closed-notes, closed-homework, and taken in class. The format is a combination of multiple-choice, short answer, and short essay. There will be NO make-up exam unless there is a documented emergency. Anyone missing an exam without a ASU sanctioned excuse will receive a zero score.

The course grade will be based as follows:

|          |         |
|----------|---------|
| Exam 1   | 20 pts  |
| Exam 2   | 20 pts  |
| Exam 3   | 20 pts  |
| Quizzes  | 20 pts  |
| Homework | 20 pts  |
| TOTAL    | 100 pts |

### Grading Scale

Final grades will be assigned as follows:

|    |                                    |   |        |    |        |
|----|------------------------------------|---|--------|----|--------|
| A+ | >=96%                              | A | 93-95% | A- | 90-92% |
| B+ | 86-89%                             | B | 83-85% | B- | 80-82% |
| C+ | 76-79%                             | C | 70-75% | D  | 60-69% |
| E  | <60%                               |   |        |    |        |
| XE | Failure due to Academic Dishonesty |   |        |    |        |

NO incomplete grades will be given except in cases of serious medical emergencies as evidenced by a documented report.

### Grade Appeals

ASU has formal and informal channels to appeal a grade. If you wish to appeal any grading decisions, please see <http://catalog.asu.edu/appeal>.

### Classroom behavior:

- **Attendance and Participation**

Your presence for the entire class period is mandatory and critical to academic success. The following penalties will be imposed for missing class without a valid and verifiable excuse: Every unexcused absence causes a deduction of 5 points from the final grade. Absences will be excused ONLY if the student has a ASU sanctioned excuse. The excused absences include those resulting from: (1) illness, death in the family or other emergency, or other reasons beyond the student's control; (2) a student's religious beliefs, observances, and practices that are in accord with ACD 304-04 (<http://www.asu.edu/aad/manuals/acd/acd304-04.html>), "Accommodation for Religious Practices", and (3) those university sanctioned events/activities that are in accord with ACD 304-02 (<http://www.asu.edu/aad/manuals/acd/acd304-02.html>), "Missed Classes Due to University-Sanctioned Activities".

- **Late and Missing Assignments**

Make-up exams will NOT be given unless the student provides documentation of the illness or emergency. Anyone missing an exam without a university sanctioned excuse will receive a zero score.

- **Cell Phone and Recording Devices**

Always turn off your cellular phone before you enter our classroom. You are not allowed to receive and make phone calls during class meetings. Other communication devices and recording devices are also strictly prohibited from the classroom.

- **Electronic Communication**

Acceptable use of university computers, internet and electronic communications can be found in the Student Code of Conduct (<http://www.asu.edu/aad/manuals/usi/usi104-01.html>) and in the University's Computer, Internet, and Electronic Communications Policy (<http://www.asu.edu/aad/manuals/acd/acd125.html>).

## University policies:

- **Academic Integrity**

All students at ASU are expected to follow the Student Code of Conduct. Each student must act with honesty and integrity, and must respect the rights of others in carrying out all academic assignments. Plagiarism, and any other form of academic dishonesty that is in violation with the Student Code of Conduct, will not be tolerated. All necessary and appropriate sanctions will be issued to all parties involved with plagiarizing any and all course work. For more information, please see the ASU Student Academic Integrity Policy: <http://provost.asu.edu/academicintegrity>.

- **Nondiscrimination, Anti-Harassment, and Nonretaliation**

Arizona State University is committed to providing the university community, including students, faculty, staff, and guests, with an environment that is free of harassment, discrimination, or retaliation. ASU expressly prohibits harassment, discrimination, and retaliation by employees, students, contractors, or agents of the university based on protected status, including race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, and gender identity. If you believe that you have been subjected to any discrimination, harassment, or retaliation in violation of this policy, or you believe that this policy has been violated, you should report the matter immediately to the Office of Equity and Inclusion (<https://cfo.asu.edu/hr-equityandinclusion>; Phone: (480) 965-5057; Fax: (480) 237-7998; Email: [EqualityandInclusion@mainex1.asu.edu](mailto:EqualityandInclusion@mainex1.asu.edu)).

- **Policy against Threatening Behavior**

Any kind of abusive, disruptive, threatening, or violent behaviour will NOT be tolerated. Students are expected to comply with the ASU policy against threatening behavior, per the *Student Services Manual*, SSM 104-02 (<http://www.asu.edu/aad/manuals/ssm/ssm104-02.html>), "Handling Disruptive, Threatening, or Violent Individuals on Campus". Any violent or threatening conduct by an ASU student in this class will be reported to the ASU Police Department and the Office of the Dean of Students.

- **Disability Accommodations**

To request academic accommodations due to a disability, please contact the ASU Disability Resource Center (<https://eoss.asu.edu/drc>; Phone: (480) 965-1234; Fax: (480) 965-0441; Email: [DRC@asu.edu](mailto:DRC@asu.edu)). This is a very important step as accommodations may be difficult to make retroactively. If you have a letter from their office indicating that you have a disability which requires academic accommodations, in order to assure that you receive your accommodations in a timely manner, please present this documentation to me no later than the end of the first week of the semester so that your needs can be addressed effectively.

- **Religious Accommodations**

Students will not be penalized for missing class due to religious obligations, holidays, observances, and practices that are in accord with ACD 304–04 (<http://www.asu.edu/aad/manuals/acd/acd304-04.html>). Students who need to be absent from class due to the observance of a religious holiday or participate in required religious functions must notify me in writing as far in advance of the holiday/obligation as possible. Students will need to identify the specific holiday or obligatory function to me. The student should contact me to make arrangements for making up tests/assignments within a reasonable time.

- **Military Personnel Statement**

A student who is a member of the National Guard, Reserve, or other U.S. Armed Forces branch and is unable to complete classes because of military activation may request complete or partial administrative unrestricted withdrawals or incompletes depending on the timing of the activation. For information, please see <http://www.asu.edu/aad/manuals/usi/usi201-18.html>.

**Syllabus disclaimer:**

This syllabus is intended to give the student guidance in what may be covered during the semester. Efforts will be made to follow the syllabus as outlined above, but the possibility exists that unforeseen events will make syllabus changes necessary. The instructor reserves the right to make changes to this syllabus and/or course schedule. If changes are made, students will be notified in a timely manner by e-mail or by an announcement in class.

## Textbook

Goldstein, E.B. (2009). *Sensation and Perception (8th Edition)*. Belmont, CA: Wadsworth Publishing.

### List of additional materials

#### Book chapters:

J. Harris, (2014). *Sensation & perception*.

Chapter 12. Recognising faces.

Chapter 13. Perceiving emotions and attractiveness.

Wolfe, J. M., et al. (2012). *Sensation & perception (3rd ed)*.

Chapter 11. Music and Speech Perception

Chapter 15. Spatial Orientation and the Vestibular System

Craig, A. B., et al. (2009). *Developing virtual reality applications: Foundations of effective design*.

Chapter 1. Introduction to Virtual Reality

#### Research articles:

Armbrüster, C., et al. (2008). Depth perception in virtual reality: distance estimations in peri- and extrapersonal space. *Cyberpsychology & Behavior*, 11(1), 9–15.

Bar, M., & Biederman, I. (1998). Subliminal visual priming. *Psychological Science*, 9(6), 464-469.

Beeli, G., et al. (2005). Synaesthesia: When coloured sounds taste sweet. *Nature*, 434, 38.

Castiello, U. et al. (2006). Cross-Modal Interactions between Olfaction and Vision When Grasping. *Chemical Senses*, 31(7) 665-671.

Goodale, M.A. & Milner, A.D. (1992). Separate visual pathways for perception and action. *Trends in Neurosciences*, 15, 20-25.

Kross, E. et al. (2011). Social rejection shares somatosensory representations with physical pain. *Proceedings of the National Academy of Sciences*, 108, 6270–6275 (2011).

Rosenberg, R.S., et al. (2013) Virtual Superheroes: Using Superpowers in Virtual Reality to Encourage Prosocial Behavior. *PLoS ONE*. 8(1): e55003.

# SENSATION AND PERCEPTION



E. BRUCE GOLDSTEIN

*Eighth Edition*

# Brief Contents

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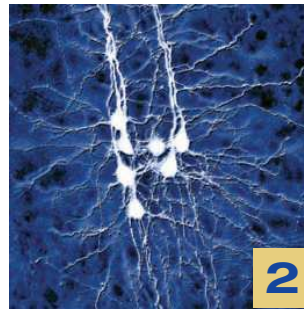
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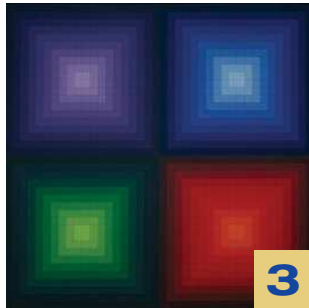
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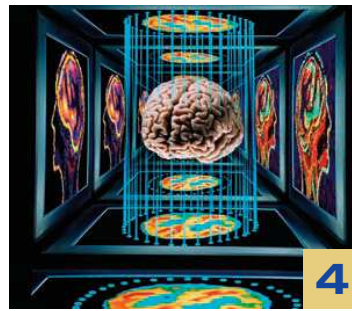
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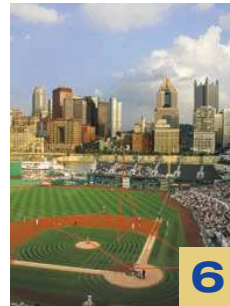
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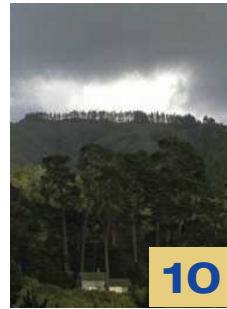
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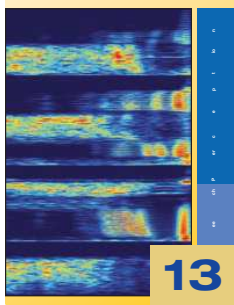
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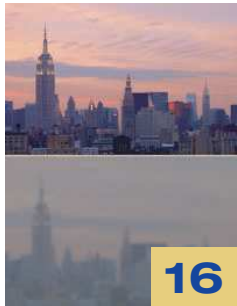
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