Unit 5: Study Guide
Sensation and Perception

We will look at the five senses through physiological and psychological measurements of the absolute and difference receptor thresholds. Emphasis is on sight and sound with less attention given to taste, smell, touch, pain perception, and balance/equilibrium. Coverage includes anatomy and function of the eye and ear, color theories of vision, audition, perceptual acuity, sensory adaptation, and sensory disorders such as deafness and colorblindness.

Since perception involves on the interpretation of information, we focus on the interplay between characteristics of the perceiver and the environment in attending to and organizing experiential data. Students look at how stability is maintained through perceptual constancies; how a a three-dimensional world is constructed from a two-dimensional retinal image; what conditions are required for the perception of motion; and how familiar and unfamiliar patterns are perceived. Of major importance is the role played by experience and culture in perception and the way in which perception can be improved by learning.

CR4: The course provides instruction in sensation and perception
CR15: As relevant to each content area, the course provides instruction in empirically-supported psychological facts, research findings, terminology, associated phenomena, major figures, perspectives, and psychological experiments

Text:	Chapter 5 (pp. 197 – 234)
	Chapter 6 (pp. 237 – 268)
Student Resources:	Flashcards from text **www.worthpublishers.com/myers8e**
Quiz on unit objectives	**www.uni.edu/walsh/jeopardy.html**
	What you see is what you've learned, Forty Studies, pp. 34 – 40
Timeline:	7 days

An emphasis on
- Absolute and Difference Thresholds
- Physical, Physiological, and Psychological variables effecting A.T. and D.T.
- The Receptors for Sight and Sound are emphasized
- Less attention to taste, smell, touch, pain perception, and balance/equilibrium
- Anatomy and function of the eye and ear ((7 – 9 % of multiple choice)

Myers' Psychology Text Reading Guide Questions
Unit 5: Neuroscience, Sensation, and Perception

Pages 197 – 214
1. **Differentiate sensation from perception.**
2. **What is the significance of thresholds to our perceptions?**
3. **How do we process visual information?**

Pages 215 – 234
1. **Physically, how does the ear process sounds?**
2. **Describe Gate-Control Theory.**
3. **How are taste and smell significant to each other?**

Pages 237 – 253
1. **Attune to how our brains perceive things that aren't there and misses things that are.**
2. **What is meant by size, shape, and lightness constancy?**

Unit 5: **Sensation and Perception**

Key Terms

Sensation	**Perception**	**Bottom-Up Processing**
Top-Down Processing	**Absolute Thresholds**	**Signal Detection**
Subliminal Messages	**Transduction**	**Difference Threshold (JND)**
Weber's Law	**Sensory Adaptation**	**Wavelength**
Hue	**Amplitude**	**Intensity**
Pupil	**Iris**	**Lens**
Accommodation	**Retina**	**Acuity**
Nearsightedness	**Farsightedness**	**Rods**
Cones	**Ganglion Cells**	**Bipolar Cells**
Optic Nerve	**Blindspot**	**Fovea**
Feature Detector	**Parallel Processing**	**Dichromats**
Color Constancy	**Color Afterimage**	**Movement After Effects (MAE's)**
Audition	**Frequency Theory**	**Pitch**
Middle Ear	**Inner Ear**	**Cochlea**
Semicircular Canals	**Basilar Membrane**	**Place Theory**
Conduction Hearing Loss	**Sensorineural Hearing Loss**	**Pain**
Homunculus(Senses)	**Gate Control Theory(Pain)**	**Sensory Interaction**
Taste receptors(bitter, sour, sweet, salty, umami)		**Olfactory**
Anosmia	**Kinesthesis**	**Vestibular Sense**
Selective Attention	**Change Blindness**	**Visual Capture**
Figure-Ground	**Depth Perception**	**Visual Cliff**
Binocular Cues	**Monocular Cues**	**Retinal Disparity**
Convergence	**Linear Perspective**	**Light and Shadow**
Phi Phenomenon	**Contrast Effects**	**Shape Constancy**
Size Constancy	**Brightness Constancy**	**Muller-Lyer Illusion**
Interposition	**Motion Parallax**	**Relative Clarity**
Texture Gradient	**Relative Height(elevation)**	**Relative Size**
Size-Distance Cues	**Reversible Figures**	**Ponzo Illusion**
Moon Illusion	**Perceptual Adaptation**	**Perceptual Set**
Schemas	**ESP**	**Telepathy**
Clairvoyance	**The Ames Room**	**Necker Cube**
Additive Color	**Opponent Process Theory**	
Young-Helmholtz Trichromatic Theory		**Monochromats Subtractive Color**
Gestalt (similarity, proximity, grouping, continuity, connectedness, closure)		

Key People

Wilhelm Wundt	**___**	**Edward Titchener**	**___**	**Ernst Weber**	**___**
Ulrich Neisser	**___**	**Hermann von Helmoltz***	**___**	**Ewald Hering***	**___**
		Eleanor Gibson & Richard Walk*	**___**		

A. Me, notice a difference? It's all relative, really.
B. My Young friend and I preferred red, green, and blue cones
C. I found blue-yellow, red-green, and black-white to be quite worthy opponents
D. CLICK-click. Don't forget that our other senses can experience illusions also
E. I know you have good depth perception, but crawl across baby cliff
F. I use *introspection* to appreciate the *structure* of how the mind senses things
G. With so many things to pay attention to we may have *inattentional blindness*

Learning Outcomes (from the Myers text - Chapter 5: Sensation)

1. Contrast sensation and perception, and explain the difference between bottom-up and top-down processing.
2. Distinguish between absolute and difference thresholds, and discuss whether we can sense stimuli below our absolute thresholds and be influenced by them.
3. Describe sensory adaptation, and explain how we benefit from being unaware of unchanging stimuli.
4. Define *transduction*, and specify the form of energy our visual system converts into the neural messages our brain can interpret.
5. Describe the major structures of the eye, and explain how they guide an incoming ray of light toward the eye's receptor cells.
6. Contrast the two types of receptor cells in the retina, and describe the retina's reaction to light.
7. Discuss the different levels of processing that occur as information travels from the retina to the brain's cortex.
8. Define *parallel processing*, and discuss its role in visual information processing.
9. Explain how the Young-Helmoltz and opponent-process theories help us understand color vision.
10. Explain the importance of color constancy.
11. Describe the pressure waves we experience as sound.
12. Describe the three regions of the ear, and outline the series of events that triggers the electrical impulses sent to the brain.
13. Contrast place and frequency theories, and explain how they help us to understand pitch perception.
14. Describe how we pinpoint sounds.
15. Contrast the two types of hearing loss, and describe some of their causes.
16. Describe how cochlear implants function, and explain why deaf culture advocates object to these devices.
17. Describe the sense of touch.
18. State the purpose of pain, and describe the biopsychosocial approach to pain.
19. Describe the sense of taste, and explain the principle of sensory interaction.
20. Describe the sense of smell, and explain why specific odors so easily trigger memories.
21. Distinguish between kinesthesis and the vestibular sense.

Learning Outcomes **(from the Myers text - Chapter 6: Perception)**

1. Describe the interplay between attention and perception.
2. Explain how illusions help us to understand some of the ways we organize stimuli into meaningful perceptions.
3. Describe Gestalt psychology's contribution to our understanding of perception.
4. Explain the figure-ground relationship, and identify principles of perceptual grouping in form perception.
5. Explain the importance of depth perception, and discuss the contribution of visual cliff research to our understanding of this.
6. Describe two binocular cues for perceiving depth, and explain how they help the brain to compute distance.
7. Explain how monocular cures differ from binocular cues, and describe several monocular cues for perceiving depth.
8. State the basic assumption we make in our perceptions of motion, and explain how these perceptions can be deceiving.
9. Explain the importance of perceptual constancy.
10. Describe the shape and size constancies, and explain how our expectations about perceived size and distance contribute to some visual illusions.
11. Discuss lightness constancy and its similarity to color constancy.
12. Describe the contributions of restored-vision and sensory deprivation research to our understanding of the nature-nurture interplay in our perceptions.
13. Explain how the research on distorting goggles increases our understanding of the adaptability of perception.
14. Define *perceptual set,* and explain how it influences what we do or do not perceive.
15. Explain why the same stimulus can evoke different perceptions in different contexts.
16. Describe the role human factors psychologists play in creating user-friendly machines and work settings.
17. Identify the three most testable forms of ESP, and explain why most research psychologists remain skeptical of ESP claims.