

APPLIED SENSORY AND CONSUMER SCIENCE

FOUNDATIONS OF SENSORY SCIENCE

This is the first of four courses in the *Applied Sensory and Consumer Science Certificate Program*.

COURSE OBJECTIVES

- Provide a broad overview of sensory science, how it is defined, uses of research and general applications.
- Be aware of how interactions between the testing environment and human subjects will affect the outcome of the tests. Examples of these factors are serving order of samples to be tested, the lighting in the test room, or the temperature of the samples.
- Understand how the external stimulus is transmitted in the brain to cognition and understanding, and how this transmission can cause perceived sensory biases.
- Get an overview of the taste mechanisms and how the primary tastes are transmitted to the brain.
- Understand the mechanisms of vision, hearing and their pathways to the brain.
- Understand the mechanisms of odor and tactile sensations and how they affect sensory perception.
- Understand the mechanisms of discrimination testing and the effects of Thurstonian modeling.
- Understand the theories of Signal Detection and some of the tests used to measure it
- Get an overview of the most common difference tests and how they are applied.
- Review each lesson and review new articles.

ASSIGNMENTS

These will be listed in the Assignments section and at the end of every Lesson. They will vary throughout the course, but most of them involve writing observations or answering questions and uploading them to the course website.

CLASS PARTICIPATION FORUM

Participation in the Class Participation Forum is part of your grade and the amount and quality of your postings will count for 10 percent of your grade.



4 UNITS ACADEMIC CREDIT

COURSE SYLLABUS AND OUTLINE

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HOW THE COURSE WILL WORK

This is a synchronous course, which means that all students will be proceeding through the course at the same time. The course consists of online course material, industry specific articles, assignments, in-lab home exercises, discussion forums, five quizzes, and a final exam.

The time it takes you to complete each lesson will depend on you - each one is anywhere from 15-30 pages long online. Plus, you will spend time on your assignments and interacting with others in the Class Participation Forum.

The lessons will be released two weeks in advance to provide a degree of flexibility with student's work/travel/family schedules. The assignments will be due at the beginning of the following week.

READINGS

The articles assigned for you to read appear at the end of each lesson. They are set up as PDF files. You will need Adobe Acrobat Reader 6x to be able to read the file. Click on the article title to open it. You may choose to read the articles online, save them to your computer hard drive, or print them. Except for Lesson 10, you will not be examined on their content. They have been chosen for several reasons: to expand on topics in the lesson; to add relevant material; to represent differing opinions on the topic; to represent different researchers in the field; to be used as an assignment for that lesson; and to provide input for the Course Participation Forum.

QUIZZES

There are five quizzes, each covering two lessons, with the exception of Quiz 5, which will cover only Lesson 9. The quizzes will be administered online, and are scored at the time of submission.

FINAL EXAM

Lesson 10 is a summary of Lessons 1 through 9, and therefore, only Lesson 10, along with the assigned reading materials in Lesson 10, will be covered in the final exam. The final exam will be a proctored exam that will be given online. Here are the parameters for the proctoring process:

- You will take the final exam online without the benefit of books, course content, or reading articles.
- You must identify a proctor who is in a supervisory position. This person must be willing to sign a form (provided by UC Davis Extension) that will indicate that you took the exam without the benefit of text, course material, or any other materials.
- The proctor will sign the form and then send in the signed form.
- You will receive more information about this process later in the course.

WHAT YOU NEED FOR THE COURSE

- All reading materials will be supplied online. No textbooks required.
- You will be mailed a test kit for two of the lessons (2 and 3) with instructions.

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Grading Criteria

Five Quizzes: 200 points
(40 points each)

Ten Assignments: 80 points
(8 points each)

Class Participation: 20 points
Final Exam: 100 points

Total: 400 points

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COURSE OUTLINE

- Lesson 1**
Introduction to
Sensory Science
- Introduction to Sensory Science - definition, history, the senses, methods, and differences from other research methods.
 - Basic Sensory Research (medical, categories, nutrition, communication between processors).
 - Roles of Sensory Science in marketing, product development, quality assurance, etc.

- Lesson 2**
The Senses:
Taste-Gustation
- Gustation (Taste) - primary tastes, anatomy, physiology, and chemistry of taste. Transducer and neural effects including receptor types, stimulus-receptor transducer mechanisms, neural channels, neural codes, and cortical cell types and mechanisms; taste modifiers; adaptation of taste.

- Lesson 3**
The Senses:
Olfaction and
Tactile
- Olfaction (Smell) - anatomy, physiology and chemistry of smell, transduction, adaptation, classification systems, illusions.
 - Tactile (Touch) - tactile sensations, temperature, mouth feel, pungency, heat, trigeminal pain.

- Lesson 4**
The Senses:
Vision and
Audition
- Vision (Seeing) - eyes: design and anatomy; visual organization including rods, cones, detection, contrast effects, depth, color perception, after effects, adjustments to distorted vision.
 - Audition (Hearing) - mechanisms, anatomy, adaptation, delayed feedback, sound location.

- Lesson 5**
The Senses and
the Brain
- Tricks the senses may play, senses and the brain, information overload, attention and adaptation, context, illusions.
 - The Mind - how information is processed, analytical and affective components of sensation.
 - Humans as Sensory Instruments - physiological and psychological biases - what can we do?
 - Theory of Sensory Measurement - response bias, psychophysics.

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Technical Requirements:

You will need the following as a minimum in order to easily access the course website:

Operating System: Windows XP or higher.

Software and Browsers:

Access to Word, Excel and the most current version of Adobe Acrobat Reader to open, save, or print the lessons and reading articles. Your browser should be the current release of either Mozilla Firefox or Microsoft Internet Explorer.

Internet Connection: We are assuming that most students will be taking the class from work and that they will have a high-speed internet connection. We recommend an internet access account with an ISDN, DSL, cable modem or higher connection speed.

Email: You will need a valid email account to take our online courses.

COURSE OUTLINE CONTINUED

- Lesson 6**
Scaling
- Level of Measurements
 - Purposes of scaling, methods of scaling
 - Ranking
 - What is happening cognitively when we do scaling?
 - What is hedonic scaling
 - Acceptance testing

- Lesson 7**
Discrimination Theory and Testing Methods
- Why some people do better (central vs. peripheral processing)
 - Thurstonian Modeling
 - Memory Effects
 - Creating more sensitive tests
 - Guessing Models for Discrimination Theory

- Lesson 8**
Signal Detection and The R-Index
- Signal Detection Theory
 - John Brown's R-index

- Lesson 9**
Labs and Procedures
- The Sensory Evaluation Laboratory - environment, test protocol, instructions to panel, palate cleansing, swallowing and expectoration, randomization and labeling, etc.
 - Virtual Tour of evaluation booths
 - Testing Procedures - strategy, staffing, experimental design options, use of human subjects, selection and training, screening tests, performance assessment

- Lesson 10**
Course Summary
- A summary of lessons 1 through 9

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