

**University of Puerto Rico
Mayagüez Campus
Food Science and Technology Program**

General Information:

Course: CITA 6016
Course Title: Sensory Properties of Food
Credits: 3

Course description:

To relate students with the fundamentals of qualitative and quantitative aspects of food sensory analysis.

Prerequisites:

None really, but AGRO 5005 or ESMA 4002 or ININ 4010 or ININ 4012 is desirable. (Basically, you need experience in statistical data analysis using ANOVA.) Willingness to view food from a different perspective.

Objectives:

By the end of the course the students will be able to perform the following tasks.

1. Distinguish between qualitative and quantitative aspects of sensory analysis.
2. Recognize the desirable sensory properties of a specific food.
3. Identify proper qualitative and quantitative tools to measure sensory properties of food.
4. Plan and execute sensory experiments using qualitative and quantitative tests to measure property of interest.
5. Apply previous knowledge of statistics to the analysis of collected sensory data and experimental design.
6. Compare data from qualitative and quantitative tests of the same variable and explain similitude and differences.

Textbook:

Sensory Evaluation Techniques, 3rd Edition, 1999
Morten Mielgaard, Gail Vance Civille and B. Thomas Carr
CRC Press, Inc.

(CITA will make arrangements to get the book. An extra copy is also available at the CITA office).

Other references:

- New Directions for Product Testing and Sensory Analysis of Food, 1985. Howard R. Moskowitz. Food & Nutrition Press, Inc.
- Basic Sensory Methods for Food Evaluation, 1989. Watts, B.M., Ylimaki, G.L., Jeffery, L.E., and Elias, L.G. International Development Research Centre.
- Food Properties Handbook, 1995. Shafiur Rahman. CRC Press
- Physical Properties of Foods and Food Processing Systems, 1996. Lewis, Michael J. Wood head Publishing Limited
- Consumer Sensory Testing for Product Development, 1998. Anna V.A. Resurrection. Aspen Publishers, Inc.
- Food Texture: Measurement and Perception, 1999. Andrew J. Rosenthal. Aspen Publishers, Inc.
- Guidelines for Sensory Analysis in Food Product Development and Quality Control, 2nd Edition, 2000. R.P. Carpenter, D.H. Lyon and T.A. Hesdell.
- Sensory Evaluation Practices, 3rd Edition, 2004. Herbert Stone and Joel L. Sidel. Elsevier Academic Press.

Instructional Strategy:

The course consists of one 2-hour lecture plus one 4-hour lab per week. The course is designed to provide a practical approach to the topic with an emphasis on problem solving and methodology. Lectures will focus on the theoretical aspects of qualitative tests of sensory as well as data collection and analysis. Laboratory time will be dedicated to the use of specialized equipment and development of course projects. Questions and comments are encouraged at any time. This includes before, during or after lectures or labs. There are no stupid questions.

Conference:	P-205	Monday 6:00 to 7:40 PM
Lab:	P-104	Friday 7:30 to 11:10 A.M.

Course requirements:

1. There will be three exams including the final exam. Exams could be in –class or taken-home as the topic allows. Take home tests will follow an honor code. Unless otherwise specified in the exam, you will be allowed to consult with the instructor only. The final solution must come from you. Individuals from whom it is suspected to have copied will be severely penalized. Due to the nature of the course, exams will be cumulative. More emphasis will be given, however, to recent, untested material. Formats and other specifics of the exams will be reviewed as needed.
2. Three group projects are required (i.e., sensory panels on aroma, color, texture). Groups are expected to work during lab periods unless otherwise instructed.

From each project, students will perform a group presentation and submit individual reports.

- a. Group project reports should last no more than ten minutes and include product description, identity of property of interest, qualitative and quantitative tests performed, and analysis of results and conclusions.
 - b. Individual project reports should be typed and must include all those items covered in the group report plus collected data and data analysis. Individual reports must also include sections on problems found and areas of improvement.
3. An individual project is also required. For this project, student will visit a food processing plant to study their current usage of sensory analysis and a critique on how to improve it. If the company does not use sensory, the students report will include a proposal for adoption of sensory analysis. This report should focus on the methodology with minor emphasis on facilities and controls. The report and presentation for this project is due on the day of the final examination.
 4. Lab reports are also required, but not from all labs exercises. More information will be given as appropriate. Lab reports are due the following the exercise. No late work will be accepted.

Note: There will be no make-up for unexcused absences. Project reports must be typed. Submitted lab work and exams can be hand written, however, if I can not read it I will not grade it. Make certain your work is legible, clean and logically ordered. Include all your assumptions and references, as appropriate.

Attendance:

Attendance is expected to both lectures and labs. If you need to be absent please notify the instructor before the meeting time.

Instructor Information:

Instructor: Fernando Perez-Munoz
 Office Hours: Not applicable
 Call (787-819-7109) or
 Send e-mail (fernando.perez-munoz@hp.com)

Grading and evaluation:

Labs	10%
Exam 1	10%
Exam 2	10%
Final Exam	10%
Group Project 1	
Presentation	5%
Report	10%

Group Project 2	
Presentation	5%
Report	10%
Group Project 3	
Presentation	5%
Report	10%
Individual Project	
Presentation	5%
Report	10%

Laboratory:

Date	Activity	Lab Report	Contact hours
Aug 20	Experiencing color: Munsell book of colors, HunterLab colorimeter, spectrophotometer on grape juice solutions (0,1,2,3,4,5,10,25,60 and 100%)	Organized Data Sheet with table and graphs	4
Aug 27	Triangle Test vs. A-not A on apple juice Effect of light color on jelly bean identification	Report on lab activities and explain findings	4
Sept 3	Group Project 1: Color	Project Report	4
Sept 10	Group Project 2: Color	Project Report	4
Sept 17	Kramer Shear- compare results of various brands at different temperatures Viscometer- Generate viscosity curves for honey and catsup at various temperatures Texture Analyzer- Generate 2-cycle graphs of samples (peanut butter, "salchichon", hard candy, cheddar cheese, soda crackers, bread and honey) to determine hardness, brittleness, Cohesiveness, adhesiveness	Organized Data Sheet with tables and graphs	4
Sept 24	Continue from previous week	See above.	4
Oct 1	Line scales on shelf life studies: Frozen Pound Cake (0,2 and 4wks of storage) Ranking test on greasiness: Hand Lotions (3 brands)	Report on lab activities and explain findings	4
Oct 8	Group Project 2: Texture	Project Report	4
Oct 15	Group Project 2: Texture	Project Report	4
Oct 22	DEMO: use of GC and HPLC for aroma component identification Difference of taste and aroma: cinnamon sugar	N/A	4

Oct 29	Category scales on saltiness thresholds: salt solutions Quality control application using line scales: chocolate milk Sugar-to-acid ratio: Sensory vs. pH meter vs. refractometer	Shared data. Present Tabulated data with appropriate graphs.	4
Nov 5	What's this sample? Describe samples all sensory properties and supplement with appropriate quantitative data.	Report on lab activities and explain findings	4
Nov 12	Group Project 3: Taste and Aroma	Project Report	4
Nov 19	Group Project 3: Taste and Aroma	Project Report	4
Total Contact Hours			56

12. Course Outline and Schedule:

Date	Topic	Reading	Contact Hours
Aug 16	First day Introduction & The seven W's on sensory	1-6	1:40
Aug 23	Sensory Attributes: Appearance & Vision	8-21	1:40
Aug 30	Measuring color: systems and instruments Measuring human responses & thresholds	44-56; 124-129	1:40
Sept 6	Overall difference test: Triangle test Two-of-five test Duo-trio test	60-74	1:40
Sept 13	Simple difference test "A" –not "A" test Difference from control test Lab Group Project 1 Presentation	74-88	1:40
Sept 20	Exam 1		1:40
Sept 27	Consistency/ texture, touch Noise & hearing		1:40
Oct 4	Test Controls: Test room Product	23-36	1:40
Oct 11	Panelists Factors affecting sensory evaluation	135-150 37-42	1:40
Oct 18	Lab Group Project 2 Presentation & Exam 2		1:40
Oct 25	Flavor & gestation Odor /aroma/fragrance & olfaction		1:40
Nov 1	Sequential & similarity tests	89-98	1:40

Nov 8	Attribute Difference tests: Directional differences test Ranking test	100-122	
Nov 15	Descriptive test	187-199	1:40
Nov 29	Affective (hedonic) test Lab Group Project 3 Presentation	201-222	1:40
Total contact hours			25