

# **SENSORY EVALUATION OF FOOD AND WINE: FS 422/522 (3 cr) Spring 2013**

Lectures: Tuesday/Thursday 12:00-1:15, Location: EME B46

**Instructor:** Dr. Carolyn Ross

Office hours: 9:00-10:30 Monday and Wednesday, 2:00-3:30 Thursday or by appointment

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**Campus Resources:** Library, Writing Center

**Course Abstract:** This course will provide an introduction to the theory, principles and applications of sensory evaluation techniques for the evaluation of appearance, aroma, flavor and texture of foods and wine. Students will learn the basic psychological and physiological processes underlying sensory analysis, sensory testing methodologies and the basic principles of flavor perception and chemistry.

**Student Learning Outcomes:** To develop an understanding of the basic psychology and physiology of the senses and the basic sensory characteristics comprising food and wine quality.

- Describe sensory testing methodologies and outline capabilities and limitations of these methods.
- Design appropriate sensory tests, statistically analyze test data and draw meaningful conclusions from the results.
- Critically evaluate sensory research as presented in the scientific literature.
- Provide experience in evaluating the sensory properties of foods and wine.

## **Required Textbooks:**

Meilgaard, M., Civille, G., and Carr, B. 2007. Sensory Evaluation Techniques, Fourth Ed. CRC Press, New York. ISBN: 0-8493-3839-5. (available at Crimson and Grey)

## **Reference Textbooks:**

Lawless, H. and Heymann, H. 1999. Sensory Evaluation of Food: Principles and Practices. Kluwer Academic/Plenum Publishers, New York.

O'Mahony, M. 1996. Sensory Evaluation of Food: Statistical Methods and Procedures. Marcel Dekker Inc., New York.

Stone, H. and Sidel, J.L. 2004. Sensory Evaluation Practices. Academic Press, Inc., New York.

**Pre-Requisite Courses:** Stat 212: Introductory Statistical Methods; FS 110  
(Introduction to Food Science) or VE 113 (Introduction to  
Vines and Wines)

<b>Topic</b>	<b>Number Lectures</b>	<b>Tentative Dates</b>
Course introduction	1	Jan. 8
Introduction to sensory evaluation, Use of human subjects	1	Jan. 10
Sensory perception (physiology)	2	Jan 15, 17, 22
Factors affecting sensory verdicts	1	Jan. 24
Wine sensory analysis	1	Jan. 29
Measurement	2	Jan 31, Feb 5
Individual differences, PROP, cultural,	1	Feb. 7
Design of a sensory evaluation program; exam review	1	Feb. 12
<b>EXAM 1</b>	1	Feb. 14
Experimental design and control	2	Feb. 19, 21
Sensory tests: Overall difference	2	Feb. 26, 28
Sensory tests: Attribute difference, time intensity	1	March 5
Beer sensory, shelf life	1	March 7
<b>Spring Break</b>		March 11-15
Sensory tests: Descriptive analysis, include selection and training of panelists	2	March 19, 21
Food colour and texture	2	March 26, 28
Sensory Tests: Threshold Tests	1	April 2, Homework assignment due
<b>EXAM 2</b>	1	April 4
Sensory tests: Affective	2	April 9, 11
Product Development, Group Presentations	1	April 16
Product Development, Group Presentations	1	April 18
Focus Groups, Group Presentations	1	April 23
Focus groups and review Reports are due (in class)	1	April 25

<b>FINAL EXAM</b>	May 2 (Thursday) 8:00-10:00 am
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**Course Outline:** The course will be composed of lectures, two examinations, one required study participation, one homework assignment, one group project and a comprehensive final.

**Grade Breakdown:** Course grades will be based on the components below. The grading rubric used for evaluation in on pg. 8 of the syllabus.

Examination 1	100
Examination 2	100
Homework Assignment	25
Final Exam	200
Attendance and participation	25
Group Project and Presentation	<u>150</u>
	<b>600 points</b>
Research Project	250
Research Project Presentation	25
Research discussions	<u>75</u>
	<b>950 points (FSHN 522)</b>

<u>Grade</u>	<u>% of Total Points</u>
A	>93.0
A-	90.0 - 92.9
B+	87.0 - 89.9
B	83.0 - 86.9
B-	80.0 - 82.9
C+	77.0 - 79.9
C	73.0 - 76.9
C-	70.0 - 72.9
D+	67.0 - 69.9
D	60.0 - 66.9
F	<59.9

**Evidence of grading strategy and student learning outcomes:**

You are evaluated based on your performance on several different types of assignments in this class. You will be tested on your knowledge of the material, your application of the concepts and your understanding and interpretation of data. You will also be required to review an already published journal article, thus applying the knowledge gained in this class.

**Instructor Specific Expectations:**

**Attendance Policies:** Students are strongly encouraged to participate in lecture through (a) asking of questions and/or (b) providing ideas/thoughts in response to questions from the instructor. A total of 25 points will be awarded for those students who frequently participate (>75% of lectures), with fewer points assigned to those students who infrequently participate.

In accordance with Academic Regulation 73, absences impede a student's academic progress and should be avoided. Those students who need to miss a lecture for university-sponsored activities such as field trips, judging teams, sports, etc. should obtain an official Class Absence Request form. These forms are available from the faculty or staff member supervising the off-campus activity.

Attendance will be required for all lectures but a maximum of three (3) unexcused absences will be allowed without penalty. **Final course grades** for those students who obtain  $\geq 4$  unexcused absences will be lowered by a single grade (*i.e.*, an earned A- will be lowered to a B-). Scheduling conflicts with other classes or other non-approved activities will be considered to be unexcused absences.

## **Instructor Expectations:**

### **Instructional Methods:**

This class is a combination of lectures and class activities. Class participation is part of your grade.

### **Academic Etiquette:**

Avoid conversations with fellow students, do not read a newspaper, and turn off cellular phones during class.

### **Study help:**

As everyone has their own learning style, many differs in how to study for examinations. To help students with their studying, a professor at the State University of New York (Buffalo campus) has designed an excellent website titled, "How to study: A brief guide." The website contains information from how to take notes in lecture to studying ideas for examinations. If your grades are not what you would likethem to be, see if there is information on this professor's website that could be useful:

<http://www/cse.buffalo.edu/~rapaport/howtostudy.html>

### **Student Policies:**

Students are encouraged to consult the WSU Student Handbook for information related to student policies and procedures

(<https://saed.wsu.edu/Content/Documents/saed/student%20handbook%200601092.pdf>).

### Students with Disabilities

(WSU students) Students with Disabilities: Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, please visit the Access Center. All accommodations MUST be approved through the Access Center (Washington Building,

Room 217). Please stop by or call 509-335-3417 to make an appointment with an Access Advisor. (<http://drc.wsu.edu/default.asp?PageID=1799>)

#### (UI students) Disability Support Services Reasonable Accommodations

Statement: Reasonable accommodations are available for students who have documented temporary or permanent disabilities. Please notify your instructor(s) during the first week of class regarding accommodation(s) needed for the course. All accommodations must be approved through Disability Support Services located in the Idaho Commons Building, Room 306; phone 885-6307; email at [dss@uidaho.edu](mailto:dss@uidaho.edu); website at [www.access.uidaho.edu](http://www.access.uidaho.edu) or [www.webs.uidaho.edu/taap](http://www.webs.uidaho.edu/taap).

#### Academic Regulations & Student Affairs Policy Regarding Absences

It is the policy of the WSU Office of Student Affairs to assist students during crisis situations where they are unable to notify their instructors prior to a hurried emergency departure. The Office of Student Affairs will send professors an “Emergency Notification” in those instances where the student will be away for more than two days. The Office of Student Affairs will not issue notifications retroactively or for “one-day emergencies.” Attendance will only impact earned grade if student does not participate in lecture.

#### Academic Dishonesty/Etiquette/Safety:

Academic integrity will be strongly enforced in this course. Cases of academic dishonesty shall be processed in accordance with academic integrity policies as stated in the *Washington State University Student Handbook, Faculty Manual* (WSU students) or the *University of Idaho Faculty Staff Handbook* (UI students).

#### **Safety:**

Washington State University is committed to maintaining a safe environment for its faculty, staff, and students. Safety is the responsibility of every member of the campus community and individuals should know the appropriate actions to take when an emergency arises. In support of our commitment to the safety of the campus community the University has developed a Campus Safety Plan (<http://safetyplan.wsu.edu>). It is highly recommended that you visit this web site as well as the University emergency management web site (<http://oem.wsu.edu/emergencies>) to become familiar with the information provided. Other safety information can be accessed through the WSU ALERT site (<http://alert.wsu.edu>).

#### **Plagiarism:**

**WSU's Academic Integrity Statement\*** "As an institution of higher education, Washington State University is committed to principles of truth and academic honesty. All members of the University community share the responsibility for maintaining and supporting these principles. When a student enrolls in Washington State University, the student assumes an obligation to pursue academic endeavors in a manner consistent with the standards of academic integrity adopted by the University. To maintain the academic integrity of the community, the University cannot tolerate acts of academic dishonesty including any forms of cheating, plagiarism, or fabrication. Washington State University

reserves the right and the power to discipline or to exclude students who engage in academic dishonesty." \*

Academic Integrity Statement and link to WSU's policy:

[www.conduct.wsu.edu/default.asp?PageID=343](http://www.conduct.wsu.edu/default.asp?PageID=343)

[www.wsulibs.wsu.edu/plagiarism/main.html](http://www.wsulibs.wsu.edu/plagiarism/main.html)

Plagiarism is defined by Webster's Dictionary as, "*to steal and pass off the ideas or words of another as one's own.*" There are two general forms of plagiarism:

- (a) Unintentional: the use of other writers' words, phrases, sentences, paragraphs as though they were your own *without understanding* the need to cite the original source. Unintentional plagiarism normally occurs when the individual does not understand the conventions of scientific writing and the need to cite sources of information.
- (b) Intentional: the use of another writers' work and claiming it as your own. Intentional plagiarism includes *knowingly copying* or incorporating sections of books, articles, or other sources into your work without citation.

To evade plagiarism, you must acknowledge the source of information. In scientific writing, this can be performed in the text of your work through the use of surnames of authors and the year of publication (*e.g.*, Edwards et al., 2003) or by using numbers enclosed by parentheses which correspond to specific citations in the reference section. In addition to employing citations in the text, plagiarism can be avoided by applying special techniques when writing about information obtained from a source:

- (a) Paraphrase: rewording information in which you accurately present the main ideas from the source but do so using your own organization, words, and sentence structures.
  - (b) Summary: a concise statement of the main idea from a section within a source.
  - (c) Direct quotation: use of quotes surrounding the passage written by another author.
- In general, paraphrasing (a) and the use of summary statements (b) are very common techniques used in scientific writing. Use of quotations (c) in scientific writing is rare and should be avoided.

Plagiarism is dishonest and is **not** tolerated. If caught using all or portions of a current or former classmate's writing or other sources of information (*e.g.*, purchase a paper), a grade of "zero" will be given for the exercise. Additional penalties for plagiarism are possible as outlined in the *Washington State University Student Handbook*.

## **Assignments:**

### **1. Homework Assignments:**

There will be one homework assignment during the course. This homework will involve statistical analysis of sensory data. A due date for this assignment will be specified in class.

### **2. Group project and Presentation (422 students)**

You will form a group with 3 others, yielding a group of 4 individuals. Each group will select a different food product – this needs to be a unique food product. The group’s selection of the food product needs to be cleared by the instructor by **February 28 2013**.

The group will need to select at least 4 modifications/versions of this product and perform a literature review on the product, including any previous sensory work that has been performed. From this literature review, the group will generate a list of sensory attributes that need to be evaluated in this particular project. For each sensory attribute, a standard must be developed. Once the group has developed standards and agreed on the intensity of each standard, the four products will be profiled. The data from this profile will then be analyzed using appropriate sensory techniques and a report generated. This project will also be presented in class.

Final paper – this should be written as a journal article found in Journal of Food Science (I will give you an example). Need to include an 1) introduction (including your study objective and hypotheses), 2) materials and methods (including the composition of your panel, your training regime, data collection and analysis), 3) results and discussion (figures or tables of your results, along with discussion and interpretation in context with other literature), 4) conclusions of your study, and 5) references cited. You need to cite at least five peer-reviewed journal articles. In addition to these, if you use websites, they must end in either .gov or .edu.

The final presentation will be 15 min, in-class, followed by questions. All members of the group must contribute to the final presentation.

This project will not only expose you to running a trained panel, it will give you experience with group work and delivering presentations. A grade will be assigned to the group. Along with the final report, you will also include a group assessment of everyone’s contributions (example is shown below). Individual grades for the group project will be weighted using the submitted table. This percentage will be converted to a score out of **20 pts** to be added to the total for the project.

<b>Student Name</b>	<b>Contribution to Project (%)</b>	<b>Signature of student</b>
Student A	25%	
Student B	20%	
Student C	25%	
Student D	30%	

Group Presentation: 30 pts, starting **mid-April (your group will be randomly assigned a date)**

Written Report: 100 pts, Due: **April 26, 2013**

**150 points TOTAL**

## **ADDITIONAL ASSIGNMENTS (FSHN 522 ONLY):**

### **1. Additional exam questions:**

These are more in-depth questions that FSHN 522 students are expected to answer on the exam.

### **2. Discussion of current research:**

Time will be set aside every 2 weeks for the graduate students enrolled in 522 to discuss current research articles with the instructor. This will be time outside of lecture and laboratory time. At the beginning of the semester, a common time will be agreed upon by the instructor and the students. At each meeting, two articles will be discussed with a student leader selected at the start of each discussion session. Participation both as a leader and as a participant is **REQUIRED**.

### **3. 522 Research Project (this is in lieu of the 422 group project):**

The graduate students will be divided into teams of 2-3 students. Each group will be presented with a sensory evaluation problem. From this, the group will need to develop an approach to answer this research question. You will need to perform a literature search to what has been done in this area, develop hypotheses, research methodology and then conduct a sensory panel(s) to answer the research question. Following the sensory panel, you will then analyze results and synthesize these results with previous research in the area. As a group, you will prepare a report in the form of a peer-reviewed research article to be submitted to Food Quality and Preference. The group will also deliver a presentation to the class.

As with the 422 project, the group will need to assign the % effort.

Grade breakdown for the project:

200 pts – group paper

25 pts – presentation

50 pts - contribution

**In Food Science**

*Washington State University*

1) Identifies, summarizes, and defines the **issue or problem** at hand.

**Emerging** \_\_\_\_\_ **Developing** \_\_\_\_\_ **Mastering**

Low 1 2 3 4 5 6

High

Overlooks or oversimplifies the complexity of the issue or problem.  Identifies a different and inappropriate issue or problem.	Clearly identifies and summarizes the issue or problem at hand.  <b>I</b> dentifies the embedded or implicit aspects, addressing their relationships.
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2) Clearly states **purposes, objectives, or hypotheses**.

**Emerging** \_\_\_\_\_ **Developing** \_\_\_\_\_ **Mastering**

Low 1 2 3 4 5 6

High

Does not clearly or concisely state the purposes, objectives, or hypotheses.  Does not adequately examine or justify the purposes, objectives, or hypotheses.	Clearly and concisely states purposes, objectives, or hypotheses.  Adequately examines and justifies the purpose, objectives, or hypotheses.
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3) Explains **designs and/or methods** used to accomplish objectives or test hypotheses.

**Emerging** \_\_\_\_\_ **Developing** \_\_\_\_\_ **Mastering**

Low 1 2 3 4 5 6

High

Does not clearly identify or explain the appropriateness of the methods or design.  Does not clearly identify or explain how the methods or design relate to purposes, objectives, or hypotheses.  Does not adequately describe test methodology.	Clearly identifies and explains the appropriateness of the methods or design.  Clearly identifies and explains how methods or design relate to purposes, objectives, or hypotheses.  Adequately describes test methodology.
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4) Presents **observations and results** in a complete, logical and clear fashion.

**Emerging** \_\_\_\_\_ **Developing** \_\_\_\_\_ **Mastering**

Low      1                                      2                                      3                                      4                                      5                                      6

High

<p>Does not present observations or results.</p> <p>Presentation of observations/results is unorganized and difficult to follow.</p> <p>Images, graphics, and tables do not accurately depict observations/results, are poorly placed, lack necessary identification, or are not consistent with the specified purposes, objectives, or hypotheses.</p> <p>Necessary calculations used in exercise/experiment are not included, or are used incorrectly.</p> <p>Fails to summarize background literature supporting the issue or problem.</p>	<p>Presents observations or results.</p> <p>Presentation of observations/results is logically organized and arranged.</p> <p>Images, graphics, and tables accurately depict observations/results, are carefully placed, clearly identified, engage the audience in thoughtful reflection, and serve a function consistent with the specified purposes, objectives, or hypotheses.</p> <p>Calculations are used clearly and correctly.</p> <p>Summarizes literature supporting issue or problem.</p>
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- 5) Assesses, discusses, and reconciles the **supporting data/evidence** acquired from the exercise/experiment in relation to the existing scientific literature.

**Emerging**                                      **Developing**                                      **Mastering**

Low      1                                      2                                      3                                      4                                      5                                      6

High

<p>Confuses observation with interpretation.</p> <p>Merely repeats information provided, taking it as truth, or fails to provide adequate justification for statements.</p> <p>Fails to <b>obtain</b>, relate, or reconcile evidence with published scientific literature. <b>Provides only a shallow survey of viable literature.</b></p> <p>Does not distinguish between fact, opinion, and value judgments.</p> <p>Confuses associations and correlations with cause and effect.</p> <p><b>Technologies related to information gathering and data analysis is used improperly.</b></p>	<p>Clearly distinguishes between observation and interpretation.</p> <p>Examines the evidence, questions its accuracy, precision, relevance, and completeness, relates or reconciles evidence with published scientific literature.</p> <p>Identifies and synthesizes the scientific facts, data, principles, and processes embedded in the issue or problem and recognizes the nuances of them as well.</p> <p>Clearly distinguishes between fact and opinion, and acknowledges value judgments.</p> <p>Properly utilizes correlations and associations to explain existing or potential consequences.</p> <p><b>Evidence of appropriate use of statistical software and other information technologies.</b></p>
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6) Identifies **conclusions, implications and consequences**.

<b>Emerging</b>		<b>Developing</b>			<b>Mastering</b>	
Low	1	2	3	4	5	6
						High
<p>Fails to <b>clearly and correctly</b> identify conclusions, implications, and consequences in relation to context, implications, assumptions, data, and evidence.</p> <p>Conclusions/claims lack scientific support or justification. <b>Brings in information not previously addressed.</b></p> <p>Does not provide indication of reflection on own assertions and/or responses.</p> <p>Recommendations are weak and do not extend beyond the existing body of knowledge and experience.</p>				<p>Identifies and <b>clearly states</b> conclusions, implications, and consequences considering context, assumptions, data, and evidence.</p> <p>Conclusions are scientifically sound and are clearly supported by the provided evidence.</p> <p>Objectively reflects upon own assertions and/or responses to the problem.</p> <p>Articulates clear and thoughtful recommendations in a manner that builds upon the body of knowledge and experience.</p>		

7) Effectively **organizes and articulates** information to promote understanding and communicate significance of the issue or problem.

<b>Emerging</b>		<b>Developing</b>			<b>Mastering</b>	
Low	1	2	3	4	5	6
						High
<p>Title is general and lacks descriptive detail.</p> <p>Text is poorly organized and lack clarity.</p> <p>Multiple spelling and grammatical errors make the writing awkward, disorganized or confusing to reader.</p> <p>The overall style and organization do not address the intended audience, do not follow a logical order, and fail to unify or link important aspects of the project necessary to promote understanding of the issue or problem.</p> <p>Supporting literature is not fully or accurately cited.</p>				<p>Title is sufficiently descriptive and informative.</p> <p>Text is clear and well organized.</p> <p>Text contains few or no spelling or grammatical errors.</p> <p>The overall style and organization consider the audience, follow a logical order, and unify all aspects of the project to maximize understanding of the problem or issue.</p> <p>Supporting literature is fully and accurately cited.</p>		

8) Demonstrates leadership and teamwork.

<b>Emerging</b>		<b>Developing</b>			<b>Mastering</b>	
Low	1	2	3	4	5	6
High						
<p>Works in isolation, is tentative, or, alternately, is domineering.</p> <p>Performance is unprofessional: takes responsibilities lightly, is late with work, or contributions to team are perfunctory.</p> <p>Does not encourage elaboration of thoughts, pronounces answers right or wrong, does not probe, question, or encourage critical consideration of perspectives and resources.</p>			<p>Provides leadership and support to integrated groups of individuals focused toward a common goal.</p> <p>Demonstrates initiative for forming and contributing to the group.</p> <p>Coaches and encourages rather than complains or quits when the team performance is less than satisfactory.</p> <p>Demonstrates a willingness to listen to and consider other viewpoints.</p> <p>Encourages participants to engage one another in a critical analysis of the issues using the language (or the criteria) of the discipline.</p>			