The Science of Human Sensory Measurements: Theoretical Principles and Industrial Applications (ONLINE): Syllabus

FDSCTE 7560 Spring 2022 Second Session
2 credit hours

Course Information

• **Course times and location:** 4:10-6:00 PM Monday & 5:10-7:00 PM Wednesday

• **Credit hours:** 2

• **Mode of delivery:** This course is 100% online and synchronous. You must be able to log on to Zoom during class time to participate in this class.

Instructor

• **Name:** Dr. Benoît Rousseau

• **Email:** rousseau.1@osu.edu

• **Phone Number:** 614-292-6281

• **Office location:** Reachable at 530 848 6008

• **Office hours:** By appointment

• **Preferred means of communication:**
  - My preferred method of communication for questions is **email**.
  - My class-wide communications will be sent through the Announcements tool in CarmenCanvas. Please check your notification preferences (go.osu.edu/canvas-notifications) to be sure you receive these messages.

Course Prerequisites

FDSCTE 5500; or permission of instructor.
Due to the advanced nature of the methodological and data analysis procedures reviewed in this course, a 5000 level or above statistics course is required. The Science of Human Sensory Measurements is a graduate level course open to all graduate students majoring in Food Science and related fields with the permission of the instructor.

Course Description
This course provides students with a critical overview of the science behind perception measurements in sensory evaluation with a focus on sensory discrimination testing. This course will describe a theoretical foundation to sensory measurements with central industrial applications, including concepts borrowed from other fields such as psychology, mathematical modeling, and statistics.

Learning Outcomes
By the end of this course, students should successfully be able to:

- understand the fundamental principles of sensory measurements built on methodological, psychological, and mathematical concepts.

- critically review a sensory discrimination testing program and point out its strengths and weaknesses.

- understand the modeling of human perception.

- design a discrimination tests program that are optimized to predict consumer acceptance or rejection of a product change.
How This Course Works

Mode of delivery: This course is 100% online. There is a required synchronous (real time) session in Zoom each week 4:10-6:00 PM Monday & 5:10-7:00 PM Wednesday. The rest of your work is found in Carmen and can be completed around your own schedule during the week.

Pace of online activities: This course is divided into modules that take place weekly. Students are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame.

Credit hours and work expectations: This is a 2 credit-hour 7-week session course. According to Ohio State bylaws on instruction (go.osu.edu/credithours), students should expect around 4 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 8 hours of homework (reading and assignment preparation, for example) to receive a grade of C average.

Attendance and participation requirements: Research shows regular participation is one of the highest predictors of success. With that in mind, I have the following expectations for everyone’s participation:

- Participating in synchronous Zoom sessions for attendance: twice per week during posted course times
  You are expected to log in to Zoom during the posted course times. Attendance will be taken via Zoom. If you have a situation that might cause you to miss an entire week of class, discuss it with me as soon as possible.

- Completing online homework/activities: at least once per week
  You are expected to log in to the course in Carmen every week. During most weeks you will probably log in many times. If you have a situation that might cause you to miss an entire week of class, discuss it with me as soon as possible.

- Zoom office hours: optional
  My office hours are by appointment only and will be conducted through Zoom.
Course Materials, Fees and Technologies

Required Materials and/or Technologies

- Course materials will be comprised of articles and primary research obtained from the published scientific literature. All materials will be posted on Carmen at the start of the semester during which the course will take place.

Recommended/Optional Materials and/or Technologies

- None

Required Equipment

- **Computer:** current Mac (MacOS) or PC (Windows 10) with high-speed internet connection.
- **Webcam:** built-in or external webcam, fully installed and tested
- **Microphone:** built-in laptop or tablet mic or external microphone
- **Other:** a mobile device (smartphone or tablet) to use for BuckeyePass authentication

If you do not have access to the technology you need to succeed in this class, review options for technology and internet access (go.osu.edu/student-tech-access).

Required Software

**Microsoft Office 365:** All Ohio State students are now eligible for free Microsoft Office 365. Visit the installing Office 365 (go.osu.edu/office365help) help article for full instructions.

CarmenCanvas Access

You will need to use BuckeyePass (buckeyepass.osu.edu) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you do each of the following:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device (go.osu.edu/add-device) help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click Enter a Passcode and then click the Text me new codes button that appears. This will text you ten passcodes, good for 365 days, that can each be used once.
• Install the Duo Mobile application (go.osu.edu/install-duo) on all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and IT support staff will work out a solution with you.

Technology Skills Needed for This Course

• Basic computer and web-browsing skills
• Navigating CarmenCanvas (go.osu.edu/canvasstudent)
• CarmenZoom virtual meetings (go.osu.edu/zoom-meetings)
• Recording a slide presentation with audio narration and recording, editing and uploading video (go.osu.edu/video-assignment-guide)

Technology Support
For help with your password, university email, CarmenCanvas, or any other technology issues, questions or requests, contact the IT Service Desk, which offers 24-hour support, seven days a week.

• Self Service and Chat: go.osu.edu/it
• Phone: 614-688-4357 (HELP)
• Email: servicedesk@osu.edu
Grading and Faculty Response

How Your Grade is Calculated

Undergraduate and graduate students will be held to the same standards and expectations in this course.

<table>
<thead>
<tr>
<th>Assignment Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance and participation</td>
<td>20%</td>
</tr>
<tr>
<td>Lecture-specific homework assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Final exam</td>
<td>40%</td>
</tr>
</tbody>
</table>

See Course Schedule for due dates.

Descriptions of Major Course Assignments

**Attendance**

**Description:** Class attendance is mandatory and will be checked at the beginning of class and posted in Carmen. This course will be instructed through video conference in 2-hour lecture increments. During each lecture, students will participate in individual or group exercises to apply the course principles as they learn them.

**Academic integrity and collaboration:** You must attend class to receive these points. Students must contact the instructor in case of illness or emergency; please refer to the Attendance Policy on page 3.

**Lecture-specific homework assignments**

**Description:** At the end of each lecture, students will be given one or more problems that they will need to solve and upload on Carmen for grading before the start of the following lecture. Students may also be assigned topics to discuss and post on the course Discussion Board in Carmen. *Late submissions are not accepted and will result in a zero for that assignment, unless you contact me in advance as per the ‘Late Assignments’ section below.*

**Academic integrity and collaboration:** Your written assignments, including discussion posts, must be your own original work. You are encouraged to ask a trusted person to proofread your assignments before you turn them in but no one else can revise or rewrite your work.
Final exam

Description: Students’ understanding of the course concepts, principles, and applications will be assessed in a two-hour final exam given during the University’s scheduled final week. The exam will be open-note.

Academic integrity and collaboration: Your final exam must be your own original work.

Late Assignments

Please refer to Carmen for due dates. Due dates are set to help you stay on pace and to allow timely feedback that will help you complete subsequent assignments. The only valid excuses for late work are emergencies, illness, and family deaths. Official documentation (i.e., doctor note, funeral announcement, etc.) is required to fulfill the need for documentation. Contact the instructor as soon as possible to discuss the situation.

Instructor Feedback and Response Time

I am providing the following list to give you an idea of my intended availability throughout the course. Remember that you can call 614-688-4357 (HELP) at any time if you have a technical problem.

• **Preferred contact method:** If you have a question, please contact me first through my Ohio State email address. I will reply to emails within **24 hours on days when class is in session at the university.**

• **Class announcements:** I will send all important class-wide messages through the Announcements tool in CarmenCanvas. Please check [your notification preferences](go.osu.edu/canvas-notifications) to ensure you receive these messages.

• **Grading and feedback:** For assignments submitted on time, I will try to provide feedback and grades within **seven days.** Assignments submitted after the due date will not be accepted.

Grading Scale

93–100: A
90–92.9: A-
87–89.9: B+
83–86.9: B
80–82.9: B-
77–79.9: C+
73–76.9: C
70–72.9: C-
67–69.9: D+
60–66.9: D
Below 60: E
Other Course Policies

Discussion and Communication Guidelines
The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

• **Writing style:** While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.

• **Tone and civility:** Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online. I will provide specific guidance for discussions on controversial or personal topics.

• **Citing your sources:** When we have academic discussions, please cite your sources to back up what you say. For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.

• **Backing up your work:** Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

• **Synchronous sessions:** During our Zoom sessions I ask you to use your real name and a clear photo of your face in your Carmen profile. During our full-group lecture time, you may turn your camera off if you choose. When in breakout rooms or other small-group discussions, having cameras and mics on as often as possible will help you get the most out of activities. You are always welcome to use the [free, Ohio State themed virtual backgrounds](www.osu.edu/downloads/zoom-backgrounds.html). Remember that Zoom and the Zoom chat are our classroom space where respectful interactions are expected.

Academic Integrity Policy
See [Descriptions of Major Course Assignments](#) for specific guidelines about collaboration and academic integrity in the context of this online class.

Ohio State’s Academic Integrity Policy
Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university’s [Code of Student Conduct](studentconduct.osu.edu), and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university’s Code of Student Conduct and this syllabus may constitute “Academic Misconduct.”
The Ohio State University’s *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: “Any activity that tends to compromise the academic integrity of the university or subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university’s *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

**If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct.** If COAM determines that you have violated the university’s Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- [Committee on Academic Misconduct](go.osu.edu/coam)
- [Ten Suggestions for Preserving Academic Integrity](go.osu.edu/ten-suggestions)
- [Eight Cardinal Rules of Academic Integrity](go.osu.edu/cardinal-rules)

**Copyright for Instructional Materials**

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

**Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct**

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.
To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at equity.osu.edu,
2. Call 614-247-5838 or TTY 614-688-8605,
3. Or Email equity@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member."

This course adheres to The Principles of Community adopted by the College of Food, Agricultural, and Environmental Sciences. These principles are located on the Carmen site for this course; and can also be found at https://go.osu.edu/principlesofcommunity. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (https://equityandinclusion.cfaes.ohio-state.edu/). If you have been a victim of or a witness to a bias incident, you can report it online and anonymously (if you choose) at https://studentlife.osu.edu/bias/report-a-bias-incident.aspx.
Accessibility Accommodations for Students with Disabilities

Requesting Accommodations
The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services (SLDS). After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services.

Disability Services Contact Information
- Phone: 614-292-3307
- Website: slds.osu.edu
- Email: slds@osu.edu
- In person: Baker Hall 098, 113 W. 12th Avenue

Accessibility of Course Technology
This online course requires use of CarmenCanvas (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations as early as possible.
- CarmenCanvas accessibility (go.osu.edu/canvas-accessibility)
- Streaming audio and video
- CarmenZoom accessibility (go.osu.edu/zoom-accessibility)
- PDF document reader
UNIVERSITY RESOURCES
Counseling and Consultation Services:
As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student’s ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life’s Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.

David Wirt, wirt.9@osu.edu, is the CFAES embedded mental health counselor. He is available for new consultations and to establish routine care. To schedule with David, please call 614-292-5766. Students should mention their affiliation with CFAES when setting up a phone screening.

Grievances:
According to University Policies, if you have a problem with this class, you should seek to resolve the grievance concerning a grade or academic practice by speaking first with the instructor or professor. Then, if necessary, take your case to the department chairperson, college dean or associate dean, and to the provost, in that order. Specific procedures are outlined in Faculty Rule 3335-7-23. Grievances against graduate, research, and teaching assistants should be submitted first to the supervising instructor, then to the chairperson of the assistant's department.

Trigger Warning:
While I do not anticipate any triggering content in this course, if needed, please take care of yourself while watching/reading the material (take a break, debriefing with a friend, contacting a Sexual Violence Support Coordinator at 614-292-1111 or Counseling and Consultation Services at 614-292-5766, and contacting the instructor if needed). Expectations are that we all will be respectful of our classmates while consuming media. Failure to show respect to each other may result in dismissal from the class.

Lyft Ride Smart at Ohio State:
Lyft Ride Smart at Ohio State offers eligible students discounted rides, inside the university-designated service area, from 9 p.m. to 3 a.m. Each month, 10,000 discounted rides will be made available on a first-come, first-served basis with the average cost expected to be $2 or less. Prices may be impacted by distance, traffic, time of day, special events and prime time surcharges. To qualify for program discounts, users must select "shared ride" when booking in the Lyft app. When using ride sharing, remember to visually confirm vehicle info_descriptions in the company app and ask the driver to say who they are picking up.
The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.
# Course Schedule

Refer to the Carmen Canvas course for up-to-date due dates.

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Focus</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Review of difference testing and its applications</td>
<td>Course Introduction; Methodologies, populations, objectives, basic statistics</td>
</tr>
<tr>
<td>2</td>
<td>Measuring sensory differences; Link to quality control concepts</td>
<td>Proportion correct; Proportion discriminators; Thurstonian/Signal Detection Theory</td>
</tr>
<tr>
<td>3</td>
<td>Limitations of traditional approaches; Paradox of discriminatory non-discriminators; Effect of increasing sample size</td>
<td>Triangle vs. 3-AFC; Triangle vs. tetrad; Consumer preference without a sensory difference</td>
</tr>
<tr>
<td>4</td>
<td>Review of Thurstonian models with application to difference testing</td>
<td>Variability, Decision rules; 2-AFC Thurstonian model</td>
</tr>
<tr>
<td>5</td>
<td>Resolution of the paradox</td>
<td>d’ calculations for different methodologies using published tables/software</td>
</tr>
<tr>
<td>6</td>
<td>Experimental variables</td>
<td>Memory, sensory adaptation and fatigue – Effect on discrimination; Triangle vs. tetrad</td>
</tr>
<tr>
<td>7</td>
<td>Predicting consumer sensitivity from a company internal panel</td>
<td>Data to collect; Methodologies used; Relating two sets of data</td>
</tr>
<tr>
<td>8</td>
<td>The need to establish consumer relevance for sensory difference</td>
<td>Same-different, Paired preference, Batch to batch variability; Calculate tau (DeltaR), d’</td>
</tr>
<tr>
<td>9</td>
<td>Power of sensory discrimination testing methods (1/2)</td>
<td>Concepts, simulations</td>
</tr>
<tr>
<td>10</td>
<td>Power of sensory discrimination testing methods (2/2)</td>
<td>Alpha, Power, DeltaR, N, Method Scenarios</td>
</tr>
<tr>
<td>11</td>
<td>Special application to advertising claims testing</td>
<td>Paradoxes: Being equivalent, unsurpassed and superior simultaneously</td>
</tr>
<tr>
<td>12</td>
<td>Course review and summary: The journey traveled on the road to more reliable sensory measurements</td>
<td></td>
</tr>
</tbody>
</table>