



CS&D 899: Capstone Study in Audiology

Spring semester, 2021

Advisors

Sriram Boothalingam, Ph.D., FAAA

Melanie Buhr-Lawler, Au.D., CCC-A

Rachel Craig, Au.D., CCC-A

Jon Douglas, Au.D., CCC-A

Viji Easwar, Ph.D., M.SC. Audiology

Cynthia Fowler, Ph.D., CCC-A

Amy Hartman, Au.D., CCC-A

Rebecca Henning, Ph.D., CCC-A

Rachel Lee, Au.D., CCC-A

Ruth Litovsky, Ph.D

Tonya Veith, Au.D., CCC-A

Course Description

Per UW Madison Course Catalog 2020 - 2021:

Independent work on a capstone project under the supervision of a faculty member.

Prerequisites

CS&D 835: Introduction to Research Methods

Credits

Second year students: 1 credit / Third year students: 3 credits

Students must be available, **at a minimum**, to work on their capstone projects on a weekly basis, in accordance with UW-Madison's Credit Hour Policy (see below). Your advisor will discuss specific time commitments with you at the start of the semester.

It is important to note that every project and every advisor are different. Consequently, how you spend your time will be different for every student. Some examples of how you may spend your time are as follows and will be largely at the direction of your advisor(s). Successful completion of these tasks will affect your grade. See "Grading" for details.

- Literature review
- Lab meetings
- Individual advisor meetings
- Subject recruitment
- Data collection
- Data analysis
- Writing/revising your introduction/proposal
- Creating your presentation

UW-Madison Definition of Credit Hour – Policy Statement (UAPC doc 2017.06.15.15):

Generally, UW-Madison will follow the federal credit hour definition: one hour (i.e. 50 minutes) of classroom or direct faculty/qualified instructor instruction and minimum of two hours of out of class student work each week for approximately fifteen weeks, or the equivalent engagement over a different time-period.

Alternatively, a credit hour will be defined as the learning that takes place in at least 45 hours of learning activities, which include time in lectures or class meetings, in-person or online, laboratories, examinations, presentations, tutorials, preparation, reading, studying, hands-on experiences, and other learning activities; or a demonstration by the student of learning equivalent to that established as the expected product of such a period of study. In all cases, learning in for-credit courses is guided by a qualified instructor and includes regular and substantive student-instructor interaction.

We encourage you to see this experience as an opportunity to grow as a professional. Many clinical audiologists who work at academic medical centers, at universities, and for equipment or device manufacturers are involved in research teams and your capstone project will help prepare you for this work. Even if you are not actively involved in future research you will all be consumers of it. As with most things, what you get out of your capstone experience is equivalent to what you put into it. If you do the bare minimum amount of work, what you learn from the experience will be the bare minimum.

Learning Outcomes

1. Students will demonstrate knowledge of basic research principles.
2. Students will critically evaluate and interpret research in order to use evidence-based practice
3. Students will evaluate study findings and infer future directions.
4. Students will participate on a research team or conduct clinical outcomes research.

ASHA Certification Standards

This course fulfills the knowledge and skills requirement of the following Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association *2020 Standards for the Certificate of Clinical Competence in Audiology*:

Standard	Knowledge Area	Type of Documentation/Experience
A13.	Principles of research and the application of evidence-based practice (i.e., scientific evidence, clinical expertise, and client/patient perspectives) for accurate and effective clinical decision making	Paper, presentation

If a student fails to meet the ASHA Standards for the course, the student may be required to complete an improvement plan and/or re-do some assignments or portions of the course.

Instructional Mode

The course will primarily consist of supervised research and may include lab work, seminar and discussions, independent/directed study, and other experiential instruction formats.

Advisor Meetings

Meetings are an important aspect of participation on a research team. You should plan to meet with your advisor on a semi-regular basis; please discuss expectations with your advisor regarding the frequency of meetings. Some advisors may require attendance at weekly lab meetings as early as the fall semester of your second year, while others will not anticipate recurring meetings until your third year. This is highly dependent on your specific project and the advisor you are working with.

Readings

The ability to glean useful information from reputable peer-reviewed journals, while weeding out studies that lack the necessary rigor and transparency, is even more important today due to the proliferation of both misinformation in the mainstream media and the rise of predatory journals. Whatever your project area is, it is important to think about the basics of reading and evaluating research literature – achieving this is one of the main goals of this process.

Readings for your project will be driven by the nature and topic of your research. For instance, research using electroencephalography (EEG) may require you to understand the basics of research-grade EEG techniques. Research using otoacoustic emissions (OAE) involving the auditory efferent system may require you to understand OAE methods, theory, and its applications to your specific research topic. There is no specified number of research articles that you will need to read as this will vary across the gamut of research areas.

Before you accumulate relevant research papers it is important to devote some time to learn about more sophisticated search strategies. Consider contacting a librarian to hone your searching skills. There is more to searching for research articles than simple “Googling”. Here are two quick guides [1](#) and [2](#). To keep track of readings, you can use several online and offline tools. For instance, the free online service [Mendeley](#) is a great way to keep your readings organized. In addition, you can use the below template to jot down important information from the articles as you are reading.

Title	Author and Year	Purpose of Study	Study Design, Duration	Organisms/ Subjects	Participant Demographics	Dependent Variable	Independent variable	Controls	Methods	Results	Discussion
-------	-----------------	------------------	------------------------	---------------------	--------------------------	--------------------	----------------------	----------	---------	---------	------------

In general, a solid understanding of the basics and a thorough grasp of the literature is critical for a good research paper. Specific learning outcomes pertaining to readings for this task are:

- (1) Apply search strategies to find relevant research papers across online sources
- (2) Analyze how a peer-reviewed manuscript is structured
- (3) Critically evaluate research papers in your chosen area of study
- (4) Understand the study outcomes as well as evaluate bias in discussion and conclusion sections of research papers
- (5) Synthesize literature, evaluate gaps in current knowledge, and develop theoretical frameworks and hypotheses for your research

Paper

Reading and understanding how research papers are written in academic journals will help you write your own paper. In order for you to meet the standards of an academic journal, it is important that you show authority in your chosen area of

study. Even if you will not be writing towards an eventual publication, it is important to keep up the high standards of writing in academia. We strongly encourage you to consider a trip to the [Writing Center](#) as you prepare for writing.

Task: write about your research (see table below for specific sections) such that it can be published in a peer-reviewed audiology journal.

Audience: your peers and professors who are interested in your research but have not done the same amount of research as you have in this specific topic.

Your paper should have the following sections:

	Sections	Max words	Description
1	Title	15	Try to use the key outcome of your work as your title but keep it short
2	Abstract	250	This is a very brief run-down of everything that is in your paper. Someone reading just this section should be able to get the gist of what your entire paper is about.
3	Introduction	1500	This is you writing to your audience why you are doing what you are doing. Remember you are the authority here. So, take a stance and provide all the available evidence for and against your stance synthesized in your own words by thoroughly analyzing the literature. Integrate sources into your paper as citations. Avoid using direct quotations from a research paper. Use a consistent and appropriate citation style throughout the paper
4	Methods	1500	In this section, write details about how you would conduct the study. Some example subheadings are: 1. Participants; 2. Screening Procedures; 3. Equipment used; 4. Procedures; 5. Analyses
5	Results	500	Because results won't be available until the entire study is completed, try to predict your results based on your hypotheses. This is another chance for you to persuade your reader, albeit with evidence.
6	Clinical Relevance	500	In this section, relate your research work to Audiology. Some studies apply directly and immediately but others may have an impact on audiology in the future. Whichever category your research falls under, use this section to discuss how your study contributes to Audiology.

Specific learning outcomes pertaining to writing and presentation are:

1. Apply peer-reviewed academic format to your structure your paper
2. Synthesize hypotheses and alternate hypotheses based on a thorough literature review

3. Demonstrate critical evaluation of research papers that both argue for and against your hypothesis
4. Develop thesis statements that describe your research
5. Evaluate the methods used for your study and articulate in a manner that readers can replicate your study
6. Demonstrate knowledge of statistical analyses and articulate analyses and statistical methods used in your research
7. Synthesize results, if available, and summarize findings. If results are unavailable, predict the outcome and articulate and provide reasons for your predictions

Rubric for the research paper

	Sections	Rubric	Points
1	Title	Is the title appropriate and reasonably short?	5
2	Abstract	Does the abstract provide adequate details succinctly?	5
3	Introduction	Does the introduction effectively present the issue and the thesis while evoking reader interest? Are the ideas sufficiently complex? Are there good reasons in support of the thesis? Is the argument logical? Are opposing or alternative views adequately and fairly summarized? Are the responses to opposing views effective?	35
4	Methods	Are study details adequately explained? Are the study procedures accurate and provide the reader adequate details to allow replication? Are the study equipment and their connections listed correctly? Are study analysis methods described with adequate detail?	20
5	Results	<i>Note: not all students will have results at the time of completion. For this reason, it is not required to write actual results of your study in this section. But you should provide predicted results and justify your predictions.</i> Do the predicted results match hypotheses? Are predictions logical and support the author's arguments made in the introduction?	10
6	Clinical Relevance	Was the student able to articulate effectively how this research contributes to clinical Audiology either immediately or in the future?	5
	Overall	Is the paper well organized into a unified whole? Are the transitions appropriate and support a natural flow of topics? Do paragraphs have thesis statements/topic sentences? Is the language style effective? Is the language chosen appropriate for the intended audience? Is the tone appropriate? Are sentences well constructed? Is the paper carefully edited?	20

Presentation

The format for the presentation of your final research work is a research talk on Capstone Day.

Task: You will present a distilled version of your research paper as a powerpoint presentation for 15 minutes, including questions.

Audience: Your average audience is audiology professionals who do not have specific knowledge in your area of research. Therefore, consider your audience knows audiology-related terminology (e.g., otoacoustic emissions) but you will have to explain in simple terms what you did in your research and what was your rationale for this specific topic.

Here are some general guidelines:

1. DO NOT read your presentation from a cue-card. Try to narrate your research as if it were a story. This will keep your audience captivated. In addition, if you have spent 12-18 months on a research project, you should be able to articulate what it is about.
2. Keep your slides simple; one figure/slide or no more than 3 lines of text/slide
3. Be creative but refrain from using too much animation that results in distraction

Rubric for presentation

Parameters	Rubric	Points
Delivery	Holds attention of entire audience with the use of direct eye contact, seldom looking at notes Speaks with fluctuation in volume and inflection to maintain audience interest and emphasize key point	20
Content	Thorough, yet brief, review of the literature. Use of literature to compel the content and questions in the presentation. Provides clear purpose and subject; pertinent examples, facts, and/or statistics; supports conclusions/ideas with evidence Demonstrates full knowledge by answering all audience questions with explanations and elaboration	40
Organization	Slides are ordered in a logical fashion with no abrupt transitions Uses animations and transitions judiciously without causing distractions	10
Enthusiasm	Demonstrates strong enthusiasm about topic during entire presentation	10
Audience Awareness	Significantly increases audience understanding and knowledge of topic; convinces an audience to recognize the validity and importance of the subject	20

Grading

Rubric for grading: Spring of 2nd year

Component	Expectations	Percent of grade
Paper	Continues work on research proposal (see rubric for introduction paper). See timeline, found for expectations.	50%
Presentation	N/A	0%
Professionalism	Communicates effectively with advisor and other study team members in a timely manner. Displays organization and preparedness. Assumes a professional level of responsibility and initiative in completing all requirements. Punctual. Adheres to research protocols. Incorporates feedback from advisor/other study team members.	50%

Rubric for grading: Fall of 3rd year

Component	Expectations	Percent of grade
Paper	Meets submission deadlines (refer to Capstone timeline, here). See paper rubric for additional guidelines.	50%
Presentation	N/A	0%
Professionalism	Takes initiative. Communicates effectively with advisor and other study team members in a timely manner. Displays organization and preparedness. Assumes a professional level of responsibility and initiative in completing all requirements. Punctual. Adheres to research protocols. Incorporates feedback from advisor/other study team members.	50%

Rubric for grading: Spring of 3rd year

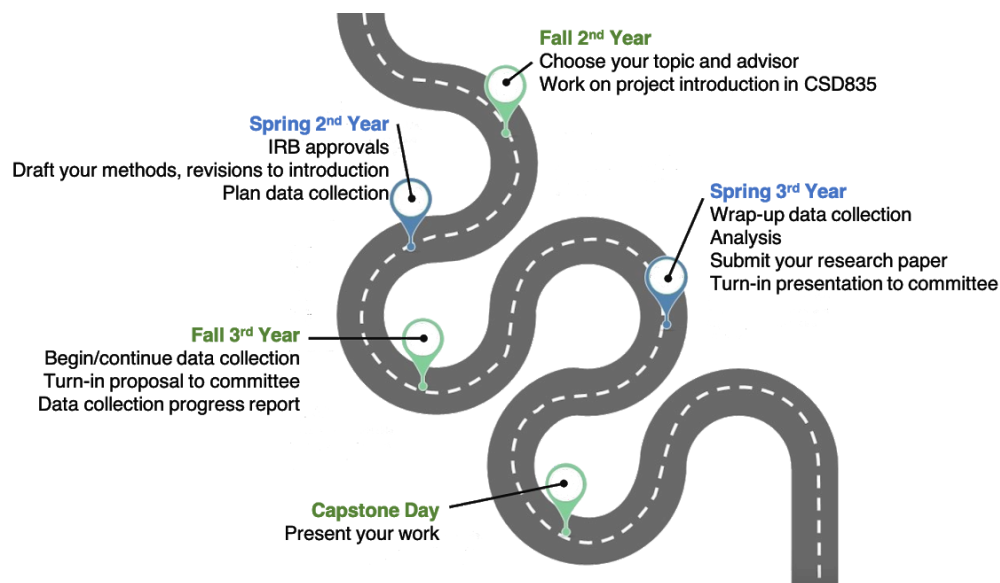
Component	Expectations	Percent of grade
Paper	Meets submission deadlines (refer to Capstone timeline, found here). See paper rubric for additional guidelines.	35%
Presentation	Meets submission deadlines (refer to Capstone timeline, found here). Incorporates advisor and committee feedback. See presentation rubric for additional guidelines.	40%
Professionalism	Takes initiative. Communicates effectively with advisor and other study team members in a timely manner. Displays organization and preparedness. Assumes a professional level of responsibility and initiative in completing all	25%

	requirements. Punctual. Adheres to research protocols. Incorporates feedback from advisor/other study team members.	
--	---	--

Percentage (total points/2)	SP Grade	Madison Grade	What it means
100-92	A	A	Strong to excellent work that demonstrates mastery of concepts and exceeds the minimum expectations for an AuD student. "A" work is precise, accurate, and incorporates all relevant details.
91.9-88	A-	AB	Solid work that demonstrates an understanding of essential concepts and meets expectations for an AuD student. There may be some inaccuracies of details or less clarity than "A" work.
87.9-82	B	B	Demonstrates understanding of the essential core/critical concepts, although there are inaccuracies or misunderstandings of some information. "B" work meets the minimum expectations for an AuD student, but the student is encouraged to improve his/her performance to develop a stronger foundation for future classes, clinical experiences, and licensing and certification exams.
81.9-80	B-	BC	The work does not meet the minimum expectations for an AuD student. There are inaccuracies or conceptual misunderstandings that the student must overcome to be competent in the fundamentals of the audiology profession.

Timeline

Here is a simplified timeline. For a complete timeline refer to this [link](#). Please follow the capstone timeline that is applicable to you. The timeline is a guide, but your advisor may change deadlines as needed. If you anticipate that you will be unable to meet any of the proposed deadlines, please notify your advisor and/or committee members.



Academic Policies

All students should be aware of the expectations for academic integrity at the University of Wisconsin. The following information is from Academic Misconduct Rules and Procedures: Guide for Instructors prepared by the Office of the Dean of Students, 75 Bascom Hall (Fall 2001):

Academic Integrity (taken from <http://www.wisc.edu/students/UWS14.htm>) Academic honesty requires that the course work (drafts, reports, examinations, papers) a student presents to an instructor honestly and accurately reflects the student's own academic efforts. UWS 14.03 defines academic misconduct as follows:

"Academic misconduct is an act in which a student:

- (a) seeks to claim credit for the work or efforts of another without authorization or citation;
- (b) uses unauthorized materials or fabricated data in any academic exercise;
- (c) forges or falsifies academic documents or records;
- (d) intentionally impedes or damages the academic work of others;
- (e) engages in conduct aimed at making false representation of a student's academic performance
- (f) assists other students in any of these acts."

Examples include but are not limited to: cutting and pasting text from the web without quotation marks or proper citation; paraphrasing from the web without crediting the source; using another person's ideas, words, or research and presenting it as one's own by not properly crediting the originator; stealing examinations or course materials; signing another person's name to an attendance sheet; hiding a book knowing that another student needs it to prepare an assignment; collaboration that is contrary to the stated rules of the course, or tampering with a lab experiment or computer program of another student.

If academic misconduct has occurred, the student may be subject to one or more of the following penalties: an oral or written reprimand, a lower grade or a failing grade in the course, university disciplinary probation, suspension, or expulsion. See additional information regarding academic misconduct at <http://www.wisc.edu/students/UWS14.htm> or www.uwsp.edu/dos/Pages/Academic-Misconduct.aspx

Academic Misconduct: The use of another person's work without proper referencing is considered to be plagiarism and is not acceptable. Work in which plagiarism is found will receive the grade of an "F". Students found to be using materials for assistance on examination that are not allowed by the instructor will receive an "F" for that examination.

Students with Disabilities

If you are a student with a documented disability and wish to discuss academic accommodations to complete reading or written assignments, examinations, quizzes, or oral reports, please contact me within the first two weeks of the semester to discuss your needs.

Religious Conflicts: In accordance with University of Wisconsin policy (UWS 22), any potential conflict between class requirements and religious observance must be made known to an instructor within the first two weeks of class. The student must notify the instructor of the specific day(s) or date(s) of specific religious observances for which the student seeks relief from academic requirements.