WISCIENCE
UNIVERSITY OF WISCONSIN-MADISON

Integrated Science 150: Exploring Research in STEM

Tuesdays, 11:00am-12:15pm CT, Room 117 WISCIENCE
1 credit, In-Person

Instructor
Nancy Ruggeri, PhD (she/her)
Director, Research Mentor & Mentee Education, WISCIENCE
WISCIENCE (445 Henry Mall), Rm 104B
nruggeri@wisc.edu

Course Description

Exploring Research in STEM will offer an overview of the research process and opportunities to build your skills in reading scientific literature. As a STEM professional, it is important to understand different approaches to science and to be flexible in one's thinking about gathering evidence or solving problems. Activities within this course will help you articulate your research interests, identify potential research mentors, and create professional communications to secure research opportunities. Throughout the semester we will build skills to prepare you for research and explore science careers by engaging in process of science.

Student Learning Objectives

By the end of the course, you will be able to…

- Describe ways that new scientific knowledge is generated via research and intellectual curiosity to address societal challenges.
- Analyze scientific literature through examination of primary research articles.
- Explore pathways to a range of science careers and strategies to pursue them.
- Articulate sources of disparities in race and gender within STEM careers and strategies to reduce them.
- Reflect on personal research interests and identify UW faculty whose research interests align with yours.
- Develop professional communication skills and comfort level in talking about scientific research.

How Credit Hours are Met by the Course

The credit standard for this course is met by an expectation of a total of 45 hours of student engagement with the course learning activities, which include regularly scheduled course meeting times (Tuesdays 11:00am-12:15pm) reading, writing, projects, presentations, and other student work as described in the syllabus.

UW-Madison Land Acknowledgement Statement

The University of Wisconsin–Madison occupies ancestral Ho-Chunk land, a place their nation has called Teejop (day-JOPE) since time immemorial. In an 1832 treaty, the Ho-Chunk were forced to cede this territory. Decades of ethnic cleansing followed when both the federal and state government repeatedly, but unsuccessfully, sought to forcibly remove the Ho-Chunk from Wisconsin. This history of colonization informs our shared future of collaboration and innovation. Today, UW–Madison respects the inherent sovereignty of the Ho-Chunk Nation, along with the eleven other First Nations of Wisconsin.

Course Communications

- We will use Canvas for all course related communication, materials, and assignments.
- I will use email as the main mode of communication outside of class meetings, and class emails will also be posted as announcements in Canvas. You are welcome to contact me at any time at nruggeri@wisc.edu to which I typically respond within 48 hours.
- I am always excited and happy to talk about the course, materials, or any questions about engaging in STEM (such as courses, careers, research, grants, and more!). I am regularly available in my office (Room 104B WISCIENCE) 15-20 minutes before and after class and hold office hours on Wednesdays at 1PM. You can always send me an email to set up an appointment as well.

Attendance

Attendance is **required** at all class meetings. Please let me know *before* class (or as soon as possible) if you will miss class. Excused absences include illnesses (you or someone in your care), religious holidays, emergencies, or personal matters that require your presence. If you require an excused absence, you will be responsible for completing all course materials and turning them in on time unless arrangements for an extension have been made in advance. In this case, participation credit can be earned by completing a version of the activities done in class. *If you do not contact me about your absence and plan for making up the material, you will miss the opportunity to make up the participation points which will impact your grade.* There are no extra credit options for the course.

I am very willing to work with you to help you be successful in this class. Please communicate with me early and often and commit to following through with the arrangements made to make up what you missed.

Assignments and grading

All course content and assignments will be posted on the Canvas course website. There are no

required texts for this class, however there will be readings available on Canvas. It is recommended that you access the course materials using a desktop computer, laptop computer, or tablet. Should you need to access Canvas with your phone, there is mobile app to download. If you are unable to access the materials, please let me know as soon as possible.

Assignments are due one day **PRIOR** to class (end of day, 11:59pm CT). We will discuss the assignments in class, so please come prepared to share your thoughts and ideas. You will have opportunities to share your work in groups and as part of our class discussion. If you are sick or other circumstances prevent you from completing an assignment by the deadline, please let me know so we can make alternate plans if necessary. Each day an assignment is late will result in a drop of one letter grade.

Please make sure you have turned Canvas notifications ON so you receive the announcements I send out to the class. You can refer to "How to use Canvas" guide for help: https://community.canvaslms.com/docs/DOC-10701-canvas-student-guide-table-of-contents

Grading

Grading scale: A = 90-100%, A/B= 87-89%, B= 80-86%, B/C=77-79%, C= 70-76%, D= 60-69%, F= >60%. Final grades will not be curved which means everyone can receive an A in the course if they complete the work.

Assignments

30% Readings & Assignments
Most weeks there will be readings, videos, reflections, discussions, and/or worksheets to complete outside of class. See the course schedule below and Canvas modules for more details.

30% Research Interest Project
One exciting, yet potentially overwhelming, aspect of finding a research experience is deciding what you are interested in. This project will provide you the structure to explore several areas of interest and to articulate your interest in them, which will be helpful when emailing mentors about opportunities. You will gain professional communication skills needed to contact faculty members about potential research opportunities. Additionally, you will gain reading and critical thinking skills to be able to effectively learn about new areas of research and be prepared to discuss with your mentor.

30% STEM Careers Exploration
One goal of the Exploring Research in STEM course is to support your exploration of STEM careers and gain an understanding for how research experiences can help you prepare for a potential career in STEM. This semester you can explore careers through a series of inventories, reflections, and activities. By the end of the semester, you will have concrete ideas of careers you would like to explore. Understanding your long-term career goals can help you to decide what kinds of research experiences

and research disciplines you want to gain experience in during your undergraduate career. Many of the resources we will use come from Success Works https://successworks.wisc.edu/.

10% Participation in Class

Participation will consist of attendance, contributions to class discussions and engagement in group work during class sessions. The level of engagement in class, listening skills, behavior, and preparation will contribute to the participation grade. Refer to the rubric below for more details.

Participation Rubric

	Exemplary (1pts)	**Accomplished (0.5pt)**	**Developing (0pts)**
Level of Engagement in Class	Student proactively contributes to class by offering ideas and/or asks more than one question per class and/or works consistently on the group project during class.	Student proactively contributes to class by offering ideas and/or asks one question per class and/or works on the group project for most of the time.	Student rarely contributes to class by offering ideas and asking questions and/or works on the group project only some of the allotted time.
Listening Skills	Student listens when other talk, both in groups and class. Student incorporates or builds off the ideas of others.	Student listens when other talk, both in groups and in class.	Student does not listen when others talk, both in groups and in class.
Behavior	Student almost never displays disruptive behavior during class.	Student rarely displays disruptive behavior during class.	Student occasionally displays disruptive behavior during class.
Preparation	Student is almost always prepared for class with assignments and required class materials.	Student is usually prepared for class with assignments and required class materials.	Student is rarely prepared for class with assignments and required class materials.

Student Resources

I care about your wellbeing and believe that our ability to learn is impacted by our wellbeing. It can be challenging to do your best in class if you have trouble meeting basic needs like safe shelter, sleep, and nutrition. If you have trouble with any of these, I urge you to contact the Dean of Students Office. If you would like help in navigating these resources, please talk with me and I can help to connect you to resources.

I have curated a collection of resources to support your success and your well-being, including links to other university services such as University Health Services and Undergraduate Academic Advising and Career Services. If you have resources to share, please let me know and I will add them to the list.

Academic Integrity

By virtue of enrollment, each student agrees to uphold the high academic standards of the University of Wisconsin-Madison; academic misconduct is behavior that negatively impacts the integrity of the institution. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these previously listed acts are examples of misconduct which may result in disciplinary action. Examples of disciplinary sanctions include, but is not limited to, failure on the assignment/course, written reprimand, disciplinary probation, suspension, or expulsion.

Accommodations for Students with Disabilities

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform the instructors of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. We will work either directly with you or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. (See: McBurney Disability Resource Center)

Diversity & Inclusion

Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals. The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.

Hate and Bias Incidents

We value each member of our community. Hate and bias incidents distract from our classroom community and negatively affect your and your classmates' ability to learn, feel welcome, and feel safe. Hate and bias incidents will not be tolerated in this classroom. Please intervene in incidents of hate and bias when you can, and report incidents to me—if you feel comfortable— and/or to the UW-Madison hate and bias reporting system: students.wisc.edu/reporthate. The University and I are dedicated to addressing reports of hate and/or bias seriously, promptly, confidentially, and sensitively. Reports can include, but are not limited to, crimes such as vandalism or physical assault; non-academic misconduct such as online or verbal harassment or disruptive behavior; and/or microaggressions such as derogatory or demeaning speech from another student, TA, or faculty/staff member. A Hate and Bias Incident Team member will respond to your report and provide you with options meet your needs. You can also report

anonymously. For more information, support, and resources regarding addressing hate and bias on campus, please visit www.students.wisc.edu/reporthate.

Course Schedule

The course schedule may be subject to change during the semester. If things change, you will be notified via Canvas and an updated version uploaded to Canvas for access.

Week	Date	Topic	Course Assignments	Research Interest Project	STEM Career Exploration
1	**Jan 23**	Introduction to Exploring Research	• Review: Syllabus and course docs • Respond: Why are you interested in research?		
2	**Jan 30**	Understanding the Research Context	• Read: Understanding Research	• Curiosity Reflection	• Career Interest Reflection • Choose Career Events to attend
3	**Feb 6**	Writing Professional Emails	• Read: Your Application Strategy • Review: Find a Mentor videos & handout	• Research Group #1 Presentations • (1 min/person)	• Career Interests Quiz & submit answers
4	**Feb 13**	Scientific Literacy	• Watch: Scientific Literacy video • Read: John Oliver article • Review: Pew Research Data	• Research Group #2 Presentations (1 min/person) • Draft email to Mentor #2	• Career Exploration Guide #1
5	**Feb 20**	Strategies for Finding and Reading Scientific Literature	• Read: "Ten simple rules for reading a scientific paper"	• Research Group #3 Presentations (1 min/person) • Draft email to Mentor #3	• Career Exploration Guide #2
6	**Feb 27**	Reading Figures and Discussing Data	• Read: Sloth mutualism paper • Complete: Reading Guide-Sloth Mutualism	• Revise emails	• Career Exploration Guide #3
7	**Mar 5**	Creating Resumes	• Read: Resume Writing Tips • Complete: Success Works	• Draft resume	

			Resume Module & worksheet		

Week	Date	Topic	Course Assignments	Research Interest Project	STEM Career Exploration
8	**Mar 12**	Talking about Research-Interviews & Presentations	• Read: Section about research interviews	• Read primary literature article from research group of choice • Complete reading guide for primary lit article • Send emails to research groups (optional)	• LinkedIn Profile
9	**Mar 19**	Undergraduate Research Panel	• Develop: Questions for panelists	• Presentation Outline	
10	**Mar 26**	SPRING BREAK			
11	**Apr 2**	Equity and Inclusion in STEM	• Watch: Videos • Read: Case study • Write: Reflection on Equity and Inclusion in STEM	• Draft slides: Research area of interest	
12	**Apr 9**	Intersection of Identities in STEM	• Review: NSF Data • Write: Identity Reflection Assignment • Equity in STEM group presentation prep	• Draft slides: Research Question & Background	• All THREE Career Event Reflections due (can turn in earlier)
13	**Apr 16**	STEM Career Presentations		• Draft slides: Results and Conclusion	• Career Presentations
14	**Apr 23**	Research Article Presentations		• Final Research Interest Presentations	
15	**Apr 30**	Research Article Presentations		• Final Research Interest Presentations • Research Interest Project Reflection	