

**Course Subject, Number and Title**

PATH 755

Responsible Conduct in Research: Research Ethics, Rigor, Reproducibility and Transparency

Credits

2 credits

Course Designations and Attributes

Graduate Attribute

Course Description

Provides instruction in principles and concepts of responsible conduct in research, including research ethics, rigor, reproducibility, and transparency. Instruction will be provided through introductory presentations and discussion of case studies, to expose students to common ethical dilemmas encountered in the context of biomedical research. Designed to meet the NIH Institutional Training Grant requirements covering all targeted areas in biomedical research. Primarily intended for first year graduate students but also appropriate for graduate students beyond their first year, MSTP students, and post-doctoral scholars.

Requisites

Graduate/professional standing

Meeting Time and Location

The two 50-minute sessions will be held on Wednesdays and Fridays at 10 am. The course will meet in a conference room in either HSLC or the University of Wisconsin Hospital.

Instructional Modality

In-person instruction

Specify How Credit Hours are Met by the Course

This class meets for two, 50-minute class periods each week over the spring semester and carries the expectation that students will work on course learning activities (reading, writing, etc.) for about 2 hours out of the classroom for every class period. The syllabus includes additional information about meeting times and expectations for student work.

Regular and Substantive Student-Instructor Interaction

Student-instructor interaction will occur when the class meets (twice a week for 50-minutes class periods). The instructor/s will provide information and facilitate discussion of course content. In addition, the instructor/s will provide feedback on student work/participation in the class.

Other Course Information

The class will meet two times a week for 50 minutes. Students will be expected to read any assigned materials before class and provide a short answer response to a faculty questionnaire. For each topic, on the first class of the week a faculty expert will provide an introductory lecture on the topic. On the second class of the week, students will be presented with common ethical dilemmas that they are likely to encounter during their career regarding to the topic discussed in the previous class and will then be broken into small discussion groups.

Time Expected to be Devoted to Individual Topics:

Week 1	1) Responsible conduct of research	<ul style="list-style-type: none"> - Professional self-regulation - Institutional policies - Research Misconduct
Week 2	<i>Responsible conduct of research</i>	<ul style="list-style-type: none"> - Conflict of interest—personal, professional, and financial -Research Team Members relationships and responsibilities (mentor, mentee, and other team members). - Promotion of a safe work environment (including issues regarding sexual harassment and other discriminatory practices).
Week 3	2) Data management in basic research.	<ul style="list-style-type: none"> - Data ownership and data storage (protection and retention (records keeping) including methods such as electronic laboratory notebooks). - Data sharing (submission to repositories <i>etc.</i>)
Week 4	3) Data management in clinical research	-- Clinical data collection, storage, confidentiality, protection, and retention.
Week 5	Data management in clinical research	<ul style="list-style-type: none"> - Clinical data analysis and sharing. - Ethical data use.
Week 6	6) Responsible data collection and analysis	- Policies regarding live vertebrate animal subjects and safe laboratory practices.
Week 7	5) Collaborative research	- Managing collaborations.
Week 8	4) Peer review	- The peer review process including responsibility for maintaining confidentiality and security in peer review.
Week 9	Responsible data collection and analysis	<ul style="list-style-type: none"> - Rigorous experimental design. - Rigorous Data analysis and interpretation [Data exclusion (appropriate, selective retention to fit hypothesis, trimming to make data look accurate/precise); inventing data]. - Laboratory/experimental variables that can affect reproducibility (appropriate controls; consideration of relevant biological variables such as sexes and ages)

Week 10	<i>Responsible data collection and analysis</i>	- Image integrity and standards.
Week 11	<i>Responsible data collection and analysis</i>	- Responsible data collection and analysis in cytofluorimetry
Week 12	<i>Responsible data collection and analysis</i>	- Responsible data collection and analysis in OMIC studies
Week 13	<i>Responsible data collection and analysis</i>	- Policies regarding human subjects, and rigor and reproducibility in clinical research.
Week 14	7) The scientist as a responsible member of society.	- The societal impacts of scientific research.

Instructors & Teaching Assistants

Instructors Title and Name

Tyler Ulland, Assistant Professor, Department of Pathology and Laboratory Medicine.

Mariana Pehar, Assistant Professor, Department of Medicine-Division of Geriatrics and Gerontology.

Instructors Availability

Office hours will be conducted remotely. Occasional exceptions may be made following physical distancing and health recommendations at the discretion of your instructor/TA.

Instructors Email/Preferred Contact

tulland@wisc.edu

mapehar@medicine.wisc.edu

Teaching Assistant (if applicable)

N/A

TA Office Hours

N/A

TA Email/Preferred Contact

N/A

Course Learning Outcomes

Upon completion of this course, students will be able to:

- Demonstrate proficiency in the Federal, State of Wisconsin, and UW-Madison rules and regulations relevant to the performance of research in the sciences.
- Explain practices and approaches that can enhance the rigor and reproducibility of their work.

- Demonstrate problem-solving strategies and how to respond properly after witnessing research misconduct.

Grading

This course will be graded on a standard A-F scale. Students are expected to attend all classes and discussion sessions. Attendance will be taken via a sign in sheet. Students will be expected to sign the attendance sheet for themselves and no one else at the beginning of each class. Participation is key to this course and as such students will be expected to complete all the recommended reading, multiple choice/short written response questionnaires, and actively participate in both the class discussions as well as the small group sessions. Following each lecture portion of the class the completion of a questionnaire consisting of multiple choice and/or short-written responses will be required. If you are unable to attend a class because of illness or a significant scheduling conflict, please email the course director with your reason for absence as soon as is practical. You will still be required to complete the questionnaire and will be required to complete a short (approximately 500 word/1 page) essay examining the topic covered during the day (in consultation with the instructor for the missed day). As attendance and participation are key to this course, 50% of the course grade will be dependent upon attending lecture and discussion sessions, 25% will be dependent upon participating in the discussion and 25% will be dependent upon the completion of the short questionnaires.

Participation in the discussion will be evaluated with a maximum score of 25 points.

-A full score of 25 points will be assigned for students that attend both lecture and discussion and substantially contribute to the improve the quality of class discussion. To receive full credit students will be expected to occasionally lead the discussion, engage with both the lecturer and other students in a respectful and thoughtful manner, and demonstrate a strong understanding of the subject matter. -

Students that reasonably demonstrate most of the characteristics enumerated for full credit with some deficiencies will receive 20 and 24 points.

-Students who participate infrequently but still show an understanding of the subject material will receive 15-19 points.

-Students will receive between 10 and 14 points for superficial participation or participation that demonstrates a lack of familiarity or engagement with the material.

-Students who rarely participate will receive between 5 and 9 points.

-Students who do not engage with the material, rarely participate, or show a lack of respect for others when they do participate will receive between 0 and 4 points.

Grades will be based on a weighted total of the percentage of total points available. Grades will correspond to the following percentages:

A = 100 - 92%

AB = 91.99 - 88%

B = 87.99 - 82%

BC = 81.99 - 78%

C = 77.99 - 70%

D = 69.99 – 62%

F = Below 61.99%

Course Website, Learning Management System & Digital Instructional Tools

All class materials will be available through the university's learning management system, Canvas. It is strongly suggested that students explore and become familiar not only with Canvas' site navigation but with content and resources available for the course.

Discussion Sessions (in-person)

Discussion sessions will occur on the second class of the week. Students will be presented with common ethical dilemmas that they are likely to encounter during their career regarding to the topic discussed in the previous class (for example, watching a video from RCR casebook from the Office of Research Integrity website). Students will then be broken into small discussion groups and presented with other case scenarios. A student from each discussion group will be assigned the role of discussion leader and will be expected to prepare for and facilitate a relevant discussion centered around the assigned topic. Student discussions will be expected to focus on ethical decision-making and problem-solving strategies. During the discussion students are encouraged to take notes and prepare to ask the faculty expert any additional questions. At the conclusion of the small group discussion, the student group leader will present a summary of the discussion and problem-solving strategies used and the faculty expert will address additional questions and concerns that the students may bring up during the small group discussions.

Required Textbook, Software & Other Course Materials

All class materials will be available through the university's learning management system, Canvas. Appropriate required readings and material review will be assigned by the course lecturer before class. Examples of potential reading materials may include: Review of "Responsible Conduct of Research" modules available on the NIH's website (<https://oir.nih.gov/sourcebook/ethical-conduct/responsible-conduct-research-training>), "Who owns the data" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1088949/>), "Ethics of authorship in scientific publications" (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3889085/>), "Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals" (<http://www.icmje.org/icmje-recommendations.pdf>), and "Research integrity: A closer look at gel and Western Blot image cropping" (<https://blog.frontiersin.org/2021/07/09/research-integrity-a-closer-look-at-gel-and-western-blot-image-cropping/>).

Homework & Other Assignments

Students will be expected to read any assigned materials before class and provide a short answer response to a faculty questionnaire following each lecture portion of the class. Assignments should be submitted through Canvas.

Privacy of Student Information & Digital Tools: Teaching & Learning Analytics & Proctoring Statement

The privacy and security of faculty, staff and students' personal information is a top priority for UW-Madison. The university carefully reviews and vets all campus-supported digital tools used to support teaching and learning, to help support success through [learning analytics](#), and to enable proctoring capabilities. UW-Madison takes necessary steps to ensure that the providers of such tools prioritize proper handling of sensitive data in alignment with FERPA, industry standards and best practices.

Under the Family Educational Rights and Privacy Act (FERPA which protects the privacy of student education records), student consent is not required for the university to share with school officials those student education records necessary for carrying out those university functions in which they have legitimate educational interest. 34 CFR 99.31(a)(1)(i)(B). FERPA specifically allows universities to designate vendors such as digital tool providers as school officials, and accordingly to share with them personally identifiable information from student education records if they perform appropriate services for

the university and are subject to all applicable requirements governing the use, disclosure and protection of student data.

Privacy of Student Records & the Use of Audio Recorded Lectures

See information about [privacy of student records and the usage of audio-recorded lectures](#).

Lecture materials and recordings for this course are protected intellectual property at UW-Madison. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. If a lecture is not already recorded, you are not authorized to record my lectures without my permission unless you are considered by the university to be a qualified student with a disability requiring accommodation. [Regent Policy Document 4-1] Students may not copy or have lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

How to Succeed in This Course

Students should attend all classes and discussion sessions. Participation is key to this course and students will be expected to complete all the recommended reading, short assignments, and actively participate in both the class discussions as well as the small group sessions to succeed in this course. If you are unable to attend a class because of illness or a significant scheduling conflict, please email the course director with your reason for absence as soon as is practical. You will still be required to complete the short-written responses to the faculty expert questionnaire.

Course Evaluations

UW-Madison now uses an online course evaluation survey tool, AEFIS. In most instances, you will receive an official email two weeks prior to the end of the semester when your course evaluation is available. You will receive a link to log into the course evaluation with your NetID where you can complete the evaluation and submit it, anonymously. Your participation is an integral component of this course, and your feedback is important. We strongly encourage you to participate in the course evaluation.

Students' Rules, Rights & Responsibilities

During the global COVID-19 pandemic, we must prioritize our collective health and safety to keep ourselves, our campus, and our community safe. As a university community, we must work together to prevent the spread of the virus and to promote the collective health and welfare of our campus and surrounding community.

UW-Madison [Badger Pledge](#)

Campus Guidance on the use of Face Coverings

Face coverings must be [correctly worn](#) on campus at all times and in all places (both outside and inside), except by students in their assigned residence hall rooms; by employees when alone in a private, unshared lab or office; when traveling alone in a private vehicle; and when exercising outside in a way that maintains 6 feet of distance from other people.

Students with disabilities or medical conditions who are unable to wear a face covering should contact the [McBurney Disability Resource Center](#) or their Access Consultant if they are already affiliated. Students requesting an accommodation unrelated to disability or medical condition, should contact the Dean of Students Office.

Students who choose not to wear a face covering may not attend in-person classes, unless they are approved for an accommodation or exemption. All other students not wearing a face covering will be asked to put one on or leave the classroom. Students who refuse to wear face coverings appropriately or adhere to other stated requirements will be reported to the [Office of Student Conduct and Community Standards](#) and will not be allowed to return to the classroom until they agree to comply with the face covering policy. An instructor may cancel or suspend a course in-person meeting if a person is in the classroom without an approved face covering in position over their nose and mouth and refuses to immediately comply.

Quarantine or Isolation Due to COVID-19

Student should continually monitor themselves for COVID-19 symptoms and get [tested](#) for the virus if they have symptoms or have been in close contact with someone with COVID-19. Student should reach out to instructors as soon as possible if they become ill or need to isolate or quarantine, in order to make alternate plans for how to proceed with the course. Students are strongly encouraged to communicate with their Instructor concerning their illness and the anticipated extent of their absence from the course (either in-person or remote). The instructor will work with the student to provide alternative ways to complete the course work.

Diversity & Inclusion Statement

[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.

Academic Integrity Statement

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 action include, but is not limited to, failure on the assignment/course, written reprimand, disciplinary probation, suspension, or expulsion.

Accommodations for Students with Disabilities Statement

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 faculty [me] 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. Faculty [I], will work either directly with the student [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](#))

Academic Calendar & Religious Observances

See: <https://secfac.wisc.edu/academic-calendar/#religious-observances>