Ph.D. in Integrated Biomedical Sciences Program

IBMS 6100 Ethics of Scientific Research Credit Hours: 1

Semester:	Spring	**Year:**	2026
Class Day/Time:	Wed, 10:30a-11:30a	**Class Location:**	BMR 12.1 (basement)

Instructor of Record: Dr. Pierre Neuenschwander
Office: **BMR 301.4** (back of Lab B1)
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Office Hours: Thursdays, noon–1 pm

Course Description: A graduate-level course to provide ethical aspects in biomedical science research. Topics will be centered on the responsible and ethical conduct of research but will also touch upon human subjects research and informed consent. Case studies will be used throughout the course to facilitate the student's ability to identify areas of concern, deal with potential moral dilemmas, and respond appropriately to cases of research misconduct.

Prerequisite: None **Co-requisite:** None

Goals of Course:

1. The student will be able to identify and discuss cases of scientific misconduct.
2. The student will be able to navigate through examples of scientific moral dilemmas.
3. The student will understand and be able to discuss examples of scientific plagiarism and how to avoid it.
4. The student will understand and be able to discuss informed consent.

Student Learning Outcomes (SLO or "course objectives"):

1. The student will demonstrate the ability to identify and discuss cases of scientific misconduct.
2. The student will demonstrate the ability to navigate through examples of scientific moral dilemmas.
3. The student will demonstrate an understanding of and be able to discuss examples of scientific plagiarism.
4. The student will demonstrate an understanding of informed consent.

Subject-specific Skills:
TBD

Course Assessment/Methods of Evaluation:

- Reflection papers or case study analyses (20%)
- Quizzes (20%)
- Attendance and Participation (30%)
- Final presentation (30%)

Attendance & Participation (30% of final grade): Regular and punctual attendance is expected and essential for this class. If a student misses a class, the student will not benefit from the discussion. **Make-ups of the discussion (participation) are not possible.** Each class will be worth 10 points for attendance and participation (5 points for attendance and up to 5 points for participation in the discussion). Students are expected to be in attendance for the majority of class time to receive full credit. **Tardiness of more than 30 minutes will result in a reduction of 5 points for that class.**

Students are allowed one excused absence without penalty (any assignments are still due on time). For an excused absence, the student **must** contact me, the instructor for hat class, and the Program Manager (Dr. Chris Holmquist) by email before the start of class. Additional excused absences (after the one allowed) will result in a deduction of 10 points for attendance & participation in each missed class. Unexcused absences will result in the student not receiving any credit for attendance & participation in each missed class.

Linked Program Learning Outcomes:
The student learning outcomes listed above address the following Integrated Biomedical Sciences Program PLO domains:

- PLO1 - Core Knowledge domain
- PLO3 - Scholarly domain
- PLO4 - Professionalism domain

Textbook:
On Being a Scientist: A Guide to Responsible Conduct in Research, 3rd ed., Committee on Science, Engineering, and Public Policy. National Academy of Sciences, National Academy of Engineering, and Institute of Medicine of the National Academies. National Academies Press, Washington DC., 2009 ISBN 978-0-309-11970-2. **PROVIDED in CANVAS**

Course Content:
Week 1 – Introduction to Research Ethics (Jan 14) - Neuenschwander

- Historical context: Nuremberg Code, Declaration of Helsinki, Belmont Report.
- Why ethics matters in biomedical research.

Week 2 – Principles of Biomedical Ethics (Jan 21) - Neuenschwander

- Autonomy, beneficence, non-maleficence, justice.
- Application to human and animal research.

Week 3 – Responsible Conduct of Research (RCR) (Jan 28) - Neuenschwander

- Honesty, transparency, reproducibility.
- NIH/NSF requirements for RCR training.

Week 4 – Human Subjects Research (Feb 4) - Tvinnereim

- Informed consent, confidentiality, vulnerable populations.
- Institutional Review Boards (IRBs).

Week 5 – Animal Research Ethics (Feb 11) - Tvinnereim

- 3Rs principle (Replacement, Reduction, Refinement).
- IACUC oversight and controversies in animal experimentation.

Week 6 – Data Management and Integrity (Feb 18) - Neuenschwander

- Data collection, storage, sharing.
- Fabrication, falsification, plagiarism.

Week 7 – Authorship and Publication Ethics (Feb 25) - Neuenschwander

- Criteria for authorship.
- Peer review ethics, duplicate publication, predatory journals.

Week 8 – Conflicts of Interest (Mar 4) - Tvinnereim

- Financial, personal, and professional conflicts.
- Disclosure requirements and case studies.

Week 9 - SPRING BREAK – no class on Mar 11

Week 10 – Emerging Technologies (Mar 18) - Neuenschwander
- CRISPR, AI in biomedical research, synthetic biology.
- Ethical implications of cutting-edge tools.

Week 11 – Clinical Trials and Translational Research (Mar 25) - Tvinnereim
- Ethical design of trials.
- Placebo use, risk/benefit analysis, global trial ethics.

Week 12 – Intellectual Property and Commercialization (Apr 1) - Neuenschwander
- Patents, licensing, and open science.
- Balancing innovation with accessibility.

Week 13 – Global Perspectives in Research Ethics (Apr 8) - Tvinnereim
- Cross-cultural considerations.
- International collaborations and differing regulatory standards.

Week 14 – Whistleblowing and Misconduct (Apr 15) - Neuenschwander
- Case studies of misconduct (e.g., Hwang Woo-suk, He Jiankui).
- Protections for whistleblowers.

Week 15 – Policy, Governance, and Public Trust (Apr 22) - Neuenschwander
- Role of government agencies (FDA, NIH, WHO).
- Building and maintaining public trust in biomedical science.

Week 16 – Student Presentations and Capstone Discussion (Apr 29)
- Students present case analyses or policy proposals.
- Integrative discussion: future of biomedical ethics.

FINALS WEEK May 4-9 – no classes

Other Class Policies:

Academic Honesty:

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Cheating

Dishonesty of any kind involving examinations, assignments, alteration of records, wrongful possession of examinations, and unpermitted submission of duplicate papers for multiple classes or unauthorized use of keys to examinations is considered cheating. Cheating includes but is not limited to:
- Using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class.
- Falsifying or inventing any information, including citations, on an assigned exercise.
- Helping or attempting to help another in an act of cheating or plagiarism.

Plagiarism

Plagiarism is presenting the words or ideas of another person as if they were your own. Materials, even ideas, borrowed from others necessitate full and complete acknowledgment of the original authors. Offering the work of another as one's own is plagiarism and is unacceptable in the academic community. A lack of adequate recognition constitutes plagiarism, whether it utilizes a few sentences, whole paragraphs, articles, books, audio-visual materials, or even the writing of a fellow student. In addition, the presentation of material gathered, assembled or formatted by others as one's own is also plagiarism. Because the university takes such misconduct very seriously, the student is urged to carefully read university policy Sec. 8-802. Academic Dishonesty. Examples of plagiarism are:

- Submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another.
- Submitting a work that has been purchased or otherwise obtained from an Internet source or another source.
- Incorporating the words or ideas of an author into one's paper without giving the author due credit.

AI (Artificial Intelligence) Policy:

UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copyrighted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified for this course (see below) is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy.

Use of AI is not permitted in this course at all.

To best support your learning, you must complete all graded assignments by yourself to assist in your learning. Doing your own work, without human or artificial intelligence assistance, is best for your efforts in mastering course learning objectives. This exclusion of other resources to help complete assignments includes artificial intelligence (AI). Refrain from using AI tools to generate any course context (e.g., text, video, audio, images, code, etc.) for any assignment or classroom assignment.

Adding/Dropping:

The official deadline for adding and dropping courses is as published in the academic calendar (Registrar Withdrawal webpage). However, students are strongly encouraged to meet with their graduate advisor or the Program Coordinator prior to adding/dropping courses. Movement into and out of classes after the 4th class day requires approval of the Program Director. Each student is responsible for their own enrollment status with the university.

Disability Accommodations:

UT Tyler HSC abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, which mandate reasonable accommodations be provided for students with documented disabilities. If you have a disability and may require some type of instructional and/or examination accommodations, please contact me early in the semester so that I can provide or facilitate the provision of accommodations you may need. If you have not already done so, you will need to register with the Student Services Office (located on the main campus). You may call 903-566-7079 for more information.

A listing and description of all student policies can be found here: Manual of Policies and Procedures for Student Affairs.