

## Responsible Conduct of Research

In accordance with the NIH policy regarding instruction in the Responsible Conduct of Research (NOT-OD-10-019), the MU School of Medicine provides the course, Medical Pharmacology and Physiology 8415: Responsible Conduct of Research through Enactment, Empowerment and Engagement, taught by Mark Milanick, PhD, professor of medical pharmacology and physiology. This course is required for scholars receiving support through any NIH training, career development award (individual or institutional), research education grant, and dissertation research grant

### Course Philosophy

The course is designed to help students and trainees build a strong understanding of the spirit and rules for ethical behavior in research. The course will also help trainees learn how to think about ethical dilemmas and to recognize bias when addressing ethical questions. The approach to teaching these skills will mimic actual situations encountered, for example, in writing research proposals and conducting experiments.

### Course Expectations

The course is taught face-to-face for a full semester and meets 2 hours each week. Trainees are expected to complete weekly readings and to participate in discussions. Trainees also write a blog each week summarizing the discussion from class and their impressions of the reading for the next class. In addition, students complete a project that proposes an improvement to institutional processes for responsible conduct of research.

The following course topics will teach trainees to:

1. Understand institutional and federal-sponsor requirements regarding personal, professional, and financial **conflicts of interest** as well as how to identify, review, and report/manage them.
2. Understand institutional and federal-sponsor requirements and regulations regarding research involving **human subjects** and **live vertebrate animals**. This includes understanding what constitutes human subjects research, and appropriate timing for obtaining institutional approval for human or vertebrate animal research.
3. Understand **safe laboratory practices** including issue of biological safety, radiation safety, clean lab space, protective equipment, hazardous waste disposal.
4. Understand the importance of, as well as the expectations and responsibilities involved in, an effective **mentor/mentee relationship**, including how to establish a relationship and work together, how to identify challenges, and the mentee's transition to an independent researcher.
5. Understand the growing importance of **collaborative research**, and how to foster cooperation, trust and collegiality within these collaborations. This includes **relationships with industry** that involve patentable technologies.
6. Understand the importance of ethical and **responsible authorship**, including consideration of issues such as clear communication about authorship and self-plagiarism.
7. Understand the role that **peer review** plays in validating scientific **publication** (thus providing credit for professional advancement) as well as the role that peer review plays in assessing a grant application. This includes ethical conduct required of reviewers.
8. Understand the importance of **data integrity** in terms of research design, data acquisition, data management, and data presentation, as well as the responsible ownership, sharing, and storage of data.
9. Understand what constitutes **research misconduct**, how to report it, what the policies are for handling misconduct, and what can be done to decrease its occurrence.
10. Understand the role of the **scientist as a responsible member of society**, contemporary ethical issues in biomedical research, the environmental and societal impacts of scientific research, as well as issues of discrimination, and gender or ethnic biases related to research.