

NAS 501: Research Methods and Scientific Ethics

Instructor: Assist. Prof. Dr. Fatih BALCI

Location: Food Engineering Department, Classroom G1

Time: Thursdays, 10:30 AM

Course Objective

The primary goal of this course is to introduce students to the fundamentals of scientific methodology and ethical principles in research, while explaining why it is crucial for a scientist to understand and adhere to these values. The course provides insight into the most current perspectives, methods, approaches, and challenges related to scientific ethics and research. Through case studies and practical examples, students will gain a comprehensive understanding of the ethical considerations in scientific work and how to apply these principles effectively.

This course is mandatory for all graduate students and is designed to equip them with the necessary skills to conduct research responsibly and apply proper methodological approaches in their academic work.

This course equips graduate students with the skills necessary to conduct research responsibly and ethically. It not only fosters a deep understanding of scientific methodology but also emphasizes the importance of maintaining ethical standards in all phases of research, from the planning stages to publication and beyond. By understanding the ethical challenges faced by scientists, students will be better prepared to navigate the complexities of modern research, avoid misconduct, and contribute positively to their respective fields.

Course Schedule

Week	Date	Topic
1	03-October-2024	Introduction to General Ethics (Case Study)
2	10-October-2024	Foundations of General Ethics and Ethical Theories
3	17-October-2024	In-depth Analysis of Ethical Theories
4	24-October-2024	Professional Ethics
5	31-October-2024	Ethical Problem-Solving Techniques I
6	07-November-2024	Ethical Problem-Solving Techniques II
7	14-November-2024	Case Study on Ethical Dilemmas
8	20-November-2024	Midterm I (30%) - MD, Amphitheatre, 19:00
9	28-November-2024	Information Literacy
10	05-December-2024	Introduction to Scientific Research Methods
11	12-December-2024	Advanced Scientific Research Methods
12	19-December-2024	Scientific Misconduct and Ethics
13	25-December-2024	Midterm II (30%) - MD, Amphitheatre, 19:00
14	02-January-2025	Continued Discussion on Scientific Misconduct

Final Exam (40%): The exact date, location, and time will be determined based on the official final exam schedule.

Course Expectations

- Active and regular participation is required. According to our graduate program regulations, a minimum attendance rate of 70% is mandatory. Failure to meet this attendance requirement will result in an automatic "NA" (Non-Attendance) grade.

- During lectures, students are expected to either turn off or silence all electronic devices, including laptops and mobile phones.

Recommended Resources

- Burkhardt, J. M., MacDonald, M. C., & Rathemacher, A. J. (2010). *Teaching Information Literacy: 50 Standards-Based Exercises for College Students*. American Library Association.
- Carey, S. S. (2011). *A Beginner's Guide to Scientific Method*. Cengage Learning.
- Fleddermann, C. B. (1999). *Engineering Ethics* (Vol. 4). Prentice Hall.
- Gauch, H. G. (2003). *Scientific Method in Practice*. Cambridge University Press.
- Gower, B. (1997). *Scientific Method: An Historical and Philosophical Introduction*. Psychology Press.
- Rabins, M.J., Harris, E., Pritchard, M.S., & Lowery, L.L. *Engineering Ethics*. <http://ethics.tamu.edu>
- Keohane, R. O., Lane, M., & Oppenheimer, M. (2014). *The Ethics of Scientific Communication under Uncertainty*. *Politics, Philosophy & Economics*, 13(4), 343-368.
- Krause, M., & Corts, D. (2016). *Psychological Science: Modeling Scientific Literacy*. Pearson. Chapter 1.
- Mak, D. K., Mak, A. T., & Mak, A. B. (2009). *Solving Everyday Problems with the Scientific Method: Thinking Like a Scientist*. World Scientific.
- Petersson, B., Hermerén, G., & Gustafsson, B. (2006). *Good Research Practice: What Is It?*
- Uçak, N. Ö., & Birinci, H. G. (2008). *Bilimsel Etik ve İntihal*. *Türk Kütüphaneciliği*, 22(2), 187-204.