

**IMPORTANT:** This syllabus form should be submitted to OAA ([gsbs\\_academic\\_affairs@uth.tmc.edu](mailto:gsbs_academic_affairs@uth.tmc.edu)) a week before the start of each semester.

**NOTE to STUDENTS:** If you need any accommodations related to attending/enrolling in this course, please contact one of the Graduate School's 504 Coordinators, Cheryl Spitzengerger or Natalie Sirisaengtaksin. We ask that you notify GSBS in advance (preferably at least 3 days before the start of the semester) so we can make appropriate arrangements.

<p><b>Term and Year</b></p> <p>Course Number and Course Title:</p> <p>Credit Hours:</p> <p>Meeting Location:</p> <p>Building/Room#:</p> <p>WebEx/Zoom Link:</p>	<p>Program Required Course:      Yes      No</p> <p>Approval Code:      Yes      No</p> <p><b>(If yes, the Course Director or the Course Designee will provide the approval code.)</b></p> <p>Audit Permitted:      Yes      No</p> <p>Classes Begin:</p> <p>Classes End:</p> <p>Final Exam Week:</p>
---	---

**Class Meeting Schedule**

Day	Time

<p><b>Course Director</b></p> <p>Name and Degree:</p> <p>Title:</p> <p>Department:</p> <p>Institution:      <i>UTH</i>      <i>MDACC</i></p> <p>Email Address:</p> <p>Contact Number:</p> <p><b>Course Co-Director/s:</b> (if any)</p> <p>Name and Degree:</p> <p>Title:</p> <p>Department:</p> <p>Institution:      <i>UTH</i>      <i>MDACC</i></p> <p>Email Address:</p> <p>Contact Number:</p> <p><b>NOTE:</b> Office hours are available by request. Please email me to arrange a time to meet.</p>	<p><b>Instructor/s</b> (Use additional page as needed)</p> <p>1.</p> <p style="padding-left: 20px;">Name and Degree</p> <p style="padding-left: 20px;">Institution:</p> <p style="padding-left: 20px;">Email Address :</p> <p>2.</p> <p style="padding-left: 20px;">Name and Degree</p> <p style="padding-left: 20px;">Institution:</p> <p style="padding-left: 20px;">Email Address :</p> <p>3.</p> <p style="padding-left: 20px;">Name and Degree</p> <p style="padding-left: 20px;">Institution:</p> <p style="padding-left: 20px;">Email Address</p> <p>4.</p> <p style="padding-left: 20px;">Name and Degree</p> <p style="padding-left: 20px;">Institution:</p> <p style="padding-left: 20px;">Email Address:</p>
--	---

<b>Teaching Assistant:</b> (if any)  Name and Email Address  Name and Email Address	<b>Cont. Instructor/s</b>  5. Name and Degree Institution: Email Address
---	---

**Course description:**

**Textbook/Supplemental Reading Materials** (if any)

- 
- 
- 
- 

**Course Objective/s:**  
Upon successful completion of this course, students will

***Specific Learning Objectives:***

- 1.
- 2.
- 3.
- 4.
- 5.

**Student responsibilities and expectations:** (See example below from GS04 1235: Basic and Translational Cancer Biology course)

Students enrolled in this course will be expected to perform the following activities each week.

1. Read, process, and review (study) material from 1 or 2 seminal reviews relating to the week's cancer biology topic
2. Read 2 research articles (e.g., primary research)
3. Write 2 one-page literature synopses for the assigned research articles (see **Course Grading** for more detail)
4. Prepare for and take course quizzes based on course lectures/ readings.
5. Attend and participate at the journal club review session
6. Participate in and contribute to course discussions during lecture, review sessions
7. Prepare for and take a final examination based on lecture and some reading material

Students are expected to complete all assigned reading material (reviews and research literature) prior to class. While you may work and discuss all course materials and assignments in groups, all writing assignments must be your own. Plagiarism and failure to properly cite scientific literature and other sources will not be tolerated and are grounds for dismissal from the course and further GSBS disciplinary action. Cheating or engaging in unethical behavior during examinations (quizzes and final) will be grounds for dismissal from the course without credit and further GSBS disciplinary action.




**NOTE:** Provide other class information as needed.

*jal/04.21*

**GS 211051**  
 FALL 2021 Schedule  
 Thursdays 11:15 a.m.-12:30 p.m.

Date	Topic	Assignment*	Cases
09/02/2021	Organizational Meeting Pre-test		
09/09/2021	How to present a case & NYT article	Chapter 1	Case #1
09/16/2021	Scientific Integrity & Research Misconduct	Chapter 2	Case #2 Plagiarism Exercise
09/23/2021	Research with Human Subjects	Chapter 3	Case #3 Case #4
09/30/2021	Humane Care & Use of Animals in Research	Chapter 4	Case #5 Exercise
10/07/2021	Management of Scientific Data	Chapter 6	Case #6 Case #7
10/14/2021	Mentor and Trainee Responsibilities	Chapter 7	Case #8 Exercise
10/21/2021	Collaborative Research Peer Review	Chapter 8 Chapter 10	Case #9 Case #10
10/28/2021	Conflicts of Interest	Chapter 5	Case #11 Exercise
11/04/2021	Authorship	Chapter 9	Case #12 Exercise
11/11/2021	Biosafety & Biosecurity	3 journal articles (on Canvas)	Case #13 Case #14
11/18/2021	Genetics, Cloning, Stem cell research	2 articles (on Canvas)	Case #15 Exercise
11/26/2021	<i>No Class</i>		
12/02/2021	Post-test (on-line)		

## THE ETHICAL DIMENSIONS OF THE BIOMEDICAL SCIENCES

### Faculty Discussion Group Leaders

<p>Askar Akimzhanov, PhD  Assistant Professor  Dept of Biochemistry and Molecular Biology  UTHealth Medical School  <a href="mailto:Askar.M.Akimzhanov@uth.tmc.edu">Askar.M.Akimzhanov@uth.tmc.edu</a></p>	<p>Joe Alcorn, PhD  Associate Professor  Department of Pediatrics  UTHealth Medical School  <a href="mailto:Joseph.L.Alcorn@uth.tmc.edu">Joseph.L.Alcorn@uth.tmc.edu</a></p>
<p>Shane Cunha, PhD  Associate Professor  Dept of Integrative Biology and  Pharmacology  UTHealth Medical School  <a href="mailto:Shane.R.Cunha@uth.tmc.edu">Shane.R.Cunha@uth.tmc.edu</a></p>	<p>Ashish Kapoor, PhD  Assistant Professor, Center for Human Genetic  UT-IMM  <a href="mailto:ashish.kapoor@uth.tmc.edu">ashish.kapoor@uth.tmc.edu</a></p>
<p>Richard J. Kulmacz, PhD  Professor  Department of Internal Medicine-  Hematology  UTHealth Medical School  <a href="mailto:Richard.J.Kulmacz@uth.tmc.edu">Richard.J.Kulmacz@uth.tmc.edu</a></p>	<p>Rebecca Lunstroth, JD, MA  Associate Professor and Associate Director  McGovern Center for Ethics and Humanities  UTHealth Medical School  <a href="mailto:Rebecca.Lunstroth@uth.tmc.edu">Rebecca.Lunstroth@uth.tmc.edu</a></p>
<p>Chris Mackenzie Ph.D. F.R.S.B.  Assistant Professor  Dept. of Microbiology and Molecular  Genetics  UTHealth Medical School  <a href="mailto:Ronald.C.Mackenzie@uth.tmc.edu">Ronald.C.Mackenzie@uth.tmc.edu</a></p>	<p>Angela Medvedeva, Ph.D.  Postdoctoral Research Fellow  Dept of Neurosurgery  UTHealth Medical School  <a href="mailto:Angela.Medvedeva@uth.tmc.edu">Angela.Medvedeva@uth.tmc.edu</a></p>
<p>Kyle Poulsen, PhD  Assistant Professor  Dept of Anesthesiology  UTHealth Medical School  <a href="mailto:Kyle.L.Poulsen@uth.tmc.edu">Kyle.L.Poulsen@uth.tmc.edu</a></p>	<p>Sujatha Sridhar, MBBS, MCE  Executive Director  Research Compliance, Education, and  Support Services  UTHealth  <a href="mailto:Sujatha.Sridhar@uth.tmc.edu">Sujatha.Sridhar@uth.tmc.edu</a></p>
<p>Luis Vega, Ph.D.  Postdoctoral Research Fellow  Dept of Pediatrics  UTHealth Medical School  <a href="mailto:Luis.A.Vega@uth.tmc.edu">Luis.A.Vega@uth.tmc.edu</a></p>	<p>Melinda S. Yates, Ph.D.  Associate Professor  Gynecologic Oncology and Reproductive  Medicine  UT-MDACC  <a href="mailto:MSYates@mdanderson.org">MSYates@mdanderson.org</a></p>

--	--

Specific Class Objectives:

Wk 1 Patents and COVID	<ul style="list-style-type: none"> <li>• Learn how to analyze a case involving research ethics using the guidelines for reasoning through an ethical dilemma and ethics case worksheet.</li> <li>• Identify the ethical issues in a patent case</li> <li>• Understand the requirements, process and policy implications of patent protection.</li> </ul>
Wk 2 Scientific Misconduct	<ul style="list-style-type: none"> <li>• Examine various cases and assess whether research misconduct has taken place based on the evidence.</li> <li>• Evaluate the likely consequences of reported misconduct.</li> <li>• Analyze the likely motive for the misconduct.</li> <li>• Distinguish when the failure of another scientist to replicate results becomes an ethical issue.</li> </ul>
Wk 3 Human Subject Research	<ul style="list-style-type: none"> <li>• Appreciate the historical relevance and importance of informed consent</li> <li>• Recognize the complexities of gaining consent for stored biological materials</li> <li>• Apply the current policies governing human subject research to actual scenarios</li> <li>• Identify the ethical standards for conducting human subject research</li> <li>• Identify ethical issues that arise in human subject research</li> <li>• Appraise the benefits and threats of conducting human subject research overseas</li> </ul>
Wk 4 Animal Research	<ul style="list-style-type: none"> <li>• Describe the role of the IACUC in reviewing and approving animal care and use protocols.</li> <li>• Describe the responsibilities that a student researcher has for the welfare of animal research subjects.</li> <li>• Describe the responsibilities of a principle investigator for the welfare of animals used in research.</li> </ul>
Wk 5 Data Management	<ul style="list-style-type: none"> <li>• Cite the factors that determine who has ownership of and access to data produced from research.</li> <li>• Explain the importance of properly recording and protecting research data.</li> <li>• Describe procedures for properly recording and protecting research data.</li> <li>• Explain the importance of sharing the products of research (data, techniques, animal models, etc.).</li> <li>• Describe some circumstances that might limit sharing the products of research.</li> </ul>
Wk 6 Mentoring	<ul style="list-style-type: none"> <li>• To promote discussions between graduate students and their mentors</li> <li>• To heighten awareness about the roles and responsibilities of a mentor</li> </ul>



	<ul style="list-style-type: none"> <li>• To explore available options when the mentor-mentee relationship goes afoul.</li> <li>• Recognize and react to what you would do as a graduate student if you were assigned a trainee to mentor.</li> <li>• Articulate the topics that you should discuss with a trainee prior to establishing a relationship.</li> <li>• Examine the role of mentors as co-authors.</li> </ul>
Wk 7 Collaborative Research & Peer Review	<ul style="list-style-type: none"> <li>• Apply the principles of openness, freedom of inquiry, and respect for intellectual property to collaborative research situations.</li> <li>• Discuss the tension between the importance of sharing ideas and the need to protect these ideas from premature dissemination.</li> <li>• Examine the responsibilities that faculty members have toward students in their department/institution.</li> <li>• Explain the importance of confidentiality in the peer review process.</li> <li>• Analyze a case scenario in which two aspects of being an ethical scientist conflict with each other and decide on an ethical solution.</li> </ul>
Wk 8 Conflicts of Interest	<ul style="list-style-type: none"> <li>• Identify and define a financial conflict of interest in research</li> <li>• Understand how COIs are managed at UTHHealth and MD Anderson</li> <li>• Recognize the strengths and shortcomings of these policies</li> <li>• Identify a conflict of interest and the ethical values that policies seek to address</li> <li>• Frame how a conflict is managed</li> <li>• Understand some of the inherent tensions in managing a conflict of interest</li> </ul>
Wk 9 Authorship	<ul style="list-style-type: none"> <li>• Understand and apply the Uniform Requirements of the International Committee of Medical Journal Editors.</li> <li>• Recognize how to avoid authorship issues</li> <li>• Articulate the standards for authorship and the appropriate order of authors.</li> <li>• Critically analyze these standards and apply them to a case scenario.</li> <li>• Identify the political nuances of authorship issues and articulate strategies for dealing with them.</li> </ul>
Wk 9 Dual Use	<ul style="list-style-type: none"> <li>• Discuss the ethical ramifications of advancements in molecular biology that have increased the risk that research could be used to malicious intent.</li> <li>• Evaluate the ethical issues in the synthetic production of a pathogenic virus.</li> <li>• Summarize the responsibilities that scientists have towards society when their research could be put to malevolent purposes.</li> </ul>
Wk 10 Hot Topics –	<ul style="list-style-type: none"> <li>• Recognize and analyze the ethical issues inherent in stem cell research</li> <li>• Applying the principles of responsible research, analyze when a given therapy should be subjected to the rigors of a research protocol</li> </ul>

Stem Cells and CRISPR	<ul style="list-style-type: none"><li>• Recognize and analyze the ethical issues inherent in gene editing technologies.</li><li>• Demonstrate how national policies are formed.</li></ul>
-----------------------	---

Required Reading – available on-line:

- Strenck, N. Introduction to the Responsible Conduct of Research, U.S. Government Printing Office, Washington D.C. 2007.
- Committee on Human Gene Editing: Scientific, Medical, and Ethical Considerations; National Academy of Sciences; National Academy of Medicine; National Academies of Sciences, Engineering, and Medicine. Summaries of Principles and Recommendations
- Hyun, I. The bioethics of stem cell research and therapy. *J Clinical Invest.* 120:1, 2010. Pp. 71-75.
- Somerville, M.A. and Atlas, R.M. Ethics: A Weapon to Counter Bioterrorism. *Science* 37, 2005. pp. 1881-1882.
- Office of Research Integrity. Dual Use Research and the Societal Responsibilities. 19:2, 2011.
- The Interacademy Panel on International Issues. IAP Statement on Biosecurity.