

**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 the Graduate School's 504 Coordinator, Natalie Sirisaengtaksin, PhD. 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>Term and Year: <b>Fall 2026</b></p> <p>Course Number and Course Title: <b>GS07 1092: Topics in Microbiology and Infectious Diseases</b></p> <p><b>Credit Hours: 2</b></p> <p>Prerequisites: <b>Previous coursework in molecular microbiology, or permission of the course director</b></p> <p>Meeting Location: <b>UTH McGovern Medical School</b></p> <p>Building/Room#: <b>MSB 1.180 (Dr. Sam Kaplan Memorial Library)</b></p>	<p><b>Program Required Course:</b> <u>Yes</u></p> <p><b>Approval Code:</b> <u>No</u></p> <p><b>Audit Permitted:</b> <u>No</u></p> <p><b>Classes Begin:</b> August 31, 2026</p> <p><b>Classes End:</b> December 18, 2026</p> <p><b>Final Exam Week:</b> N/A</p>
<p><b>Class Meeting Schedule</b></p>	
<p style="text-align: center;">Day</p> <p style="text-align: center;"><b>Tuesday and Thursday</b></p>	<p style="text-align: center;">Time</p> <p style="text-align: center;"><b>2:00 – 3:00 PM</b></p>
<p><b>Course Director</b> Name and Degree: <b>Diana M. Proctor, PhD</b> Title: Assistant Professor Department: Microbiology and Molecular Genetics Institution: <b>UTHH</b> Email Address: <a href="mailto:Dinah.M.Proctor@uth.tmc.edu">Dinah.M.Proctor@uth.tmc.edu</a> Contact Number: 713-500-4882</p> <p><b>NOTE:</b> Office hours are available by request. Please email me to arrange a time to meet.</p> <p><b>Teaching Assistant:</b> <b>N/A</b> Name and Email Address</p>	<p><b>Instructors</b></p> <p>1. <b>Diana M. Proctor, PhD</b> Institution: UTHH Email Address: <a href="mailto:Dinah.M.Proctor@uth.tmc.edu">Dinah.M.Proctor@uth.tmc.edu</a></p> <p>2. <b>Nicolas De Lay, PhD</b> Institution: UTHH Email Address: <a href="mailto:Nicolas.R.DeLay@uth.tmc.edu">Nicolas.R.DeLay@uth.tmc.edu</a></p> <p>3 <b>Danielle A. Garsin, PhD</b> Institution: UTHH Email Address: <a href="mailto:Danielle.A.Garsin@uth.tmc.edu">Danielle.A.Garsin@uth.tmc.edu</a></p> <p>4. <b>Anne-Marie Krachler, PhD</b> Institution: UTHH Email Add: <a href="mailto:Anne.Marie.Krachler@uth.tmc.edu">Anne.Marie.Krachler@uth.tmc.edu</a></p>

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**Course Description:**

This course offers an overview of the latest research on selected topics in microbiology and infectious diseases, with a focus on critically evaluating the rigor of different methodological approaches. The curriculum helps students acquire the ability to critically review research and develop a research project.

The course consists of student presentations and discussion of recent scientific articles. The list of articles for each session will be provided in advance. Students will also be required to develop and write a full NIH-style grant proposal. **This course fulfills the GSBS Scientific Writing requirement.**

**Textbook/Supplemental Reading Materials**

- The Grant Application Writer's Workbook will be provided to you for use throughout the course. As we recycle these books for next year's class, please treat your copy with care, as you would a library book.
- Primary scientific literature (recent research articles) will be assigned for discussions.

### **Course Objective/s:**

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

1. Critically evaluate primary literature pertaining to a range of topics reflecting the breadth of microbiology and infectious diseases.
2. Formulate testable research hypotheses.
3. Propose appropriate experimental strategies to test their hypotheses.

### ***Specific Learning Objectives:***

1. Learn to critically evaluate primary literature in the field of microbiology and infectious diseases.
2. Gain enough understanding of a specific subject to be able to formulate and test a sound hypothesis.
3. Devise experimental strategies and develop specific aims to test a research hypothesis.
4. Acquire grant writing skills.

### **Student responsibilities and expectations**

There are two main components of the course: literature discussion and grant writing. The literature discussion component accounts for 40% of the grade. Students will be assigned research articles to critically read and analyze. The discussion format is entirely up to the instructor, which will be announced 1-2 weeks prior to the class. All students are expected to be capable of discussing all parts of the paper.

#### **Students will:**

- 1) Critically read every week 1-2 research articles (primary literature) which will be assigned in advance by the instructors.
- 2) Attend and participate in every session.

The grant writing component accounts for 60% of the grade. Students will first choose a research topic distinct from their own thesis topic along with a faculty mentor among the 6 faculty members involved in the course.

#### **Students will:**

- 1) Pick a research topic and a mentor and meet with the mentor periodically on the assigned dates to discuss all aspects of proposal development. The meetings are expected to take place during the normal scheduled class hours (2-3PM Tuesday or Thursday). However, if the faculty mentor has a scheduling conflict that day and time, they will reach out to you directly to reschedule the meeting. The mentor-mentee meetings are required and will be graded based on the faculty mentor's input on the mentee's progress and preparedness for the discussion.
- 2) Write a draft of specific aims: the draft should be one page long and include sub-aims. You must meet with your faculty mentor to discuss the draft. Examples of specific aims will be made available to you.
- 3) Give an oral presentation of the aims and the outlines of the approach: The presentation should give a brief introduction to your topic and outline aims/sub aims with details of methods/techniques to be used. Presentations will be informal discussions between students and faculty and should help you formulate an

experimental plan. Plan for 10-12 minutes of presentation followed by 10-15 minutes of feedback. Please expect that the class might go over an hour and leave an extra 30 minutes to your schedule.

4) Revise the specific aims and write a 6-page grant proposal in the format of an NIH R21 or F31 grant proposal. You must meet with your faculty mentor to discuss the revised specific aims and experimental plan following the presentations. Examples of funded grant proposals will be made available to you.

5) Receive written critiques after the grant has been reviewed by several faculties. You will submit revised grant proposal based on the critiques, along with a one-page Introduction addressing the critiques directly. The revised proposal will be discussed by faculty in the “study section”. You will receive another written critique that will form the basis for your final assessment.

6) Students are expected to complete all assigned reading material prior to class. While you may work and discuss all course materials 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. Engaging in unethical behavior during discussions and presentations will be grounds for dismissal from the course without credit and further GSBS disciplinary action.

As indicated in the class schedule, there is no paper assignment for several classes. Students are nonetheless expected to attend all of these classes including the aims presentation.

Grading System: **Letter Grade (A-F)**

**Student Assessment and Grading Criteria:**

<b>Percentage</b>	<b>Description</b>
<b>Homework (20%)</b>	Weekly reading of assigned literature.
<b>Presentation (15 %)</b>	Specific aims presentation
<b>Midterm Exams (15 %)</b>	Research grant proposal
<b>Final Exam (20 %)</b>	Revised research grant proposal
<b>Workshop or Breakout-Session (10%)</b>	Turning in writing assignments, participation and discussion in mentor-mentee meetings
<b>Participation and/or Attendance (20%)</b>	Participation in discussion of assigned literature

## 2026 Fall Topics in MID – Course Schedule

Time and Location: Tuesdays & Thursdays, 2–3 PM @ MMG Library (MSB 1.180, a.k.a. Dr. Sam Kaplan Memorial Library)

**Table 1:** Table showing dates, days, milestones, reading assignments for skills development, lectures topics, faculty instructors, and due dates for faculty instructors. Students should note that individual faculty also assign reading, for each class, which can be found on Canvas.

## 2026 Fall Topics in MID – Course Schedule

Time and Location: Tuesdays & Thursdays, 2–3 PM @ MMG Library (MSB 1.180, a.k.a. Dr. Sam Kaplan Memorial Library)

Date	Day	Milestones	Required Reading (Skills Development)	Lecture / Meeting Topic	Instructors	Notes
9/1/26	Tues	Identify an area of interest; Note your area of interest cannot be related to your research project or candidacy exam topic. Brainstorm proposal topic and aims; Contact and set up a mentor.	How To Choose a Good Scientific Problem. Molecular Cell 35(6), 2009 Read chapter 2: How to develop an irresistible idea	How to write a grant – Part 1	GARSIN	GARSIN lecture material upload a week before class starts
9/3/26	Thurs	Read relevant papers Narrow down the research topic and aims idea.	Read Chapter 7: Conceptual framework for creating a bulleted outline	How to write a grant – Part 2	GARSIN	KRACHLER lecture material upload
9/8/26	Tues	Mentor-Mentee Meeting 1: Brainstorm ideas for a proposal topic	Read Chapter 8: Writing the specific aims section	Mentor-Mentee Meeting 1: Brainstorm ideas for a proposal topic	KRACHLER LEE PROCTOR WU C. DE LAY N.	
9/10/26	Thurs	Read relevant papers; Narrow down the research topic and aims idea; Develop Specific Aims	None	Topic #1: Inter-species interactions 1	KRACHLER	

Date	Day	Milestones	Required Reading (Skills Development)	Lecture / Meeting Topic	Instructors	Notes
9/15/26	Tues	<b>DUE!!!! Turn in a working draft of the Specific Aims page to your mentor</b>	Read Chapter 9: Strategic use of literature review	Topic #1: Inter-species interactions 2	KRACHLER	
9/17/26	Thurs	Mentors provide feedback prior to or during the meeting	None	Topic #1: Inter-species interactions 3	KRACHLER	LEE lecture material upload
9/22/26	Tues	Mentor-Mentee Meeting 2: Discuss Specific Aims page	Read Chapter 10: Research strategy (significance and innovation)	Mentor-Mentee Meeting 2: Discuss Specific Aims page	KRACHLER LEE PROCTOR WU C. DE LAY N.	
9/24/26	Thurs	Revise Specific Aims	None	Topic #2 Functional genomics of parasite-host interactions	LEE	
9/29/26	Tues	Revise Specific Aims Prepare for presentation	None	Topic #2 Functional genomics of parasite-host interactions	LEE	
10/1/26	Thurs	<b>DUE!!!! An outline of significance, rationale, approach due to the course director</b>	None	Topic #2 Functional genomics of parasite-host interactions	LEE	
10/6/26	Tues	<b>DUE!!!! Present background, significance, rationale, hypothesis, aims, and brief description of approach (10 min talk + 10 min Q&amp;A)</b>	Read Chapter 11: Research strategy (approach)	Specific Aims Presentation 1	KRACHLER LEE PROCTOR WU C. DE LAY N.	Plan ~1.5 hours for class

Date	Day	Milestones	Required Reading (Skills Development)	Lecture / Meeting Topic	Instructors	Notes
10/8/26	Thurs	<b>DUE!!!! Present background, significance, rationale, hypothesis, aims, and brief description of approach (10 min talk + 10 min Q&amp;A)</b>	None	Specific Aims Presentation 2	KRACHLER LEE PROCTOR WU C. DE LAY N.	Plan ~1.5 hours for class
10/13/26	Tues	Write the proposal, addressing feedback from the presentation. Adjust and refine the scope, aims, and the approach.	Read Chapter 18: Compelling titles	Mentor-Mentee Meeting 3: Post-presentation discussion	KRACHLER LEE PROCTOR WU C. DE LAY N.	WU F. lecture material upload
10/15/26	Thurs	Adjust and refine the scope, aims, and the approach.	None	No class – TX ASM Branch Meeting		PROCTOR lecture material upload
10/20/26	Tues	Finalize draft proposal	None	Topic #3: Modeling genomic data	WU F.	
10/22/26	Thurs	Finalize draft proposal	None	Topic #3: Genomic analysis	PROCTOR	
10/27/26	Tues	Finalize draft proposal		Topic #3: Genomic analysis	PROCTOR	
10/29/26	Thurs	<b>DUE!!!! Work-in-progress proposal (Specific Aims + Research Strategy) due to mentor (does not have to be complete)</b>	None	Topic #3: Genomic analysis	PROCTOR	
11/3/26	Tues	Continue drafting proposal	None	Topic #4: Functional genomics in bacteria	WU C.	WU C. lecture material upload

Date	Day	Milestones	Required Reading (Skills Development)	Lecture / Meeting Topic	Instructors	Notes
11/5/26	Thurs	Mentor-Mentee Meeting 4: Draft proposal discussion	Read Chapter 5: Response to a prior review	Mentor-Mentee Meeting 4: Draft proposal discussion	KRACHLER LEE PROCTOR WU C. DE LAY N.	WALKER lecture material upload
11/10/26	Tues	<b>DUE!!!! Full research proposal due to Course Director</b>	None	Topic #4: Functional genomics in bacteria	WU C.	
11/12/26	Thurs	Proposals reviewed by 3+ reviewers	None	Topic #4: Functional genomics in bacteria	WALKER J.	
11/17/26	Tues	Critiques returned to students and mentors	None	How to write a grant – Part 3 (How to respond to critiques)	GARSIN (confirmed)	
11/19/26	Thurs	Mentor-Mentee Meeting 5: Discussion of critiques and revision plans	None	Mentor-Mentee Meeting 5: Discussion of critiques and revision plans	KRACHLER LEE PROCTOR WU C. DE LAY N.	
11/24/26	Tues	No Class – Thanksgiving Break Work on revision and introduction	None			SHARMA lecture material upload
11/26/26	Thurs	No Class – Thanksgiving Break Work on revision and introduction	None			
12/1/26	Tues	<b>DUE!!!! Turn in revision draft (Introduction + Proposal) to mentor</b>	None	Topic #5: Immunology	SHARMA (confirmed)	

Date	Day	Milestones	Required Reading (Skills Development)	Lecture / Meeting Topic	Instructors	Notes
12/3/26	Thurs		None	Topic #5: Immunology	SHARMA (confirmed)	
12/8/26	Tues	Mentor returns feedback	None	Topic #5: Immunology – patient centered learning	SHARMA (confirmed)	
12/10/26	Thurs	<b>DUE!!!! Turn in final revised proposal to Course Director (must include Introduction page)</b>	None	Topic #5: Immunology discussion	SHARMA (confirmed)	
12/15/26	Tues		None	No class. Faculty Review proposals on their own.	KRACHLER LEE PROCTOR WU C. DE LAY N.	
12/17/26	Thurs	Revised proposal reviewed by 3–4 reviewers	None	Faculty Study Section (2–3 PM, MSB Library)	KRACHLER LEE PROCTOR WU C. DE LAY N.	
		Critiques handed back to students; Re-revise if necessary				

### Expected Student Enrollment

PhD Students (Required) – total five students:

- Katy Ayers (Lorenz/Krachler Lab)
- Madhvi Bhakta (Perez Lab)
- Manuel Ramirez (Krachler)
- Gregory Mendez (Pountain)
- Raquel Luna (completed MGP but will be rotating)

### Confirmed Instructors

- Danielle Garsin

- Anne-Marie Krachler
- Jayhun Lee
- Diana Proctor
- Chenggang Wu
- Jyotika Sharma
- Jennifer Walker
- Fuqing Wu

1. One to four lectures.
2. Please upload the lecture material (e.g., slides, papers) a week before your class on Canvas.
3. Please limit the number of papers to discuss to no more than two.

### **Confirmed Writing Mentors and Responsibilities**

- Anne-Marie Krachler – writing mentor #1
  - Jayhun Lee – writing mentor #2
  - Chenggang Wu – writing mentor #3
  - Diana Proctor – writing mentor #4
  - Nicholas De Lay – writing mentor #5
1. Five mentee meetings (virtual or in-person). The purpose of these meetings is to check on the students' progress and provide feedback on their proposal. If you have a scheduling conflict, reach out to the mentee directly to arrange another time that week.
  2. Two student presentations. Each student has ~15–20 minutes, so we will have 2-3 students present each day. Please add 30 minutes to your schedule for these days, in case the discussions run overtime. Please let the course director know if you cannot make it.
  3. Two rounds of proposal review. The students will turn in their full proposals to the course director. The course director will arrange for each proposal to be reviewed by at least three instructors. The comments will be returned to students. The students will revise the proposal, add an introduction page, and turn in the final product, which will be reviewed again by at least three instructors. This will follow an in-person faculty meeting to discuss the proposals in a 'study section'-like format. An overall grade for each student will also be discussed during this meeting.