

MATH 669 – SEMINAR ON MATHEMATICAL BIOLOGY, SPRING 2022
MONDAYS/WEDNESDAYS 12:45 TO 2:00 IN BLOCKER 121

Instructor: Prof. Anne Shiu (annejls@tamu.edu)

Office: Blocker 601E

Office Hours: Wednesdays 2:15 p.m. to 3:15 p.m. and by appointment (ask one day in advance)

Prerequisites. Graduate-student status, or instructor approval

Reference textbooks. *Mathematical Biology*, Murray. *Algebraic and Combinatorial Computational Biology*, edited by Robeva and Macauley. *Algebraic Statistics for Computational Biology*, edited by Pachter and Sturmfels.

Course description. This course focuses on problems, methods, and recent developments in Mathematical Biology. Topics will include infectious-disease modeling, biochemical reaction networks, neural codes, and other topics of interest to students in the course.

Website. <https://math.tamu.edu/~annejls/teaching/669-spring-22.html> (Homework posted here.)

Learning outcomes. This aim of this course is for students to become familiar with mathematical modeling for applications in the life sciences. Upon successful completion of this course, students will be able to (1) formulate, analyze, and simulate mathematical models arising from applications in ecology, biology, and medicine, (2) read and critically assess research papers in mathematical biology, and (3) communicate effectively about the mathematical and scientific topics in the class.

Student expectations. Students will be expected to attend class, complete homework, write a final report, and give a 20-minute presentation.

Homework. Approximately 10 homework assignments will be given. Staple your homework, and remove frayed edges from paper torn from spiral notebooks; otherwise the grader will deduct 20 points. Homework solutions must be clear, well organized, and in the order assigned; otherwise the grader will deduct 10%.

Group work is strongly encouraged, but you must write up your solutions independently.

Late homework policy. Late homework is *not* accepted (except with a University-approved absence; see Make-up Policy below). However, the lowest homework score will be dropped.

Seminar response. Students will be required to attend one 50-minute talk on a topic related to Mathematical Biology, and then to submit a response (several paragraphs) to the following questions: (1) What is the question(s) that motivated this work, and why is it interesting? (2) What is the main result the speaker is conveying, and how does it pertain to your answer to (1)? (3) What aspects of the talk did you like? (4) What parts of the talk were surprising and/or confusing? Some opportunities include the Mathematical Biology seminar and the Statistics colloquium. The response is due on *April 29*.

Grading.

- Homework – including some partial drafts of the final paper: 35%
- Seminar response: 5%
- Project – in-class presentation: 20%
- Project – final paper: 30%
- Class attendance and participation: 10%

Final grades: did you accomplish the learning outcomes?

- A: 90%+
- B: 80–89%
- C: 70–79%
- D: 60–69%
- F: < 60%

The precise cut-offs will be determined when final grades are assigned.

Make-up Policy. No late assignments are possible or accepted without a University-approved excused absence (see <http://studentrules.tamu.edu/rule07>).

To be excused, you must notify the instructor in writing (by email is fine) prior to the date of absence, if possible. *Consistent with Texas A&M Student Rules, in cases where advance notification is not feasible (e.g. accident or emergency) the student must provide notification by the end of the second working day after the absence.* It is the student's responsibility to schedule a make-up in a timely manner.

If you must miss class, please get notes from another student in the class.

Life. If your performance in the class is negatively affected by your experiences outside of class, please talk to me!

Americans with Disabilities Act (ADA) Policy. Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact Disability Resources in the Student Services Building or at (979) 845-1637 or visit <http://disability.tamu.edu>. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors *as soon as possible*.

Academic Integrity Statement and Policy. Academic dishonesty will not be tolerated.

An Aggie does not lie, cheat, or steal or tolerate those who do.

As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person *or a solutions manual* and turn it in as your own. Any student found guilty of cheating, plagiarism, or other dishonorable acts in academic work is subject to disciplinary action. If you are caught cheating, you will receive a grade of "0" and it could result in your failing the course.

Title IX and Statement on Limits to Confidentiality. Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see University Rule 08.01.01.M1):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, you will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with Counseling and Psychological Services (CAPS) (<https://caps.tamu.edu/>).

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's Title IX webpage.

Statement on Mental Health and Wellness. Texas A&M University recognizes that mental health and wellness are critical factors that influence a student's academic success and overall wellbeing. Students are encouraged to engage in proper self-care by utilizing the resources and services available from Counseling and Psychological Services (CAPS).

Statement on Masks and Vaccination. To help protect Aggieland and stop the spread of COVID-19, Texas A&M University urges students to be vaccinated and to wear masks in classrooms and all other academic facilities on campus.