

The Math and Science of COVID-19

Course Syllabus

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Contact/Office Hours: Please contact me through my TTU email address, only. This is the best method to ensure a timely response. Please DO NOT send messages through Blackboard. I will not hold “regular” office hours for this course but you may schedule a time to meet with me in person if you wish. Please feel free to contact me via email to ask a question or to set up a time to come to my office. I will respond within 24 hours M-F and as I can over the weekend.

Student E-mail: I **strongly recommend** that you update your e-mail in Raiderlink to your primary email address. I will send important reminders and announcements to the email listed in Raiderlink.

Textbook: Although I have decided to make this textbook optional, it is **HIGHLY** recommended that you either purchase a hardcopy or access to the eText. The assigned case studies will be much more manageable with access to a textbook.

GENERAL INFORMATION

This short course is designed for non-life science majors who are interested in learning more about the scientific aspects related to the COVID-19 pandemic. As such, no science pre-requisites are necessary to be successful in this course. The material for this course will be presented in a “flipped modality.” **You will access pre-recorded (asynchronous) mini-lectures so that you can prepare for our face to face class.** During class time, we will discuss what you watched and summarized. More on this below under “**Student Assignment and Assessment.**”

COURSE EXPECTATIONS

My main objective for this course is to assess, and potentially challenge, students’ prior knowledge about science and math, particularly that knowledge as it applies to the many facets of COVID-19. Based upon the National Survey of Student Engagement (NSSE) the rough expectation is that students should spend 1-2 hours of their time on this course outside of class, for a total course effort of no more than 3 hours per week. The following is my recommendation for that effort:

STUDENT ASSIGNMENT & ASSESSMENT

30 minutes – To be successful in the course, students will write a ~250 word summary (about half a typed page of 12 pt. font) of your current understanding of the upcoming topic, prior to our meeting time. This is **NOT** intended to be a research paper. Only write what you think you know. Your “understanding” at this point will NOT be evaluated. Students will be expected to spend no more than 30 min-60 min on this summary. It will be due by 11:59pm, the night before class every week.

1 Hour - The video(s), are multiple vignettes that will equal 60 minutes total. Each topic will open at noon, the day prior to our class meeting. My hope is that you will begin to re-evaluate your initial summary during, or shortly after watching the asynchronous videos.

1 Hour – In class, we will open the topic for discussion in our synchronous class period. This will be student-centered discussion and student-driven. If I need to jump start the discussion, I may have at least 3 questions at the ready to prime the pump.

30 minutes - After our Thursday class meeting, students will be asked to re-evaluate their initial submission and submit it for a total grade. In other words, I want you to critically assess your prior knowledge now that you have received instruction. Students will receive half credit for your initial submission (completion) and the remaining 50% credit will assess your ability to recognize and correct any flaws in your prior knowledge.

There will be **NO** exams in this course.

EXPECTED LEARNING OUTCOMES

- A. Students will be able to explain the basic science of COVID-19
- B. Students will be able to differentiate between COVID-19 and other types of viruses
- C. Students will be able to discuss basic epidemiology and mathematical modeling
- D. Students will be able to explain how the COVID-19 vaccine protects individuals

TENTATIVE TOPIC SCHEDULE

Week 1: Course Introduction & Discussion

Week 2: COVID 19 – A Year (and a half) in Review

Week 3: Central Dogma of Biology

Week 4: Basic Immunology

Week 5: Viruses, Variants & Vaccines

Week 6: Aerosol Physics (Dr. Karin Ardon-Dryer, Geosciences).

Week 7: Epidemiology and Mathematics (Dr. Jerry Dwyer)

Week 8: Zoonosis and Ecology (Dr. Kendra Phelps from Nat Geo’s “Virus Hunters.”)

GRADE EVALUATION

Course grades are based on a traditional model:

89.50%-100%	= A
79.50%-89.49%	= B
69.50%-79.49%	= C
59.50%-69.49%	= D
59.49% or below	= F

There will be no curve or extra credit so please don’t ask. This scale will not be extended downward under any circumstances. Withdrawal is the student’s responsibility, and is done by following the requirements as outlined by the Registrar’s Office.

The final letter grade will be determined as follows:

Week 1: Course Introduction & Discussion	100 POINTS
Week 2: COVID 19 – A Year (and a half) in Review	100 POINTS
Week 3: Central Dogma of Biology	100 POINTS
Week 4: Basic Immunology	100 POINTS
Week 5: Viruses, Variants & Vaccines	100 POINTS
Week 6: Aerosol Physics (Dr. Karin Ardon-Dryer, Geosciences).	100 POINTS
Week 7: Epidemiology and Mathematics (Dr. Jerry Dwyer)	100 POINTS
Week 8: Zoonosis and Ecology (Dr. Kendra Phelps from Nat Geo’s “Virus Hunters.”)	100 POINTS
TOTAL	700 POINTS

How to determine your grade at any point in the semester: Blackboard keeps a running total of the points that you have earned at any given point in the semester, however Bb's calculations are a little unreliable. To determine your current grade at any point in the semester, simply divide your Bb points total by the number of points possible at the time of your calculation and multiply by 100 to obtain a percentage: **points earned/points possible x 100**

Sample calculation: If you have earned 325 points out of 400 possible (depending on date):

$$325/400 \times 100 = 81.25\%, \text{ which is a B}$$

This doesn't necessarily mean that you will finish the course with a grade of "B", (although you could if you keep up the good work) but rather it means that you have a "B" based upon the amount of work that has been assigned and the amount of work that you have completed at a given point in the semester.

Religious Holidays: Any student who may miss an exam because of a religious holiday must notify me ASAP so alternative arrangements can be made (refer to syllabus for exam dates). A "religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code #11.20. For more information refer to the Texas Tech University Operating Manual section 34.19. Since assignments are released for 1 week, please make plans to complete the assignment so that there is no conflict with a specific holy day.

Disabling Conditions: Any student who requires special arrangements to meet the course requirements because of a disability must contact me ASAP to seek the appropriate accommodations. *Such students must present appropriate verification from Student Disability Services.* In addition, if a medical condition exists that might affect the student's ability to take tests, notify me **at the beginning of the semester---before the first exam. Although it is an on-line class, there may be ways to address any issues. I am more than happy to work with any student to accommodate a documented condition.**

Academic Integrity: It is the aim of Texas Tech University to foster a spirit of complete honesty and a high standard of integrity. **Any attempt by a student to present any work as his/her own that was not honestly performed by this student is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences, as outlined by the Operating Policy cited below.** "Scholastic dishonesty" includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, or any act designed to give unfair academic advantage to the student. For more information, see the Texas Tech University Operating Policy Manual section 34.12. In reference to this OP, all students are expected to take their on-line quizzes and exams individually with no outside help or collaborations. As stated above, you are permitted to use any of the course materials during exams but bear in mind the time limits and level of questions on the assessment.