# BIOL 4530 Virology Syllabus, Fall 2025

# Meeting Dates:8/18/2024-12/15/2025

**Class Time:** MWF 1:00 pm to 1:50 pm, face-to-face **Class Location:** General Academic Building, 310

**Contact Information for Instructor**

Dr. Nuzhat N. Farooqui

**Email:** [Nuzhat.Farooqui@unt.edu](mailto:Nuzhat.Farooqui@unt.edu) (preferred)

**Office Location:** Life Science Complex Building A (LSC-A), Room # 126C

**Student Hours:** Monday and Wednesday 3:00 pm to 4:00 pm

# Course Description

Virology is a course intended for majors in biological sciences. The course content includes:

* Molecular Biology of viruses infecting bacteria, plants and animals.
* Interaction of viruses and host cells.
* Viral genetics; replication, pathogenesis.
* Oncology, immunology, chemotherapy and vaccines.

# Prerequisites or Other Restrictions

# Completion of foundation requirements for the declared biological sciences major and C or higher in BIOL2041/BIOL2042. If major is outside of biological sciences, foundation requirements for Biology BA and C or higher in BIOL2041/BIOL2042 must be completed.

# Course Objectives

The course objectives have been adopted from American Society of Virology curriculum guidelines for undergraduate Virology Education.

1. Understand the structure, classification, and replication strategies of viruses.
2. Explore the mechanisms of viral pathogenesis and host immune responses.
3. Examine the role of viruses in human, animal, and plant diseases.
4. Discuss emerging viruses, antiviral therapies, and vaccines.

By the end of this course, students will be able to:

1. Define and describe different viruses in terms of their nucleic acid and basic structural composition.

2. Convey that viruses are obligate intracellular pathogens that infect a broad range of host organisms.

3. Using different Examples of Bacteria, plant and animal viruses identify and recognize RNA and DNA viruses that causes viral diseases including AIDS, cancer, flu, COVID-19, etc.

4. Detail steps of the viral life cycle of diverse RNA and DNA viruses, providing biochemical mechanisms for attachment, entry, gene expression, genome replication, assembly, and release.

5. Identify and evaluate individual steps in a virus’ replication cycle that can be effectively targeted by antiviral drugs for pharmaceutical intervention of viral diseases. Compare and contrast with established therapies for limiting viral infections including vaccines and therapeutic agents.

6. Describe how host immune responses prevent or limit viral replication and pathology, and how this process can be exploited to develop effective antiviral strategies and vaccines.

7. Host Immune responses to Viruses

8. Vaccines and Antiviral therapies

9. Appreciate these fundamental concepts which will prepare students to critically assess the accuracy of information (*e.g.*, by journalists and from social media) and to identify misconceptions regarding aspects of virology such as outbreaks and vaccines.

# Course Materials

**The textbook is Fundamentals of Molecular Virology (2nd or 3rd) Edition by Nicholas H. Acheson.** All class material in this syllabus is identified based on this book.

**Additional Resources:**

* **Journal Articles**: Selected papers from journals like *Journal of Virology*, *Virology*, and *Nature Reviews Microbiology*.
* **Online Resources**:
  + CDC and WHO websites for updates on viral outbreaks.
  + Podcast from Virologist

Please check Canvas regularly for announcements, PowerPoints, reviews, assignments and any updates. It is your responsibility to check for announcements and to have notifications on. Course materials provided in this course are reserved for use only by students in this class for educational purposes. These materials should not be shared outside the class in any form. Failing to follow this restriction is a violation of the UNT Code of Student Conduct and could lead to disciplinary action.

# Communication & Feedback

* Students should email the instructor with any questions or concerns as soon as they arise. Please don't wait until deadlines have passed or it is too late to remedy the situation. The instructor will respond to email within 24-48 hours (weekends and holidays excluded). The instructor will only respond to emails received from UNT account and NOT respond to emails sent from outside accounts such as gmail, yahoo, etc.
* Communication will be done via Canvas announcements, emails to your UNT email address, or in class. To avoid missing announcements, you should make sure that your Canvas settings are correct for receiving email notifications from Canvas. Please check your UNT emails and Canvas email regularly for time sensitive communication
* Students facing technical problems with course material or online assignments on Canvas should contact the instructor as early as possible before the deadline. There will be grade penalty for late submission if not contacted earlier
* All grades are posted within 7 days. The Canvas grade book is set up to calculate the student's grade throughout the semester. Please email the instructor with any questions about any grades, how assignments are graded, or how to calculate the course or lecture grade

# Class Expectations

Respect for others is vital. As a student, you are expected to work individually and with others, to create an atmosphere that is safe, valuing one another, and open to diverse perspectives. Everyone is expected to show courtesy, civility, and respect for one another.

# Course Policies

**Attendance:** Regular check-in and completion of materials constitutes attendance. Failure to participate in class for an extended period will lead to a grade of “F”.

**The last day to withdraw from classes is November 7th, 2025**.

Research has shown that students who attend class are more likely to be successful. The only excused absences recognized by the University of North Texas are observation of religious holidays, military service or wherein a student is representing the university in an official capacity such as athletics or band. According to UNT policy: “An activity or event is organized and sponsored by the university when it has been planned, funded and properly approved by the appropriate university official”. Please visit the following link for more details: <https://policy.unt.edu/sites/default/files/06.039>.

If you must miss a class period, contact your instructor immediately via email to discuss the reason for your absence. Excused absences must be accompanied by proper documentation. It is also helpful to connect with other students to form study groups. Do not wait till the last moment to finish the assignments.

# Class Schedule

The tentative schedule is given below and may subject to change. Instructor will inform any changes in class or via canvas announcement**. It is the students' responsibility to check for due dates for exams and assignments in Syllabus and be prepared for class accordingly.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Days** | **Date** | **Chapter** | **Topic** |
| 1 | Mon | Aug 18 |  | Syllabus and Course Introduction |
|  | Wed | Aug 20 | 1 | Intro to Virology |
|  | Fri | Aug 22 | 2 | Viral Structure |
| 2 | Mon | Aug 25 | 3 | Virus classification |
|  | Wed | Aug 27 | 4 | Virus entry |
|  | Fri | Aug 29 | 7 | Bacteriophage- T7 **(Double stranded-DNA virus)**  **Census date -August 29th**  **Quiz#1 (1,2,3,4)** |
| 3 | Mon | Sep 1 | **No class** | **Labor Day- NO CLASS** |
|  | Wed | Sep 3 | 7/8 | Bacteriophage-T7/ Lambda |
|  | Fri | Sep 5 | 8 | Bacteriophage-Lambda  **Quiz#2 (7,8)** |
| 4 | Mon | Sep 8 | Guest speaker | **Plant Virus** |
|  | Wed | Sep 10 | Other resource | Plant Virus-TMV |
|  | Fri | Sep12 | 10 | Plant virus-CMV  **Quiz#3 (Plant virus)** |
| 5 | Mon | Sep 15 |  | **Exam 1 (1, 2, 3, 4, 7, 8, 10)** |
|  | Wed | Sep 17 | 11 | **Review Exam #1**  **Assignment #1 due**  **Positive RNA Virus:**   1. Picornavirus |
|  | Fri | Sep 19 | 11 | Picornavirus |
| 6 | Mon | Sep 22 | 14 | 1. Coronavirus |
|  | Wed | Sep 24 | 14 | Coronavirus |
|  | Fri | Sep 26 | 15 | **Negative RNA Virus:**   1. Paramyxovirus-Rhabdovirus   **Quiz# 4 (11, 14)** |
| 7 | Mon | Sep 29 | 15 | Paramyxovirus-Rhabdovirus |
|  | Wed | Oct 1 | 18 | 1. Influenza virus |
|  | Fri | Oct 3 | 18 | Influenza virus  **Quiz #5 (15, 18)** |
| 8 | Mon | Oct 6 | 23 | **Large DNA Viruses:**   1. Adenovirus   **Assignment #2 due** |
|  | Wed | Oct 8 | 23 | Adenovirus |
|  | Fri | Oct 10 | 24 | 1. Herpesvirus   **Quiz#6 (23, 24)** |
| 9 | Mon | Oct 13 |  | **Exam 2 (11, 14, 15, 18, 23)** |
|  | Wed | Oct 15 | 24 | **Review exam #2**  Herpesvirus |
|  | Fri | Oct 17 | 26 | 1. Poxvirus   **Quiz#7 (24, 26)** |
| 10 | Mon | Oct 20 | 26 | Poxvirus |
|  | Wed | Oct 22 | 28 | **Virus with Reverse Transcriptase:**   1. Retrovirus |
|  | Fri | Oct 24 | 29 | Retrovirus/HIV  **Quiz# 8 (26, 28)** |
| 11 | Mon | Oct 27 | 29 | 1. HIV |
|  | Wed | Oct 29 | 30 | 1. Hepadnavirus |
|  | Fri | Oct 31 | 30 | Hepadnavirus  **Quiz #9 (29, 30)** |
| 12 | Mon | Nov 3 | 33 | Cellular defense against Virus  **Assignment #3 due** |
|  | Wed | Nov 5 | 33 | Cellular defense against Virus |
|  | Fri | Nov 7 | 34 | Innate & adaptive immune response to Virus  **Quiz#10 (33, 34)**  **Last day to drop with a W -Nov 7th** |
| 13 | Mon | Nov 10 |  | **Exam 3 (24, 26, 29, 30, 33)** |
|  | Wed | Nov 12 | 34 | Innate & adaptive immune response to Virus |
|  | Fri | Nov 14 | 35 | Antiviral Vaccines |
| 14 | Mon | Nov 17 | 35 | Antiviral Vaccines |
|  | Wed | Nov 19 | 36 | Chemotherapy |
|  | Fri | Nov 21 | 36 | Chemotherapy  **Assignment # 4 due**  **Quiz #11 Bonus (34, 35, 36)** |
| 15 | Mon- Fri | Nov 24-28 |  | **Thanksgiving Holiday -No Classes** |
| 16 | Mon | Dec 01 |  | **Assignment #5 (PPT/ Presentation)** |
|  | Wed | Dec 03 |  | **Pre-Final day (Review)** |
|  | Fri | Dec 05 |  | **Reading day-No classes** |
|  | Sat | Dec 06 |  | **Final Exam (Mandatory-Comprehensive)**  **10:30-12:30 PM** |

# Methods of Evaluation

**Exams** The grade in this course is determined by the following categories of assessment.

There will be 4 exams for this course (3 in-class exams and 1 comprehensive final exam). All exams will count equally. The lowest score you earn on one of the three in-class exams will be dropped, but NOT the comprehensive final exam grade. There will be no make-up exams, except in case of excused absences recognized by the University of North Texas (observation of religious holiday, military service or wherein a student is representing the university in an official capacity such as athletics or band). Medical emergencies may be considered but must be documented by a medical professional. No one will be admitted to an exam after the first person has left that exam. Bring pencils with a decent eraser. NO OTHER ITEMS ARE PERMITTED DURING EXAMS. This includes smart watches and devices, lecture notes, “cheat sheets”, etc. Hats are okay during exam time, but you will need to flip it backwards so that the brim of the hat is at the back of your head. Scantrons will be provided, so there is no need to get it yourself.

\* **Exam dates or coverage subjects to change, with reasonable advance notice**.

**PLEASE NOTE THAT THE CLASS TIME IS DIFFERENT FOR THE FINAL!**

**1. Exams**

* + Class Exams (2)
  + Final Exam

**2. Assignments and Quizzes**

* + Weekly quizzes on lecture material
  + Assignments on research papers or podcasts.

**3. Case Studies or Presentations**

* + Group or individual presentations on viruses or antiviral therapies/vaccine development

There are **500 total possible points.** Grades will be assigned based on how many cumulative points you earn in the class.

* 3 exams, 100 pts each = 300 pts
* Final Exam (cumulative) =100 pts

Out of the 3 in class exams, one lowest exam score will be dropped. It is mandatory to take the comprehensive Exam.

* 4 assignments =60 pts (15 points each)
* 1 PPT presentation= 40 points
* 10 Quizzes= 100 points (10 points each)

Total points: 3 in class Exams (300) + Final Exam (100) + Quizzes (100) + Assignments (60) + Presentation (40) = 500 total points

# Extra credits: It will be in the form of iClicker, bonus quizzes or worksheet. These extra points will be added to the total points.

**The Final letter grades will be based on total points earned** including all the bonus points earned. The grading scale for assigning letter grades in this course is as follows:

A = 450 and up

B = 449-400

C = 399-350

D = 349-300

F = 299 and below

**Grade Reviews** If you have any questions about a graded item or believe there is an error in the grade, you must notify the instructor within 1 week after the grade is posted online. After this time, all grades are final and will not be reviewed. You will not be allowed to review a previous exam after taking the next exam. For example, after taking Exam 2, you will not be able to review Exam 1. This is due to accommodating other students during my office hours. Please note that I offer 4 hours of office hours each week.

# UNT Policies

**Academic Integrity Policy** Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University. In this course, each student is expected to work independently on all assignments unless specifically instructed otherwise by the instructor. Academic dishonesty (cheating) will not be tolerated.

Students found to be cheating on any work in this course may receive a grade of zero on affected work, be removed from the course, and/or be reported to the university for additional disciplinary action.

**Gen AI UNT policy:** Throughout the semester, you will or may use specific Generative AI (GenAI) tools for certain assignments, with guidance on responsible use. These assignments help build ethical resilience and GenAI literacy, preparing you for careers in a GenAI-oriented workforce. In accordance with the UNT Honor Code, unauthorized use of GenAI tools is prohibited. Using GenAI content without proper credit or substituting your own work with GenAI undermines the learning process and violates UNT academic integrity policy. If you're unsure whether something is allowed, please seek clarification.

**In this course, the use of GenAI tools is limited to searching review articles or research papers. Any other use of GenAI is prohibited. All required assignments should show proper citation and authentic student work.** **If you're unsure whether something is allowed, please seek clarification.**

# ADA Policy

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodation at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to

implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website. You may also contact ODA by phone at (940) 565-4323