

Virology: Biol. 841
Course Syllabus – Spring 2024

Instructor: Dr. Austin Nuxoll

Office: Bruner 201D

Phone: 308.865.8602

Email: nuxollas@unk.edu

Office hours: MWF 1:30 pm – 2:30 pm or by appointment

Course Description

An in-depth discussion of the principles of modern virology. Major topics of discussion will include: virus replication strategies, virus structure, virus infection and disease, and host resistance to disease.

Course Objectives

1. Understand how the virus is able to infect a host, including the steps involved in the infectious cycle including attachment, entry, replication, and exit from the cell.
2. Be able to describe the structure of a virus and the differences that exist between viruses.
3. Know different barriers to infection and the mechanisms viruses employ to get through these barriers.
4. Have a general understanding of how viruses interact with the immune system, mechanisms of pathogenesis and the basis of vaccines.

Textbook

Principles of Virology, 5th edition.

Vol I: Molecular Biology

Vol II: Pathogenesis and Control

Flint J, Racaniello V, Rall G, Skalka AM,

ASM Press, 2020

Computer and Software:

Access to a computer with internet access, Microsoft PowerPoint. Software can be purchased through UNK bookstore at a discount. We will have video presentations that require the use of a webcam. These can be found through Walmart or Amazon starting around \$10.

Communication

The best way to reach me is through email. I will respond to email fairly quickly and if you need to talk to me please email me and we can set up a time to talk further. You should frequently check your UNK email and Canvas for course assignments or announcements. Slides will be posted on Canvas but you will still be required to watch lectures as additional information provided during lectures will be pertinent.

Grading

Discussion (5-10pt)	90
2 Exams (30pts each)	60

Quizzes (10pts each)	120
Case Studies (10pts each)	30
Design a Virus (30pts)	30
Short Presentation (20pts)	20
Virtual Labs (10 pts each)	30
<u>Viral Presentations (30pts)</u>	<u>30</u>
Total	410

Grades will be assigned using the Department of Biology standard grading scale: follows: A (93-100%), A- (90-92%), B+ (88-89%), B (83-87%), B- (80-82%), C+ (78-79%), C (73-77%), C- (70-72%), D+ (68-69%), D (63-67%), D- (60-62%), and F (below 60%).

Discussion

I will post papers on Canvas on Monday and you will have until Friday for your first post and until the following Monday for your second post. To receive full credit, students must have **two significant contributions** weekly for each paper we discuss and **one comment** on each lecture discussion topic. Your responses must contribute something new to the discussion and not simply agree or disagree to the previous response. References will be required to support your statement - at least one post each week must have a reference. Please be considerate of your classmates' responses, abusive comments or attacking other student's comments will not receive credit as comments should be constructive even if you strongly disagree with another student.

Exams

Exams will consist of a take home portion consisting of short answer or essay questions and worth 30 pts each. Students will be given one week to complete the exam, however there will still be lectures and other assignments at this time so please do not procrastinate. Exam dates are as follows:

Exam 1: March 25

Exam 2: May 13

Case Studies

For the case study assignments, students will work in groups, and each group is assigned the same case study. Everyone in the group needs to participate and students that do not contribute to their group will not receive credit for that assignment. The same guidelines for discussion also apply to participation with the case studies.

Case Study 1: Feb 16, 19

Case Study 2: April 5, 8

Case Study 3: April 12, 15

Disease Presentation

We will not have the time to cover individual viruses in detail in this class, to cover individual viruses of interest, students will be assigned a virus the week of Jan 23rd.

Students will create a PowerPoint presentation. PowerPoint presentations will be due **February 26th at 11:59pm CST**. I will post the presentations over two weeks. Same guidelines apply as stated above in the discussion section when commenting on these presentations, you need to have 3 questions or comments on different posts by Friday of each week. If it is your week to present, you are also responsible for frequently logging into the discussion board and responding to comments as well as commenting on one other presentation. Presentations should be concise as students are responsible for viewing multiple presentations. Approximately 10 – 15 minutes should suffice depending on the virus. Presentations significantly shorter or longer will not receive full credit (aim for 5-15 slides, avoid wordy slides, and be sure to use references).

Short Presentations

We will have questions that require further research to answer. Answer these questions with references and create a short presentation (4-7 min). You will post your video to the discussion board by **April 15th at 11:59pm CST**. You will be responsible for viewing and commenting on three presentations by April 19th. Final discussion on these topics will finish on April 22nd.

Designing a Virus Project

Throughout the semester we will go through the different components of a virus (genome types, structure, attachment and entry, replication, release from host cell). This assignment is designed to integrate with what you learn each week and apply it to a semester-long project. You will build a virtual virus. You will want to design a human pathogen that has pandemic potential. Use references to justify why you are selecting the features that you are. For example, if you select dsRNA genome, you need to justify why you selected this genome. As for building your virus, You can use any online program (powerpoint, word, etc.) you would like to construct your virus or you can build a physical model with any material you want. Common materials might include push pins, yarn, pipe cleaners, wire, ribbon, used plastic containers, styrofoam shapes, etc. You may need to cut away part of the capsid to showcase the inside of your viral particle. Alternatively, you can take pictures at multiple steps in the process. This will be due by **May 6th**. You will need to submit a photo and a 1-2 page (single spaced) report describing key aspects of your virus and why you selected those attributes for your virus and how they may contribute to the ability to cause a pandemic. I will award bonus points to the most creative design.

Key elements that you need to include or discuss in your report include:

Virus name, genome type, shape, capsid, enveloped or non-enveloped, replication strategy, reservoirs, transmission, tissue tropism, incubation period, symptoms associated with the virus, R0 value, mortality rate

Preparation for class	Dates	Schedule	Assignment
Vol 1. Ch 1	Jan 22	Introduction	Disc.
Vol 1. Ch 2	Jan 29	Infectious Cycle	Disc., Quiz
Vol 1. Ch 3	Feb 5	Genome	Disc., Quiz
Vol 1. Ch 4	Feb 12	Structure	Case Study, Quiz
Vol 1. Ch 5	Feb 19	Attachment and Entry	Disc., Quiz
Vol 1. Ch 6, 7, 8	Feb 26	RNA synthesis	Disc., Quiz
Vol 1. Ch 9	Mar 4	DNA Replication	Disc., Quiz, Presentations
Vol 1. Ch 10, 11	Mar 11	Spring Break	
	Mar 18	Exam 1 Due March 25	Quiz
Vol 1. Ch 13	Mar 25	Processing, Protein Synthesis	Disc., Presentations
Vol 2. Ch 2, 3, 4	Apr 1	Assembly, Exit, Maturation	Case Study, Quiz, Lab
Vol 2. Ch 8	Apr 8	Barriers, Immune System	Case Study Quiz
Vol 2. Ch 5,10,11	Apr 15	Vaccines	Short Presentations, Quiz, Lab
	Apr 22	Pathogenesis, Evolution	Quiz, Lab
	Apr 29	Designing a Virus	Quiz
	May 6	Exam 2 Due May 13	

Academic Integrity Policy

All students at the University of Nebraska at Kearney are expected to conduct their academic affairs in an honest and responsible manner. Any student found guilty of dishonesty in academic work shall be subject to disciplinary actions. Acts of academic dishonesty include, but are not limited to:

- plagiarism, i.e., the intentional appropriation of the work, be it ideas or phrasing of words, of another without crediting the source.
- cheating, i.e., unauthorized collaboration or use of external information during examinations;
- assisting fellow students in committing an act of cheating;
- falsely obtaining, distributing, using or receiving test materials or academic research materials;
- submitting examinations, themes, reports, drawings, laboratory notes, research papers or other work as one's own when such work has been prepared by another person or copied from another person (by placing his/her own name on a paper, the student is certifying that it is his/her own work);
- improperly altering and/or inducing another to improperly alter any academic record.

Additionally, graduate students are more likely to assume roles as active scholars. With these roles come added responsibilities for academic honesty. For such individuals academic honesty requires an active pursuit of truth, not just an avoidance of falsehood. This pursuit includes but is not limited to:

- providing a full and a complete representation of any scholarly findings, be it experimental data or information retrieved from archives;
- taking care that the resources of the University (e.g., library materials, computer, or laboratory equipment) are used for their intended academic purposes and that they are used in a manner that minimizes the likelihood of damage or unnecessary wear;
- assuring that one's co-workers are given due credit for their contributions to any scholarly endeavor;
- respecting a diversity of opinion and defending one's colleagues as well as one's own academic freedom;
- respecting the rights of other students who may come under the tutelage of the graduate student and being fair and impartial in grading and other forms of evaluation; and
- seeking permission from an instructor when submitting work that has been used in other courses.

Withdraw (W)

Students in full-semester courses in Fall and Spring semesters may withdraw from one or more courses from their schedule until the end of the twelfth week of the semester. A grade of "W" will automatically be noted on the transcript for these courses. For courses of duration other than full semester and all Summer term courses, students may withdraw and receive a "W" after the first day of the class through the three-fourths point of the class meeting duration. The last day to withdraw from a full semester course can be found on the [academic calendar](#).

Students who withdraw from one or more courses after the 100% refund period will be obligated to UNK for that portion of tuition and fees that is indicated on the [refund schedule](#).

A student may not withdraw from a course after the course, or the semester/session has ended.

Incomplete (I)

The mark of "I" (Incomplete) is reserved for conditions in which the student is unable to complete the course by the end of the term due to highly unusual circumstances beyond their control (e.g., serious illness, etc). Under these circumstances, the instructor should be notified as soon as possible, during the semester. In such cases, the instructor may award the student an "I" (incomplete) instead of a final grade at the end of the semester. The "I" is recorded on the student's grade report and transcript.

Unless an extension of time is granted, by the Registrar's Office, an incomplete must be removed within twelve calendar months from the end of the semester in which the "I" was recorded by completion of course requirements established by the instructor. If the coursework is not completed and a change of grade is not filed with the Registrar's Office within twelve calendar months from the time it was awarded, or an extension has not been granted by the Registrar's office, the "I" will convert to a grade of "F" on the student's transcript. Some courses are eligible to be repeated, in which case the "F" will be marked as a repeated course on the student's transcript.

Student Accommodations

Students with Disabilities

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students with documented disabilities. To receive accommodation services for a disability, students must be registered with the UNK Disabilities Services for Students (DSS) office, 175 Memorial Student Affairs Building, 308-865-8214 or by email unkdso@unk.edu

UNK Statement of Diversity & Inclusion:

UNK stands in solidarity and unity with our students of color, our Latinx and international students, our LGBTQIA+ students and students from other marginalized groups in opposition to racism and prejudice in any form, wherever it may exist. It is the job of institutions of higher education, indeed their duty, to provide a haven for the safe and meaningful exchange of ideas and to support peaceful disagreement and discussion. In our classes, we strive to maintain a positive learning environment based upon open communication and mutual respect. UNK does not discriminate on the basis of race, color, national origin, age, religion, sex, gender, sexual orientation, disability or political affiliation. Respect for the diversity of our backgrounds and varied life experiences is essential to learning from our similarities as well as our differences. The following link provides resources and other information regarding D&I: <https://www.unk.edu/about/equity-access-diversity.php>

Students Who are Pregnant

It is the policy of the University of Nebraska at Kearney to provide flexible and individualized reasonable accommodation to students who are pregnant. To receive accommodation services due to pregnancy, students must contact the Student Health office at 308.865.8218. The following links provide information for students and faculty regarding pregnancy rights. <https://thepregnantscholar.org/title-ix-basics/>

<https://nwlc.org/resource/faq-pregnant-and-parenting-college-graduate-students-rights/>

Reporting Student Sexual Harassment, Sexual Violence or Sexual Assault

Reporting allegations of rape, domestic violence, dating violence, sexual assault, sexual harassment, and stalking enables the University to promptly provide support to the impacted student(s), and to take appropriate action to prevent a recurrence of such sexual misconduct and protect the campus community. Confidentiality will be respected

to the greatest degree possible. Any student who believes she or he may be the victim of sexual misconduct is encouraged to report to one or more of the following resources:

- **Local Domestic Violence, Sexual Assault Advocacy Agency** 308-237-2599
- **Campus Police (or Security)** 308-865-8911
- **Title IX Coordinator** 308-865-8655

Retaliation against the student making the report, whether by students or University employees, will not be tolerated.

Mental Wellness

The UNK Counseling Center provides mental health services to support the academic success of students. The Counseling Center provides a full range of short-term professional mental health services.

Getting help is a smart and courageous thing to do. Contact the UNK Counseling Center at 308-865-8248 or visit their website for more information: https://www.unk.edu/offices/counseling_healthcare/counseling_care/index.php

Military and Veteran Services

Military and Veteran Services assist veterans, service members, and their dependents with education benefits and academic and supporting resources. They serve as a liaison between students and the Veterans Administration and branches of the military. Contact the UNK Military and Veteran Services office at 308-865-8677 or visit their website for more

information: https://www.unk.edu/offices/financial_aid/veterans_services/index.php

Technical Support

LoperTECH Service Desk Phone: 308-865-8363 Email: support@nebraska.edu
If you are having problems or technical issues with Canvas, please contact ITS.

Course Policies

Contact and Response

I will try to respond to your emails as quickly as possible (within 2 business days). There may be instances in which I do not respond until the next business day (e.g., if you email me on a Friday night I may not email back until Monday).

Please check your UNK email account and Canvas announcements on a regular basis. I will only use your official UNK email address for communication, so it is your responsibility to ensure you are receiving emails regarding this course.

When sending emails, treat the message as if you were sending it in a professional situation (e.g., to a boss or supervisor).

Late Work/Student Attendance Policy

Unless there are extenuating circumstances, for each day late, 10% of the grade will be taken off. If an assignment is over 7 days late, you will receive no credit for it. If a student is absent or anticipates an absence for either class mode, the student's primary responsibility is to directly contact the primary instructor, and the student should consult with them accordingly. Participation in official University activities, serious health concerns, personal emergencies, and religious observances are valid reasons for absence from classes. Students are responsible for informing their instructors prior to their absence(s) from class and for completing assignments missed during their absence(s). No adverse or prejudicial effects shall result to any student with a documented, excused absence.

Course Conduct

Be considerate to your fellow students. In this class, I encourage comments and questions. As such, I ask that you are respectful and courteous towards one another.

Copyright

During this course, you are prohibited from selling notes to or being paid for taking notes by any person or commercial firm without the express written permission of the professor teaching this course.

Finals Week Policy

The final exam will be administered in the time period scheduled during finals week in accordance with University policy ([Final Exam Schedule](#)).