**Virology – EX 123**

**Spring, 4 credit hours**

**MTh 2:30-3:45pm / HST 123**

**Note: you can click on the title of the section below and it’ll take you to that page on the syllabus**

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# Instructor Information

## Instructor

Mac Crite, PhD

Pronouns: they/them/theirs

**Email:** [**mac.crite@xxxxxxxx.edu**](mailto:mac.crite@xxxxxxxx.edu)

## Student Hours

Monday and Wednesday 4-5pm via Zoom.

Please schedule a slot on my Calendly here: [**https://calendly.com/xxxxxxxx**](https://calendly.com/xxxxxxxx) and if none of the times work for you, or if all times are booked, please reach out to me via email to schedule an appointment.

Student hours, otherwise known as office hours, are times when I am available to discuss class material, assignments, or other related interests you have. We can discuss job prospects, opportunities for research inside and outside of the classroom, and/or anything else you’d like. I am a resource to you, and I’d love to see you during student hours! My student hours are subject to change based on my availability, but I’m always happy to chat with you, so just send me an email!

## Communication Policy

Monday through Friday afternoon, I’ll respond to emails within 24 hours, but likely in a timelier manner. Over the weekends, I will check my email periodically, but may not respond until Monday.

# Course Details

## Course Outcomes

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

1. Describe the general commonalities of viruses and their lifecycles.
2. Define the molecular mechanisms of viral replication for the main virus families.
3. Analyze the effects of viruses on host cells.
4. Explore different types of viral research and apply these techniques to scientific questions.
5. Identify sources of reputable primary research.
6. Analyze and critique primary research papers.
7. Communicate complex scientific concepts to a diverse audience.

## Scope of the course

This course will cover the strategies that different types of viruses use to infect host cells and replicate within them. This includes animal viruses as well as bacterial viruses. Because viruses replicate within cells, this class will mainly deal with molecular events such as transcription, translation, etc. in eukaryotic as well as prokaryotic cells. Students will also be exposed to standard research methodologies as well as cutting edge research used in the virology field and learn how to communicate complex scientific topics.

## Book

*Principles of Virology, Vol. I and II, 4th Edition,* Flint, Enquist, Racaniello and Skalka

Note on the use of text book: Any edition is fine, but the chapter numbers may change. Please come to me if you have a different edition and cannot determine which chapters to read. Reading the text book is VERY important to your ability to understand the lecture material. Please read ahead based on the schedule below. You can find a copy for free from the library.

## Class Schedule

|  |  |  |  |
| --- | --- | --- | --- |
|  | Class | **Topic** | **Book Chapters** |
| Week 1 | 1/25 | Intro to viruses; how to read a paper | Vol 1, Ch 1 |
|  | 1/27 | Viral Replication | Vol 1, Ch 2 |
| Week 2 | 2/1 | Genomes and genetic analysis | Vol 1, Ch 3 |
|  | 2/3 | Paper discussion #1  **Research Box #1 Due** |  |
| Week 3 | 2/8 | Viral Structure | Vol 1, Ch 4 |
|  | 2/10 | Paper discussion #2  **Research Box #2 Due** |  |
| Week 4 | 2/15 | Attachment and entry | Vol 1, Ch 5 |
|  | 2/17 | Paper discussion #3  **Research Box #3 Due** |  |
| Week 5 | 2/22 | Viruses with RNA templates | Vol 1, Ch 6 and 7 |
|  | 2/24 | Paper discussion #4  **Research Box #4 Due** |  |
| Week 6 | 3/1 | Viruses with DNA templates | Vol 1, Ch 8 and 9 |
|  | 3/3 | Paper discussion #5  **Research Box #5 Due** |  |
| Week 7 | 3/8 | Processing of Viral mRNA and translation | Vol 1, Ch 10 and 11 |
|  | 3/10 | **Exam #1** |  |
| Midterm break | 3/14-3/20 | Have a great break! |  |
| Week 8 | 3/22 | Intracellular trafficking and viral maturation | Vol 1, Ch 12 and 13 |
|  | 3/24 | Infection | Vol 2, Ch 1 and 2 |
| Week 9 | 3/29 | Immune response | Vol 2, Ch 3 and 4 |
|  | 3/31 | **Paper discussion** |  |
| Week 10 | 4/5 | Pathogenesis | Vol 2, Ch 5 and 6 |
|  | 4/7 | **Paper discussion** |  |
| Week 11 | 4/12 | Vaccines and antivirals | Vol 2, Ch 8 and 9 |
|  | 4/14 | **Paper discussion** |  |
| Week 12 | 4/19 | Viral evolution | Vol 2, Ch 10 |
|  | 4/21 | **Paper discussion** |  |
| Week 13 | 4/26 | Emerging viruses | Vol 2, Ch 11 |
|  | 4/28 | Therapeutic Viruses  **Draft due of Scientific Topic Communication (STC); Peer Review of STC** |  |
| Week 14 | 5/3 | Coronavirus |  |
|  | 5/5 | Open Topic  **Scientific Topic Communication Due by 11:59 PM** |  |
| Finals Week |  | **Exam #2** |  |

**Please note this is a \*tentative\* schedule and subject to change based on student and instructor interest and conversations.**

# Assignments and Evaluation:

## Guaranteed Grading Scale

|  |  |  |
| --- | --- | --- |
| 93-100% A | 90-92% A- |  |
| 87-89% B+ | 83-86% B | 80-82% B- |
| 77-79% C+ | 73-76% C | 70-72% C- |
| 60-69% D | 0-59% F |  |

## Assignments

|  |  |
| --- | --- |
| Exams (2) | 30% |
| Box Templates for Papers | 20% |
| Group Paper Presentation | 20% |
| Scientific Topic Communication | 20% |
| Class Participation | 10% |

**Exams**

You will have 2 exams in this course and they will not be cumulative, however you will need to understand the information from the first half of the course and first exam in order to do well in the second half. The exams will be short answer/essay format and will cover material that we learn in class and what we discuss in the journal articles that we read.

**Paper Discussions**

We will discuss many pieces of primary literature in this course. Primary literature includes peer-reviewed articles that are published by a variety of journals. Common journals in the virology field are Cell, Science, Nature, Cell Host & Microbe, PLOS Pathogens, mBIO, and the Journal of Virology, among many others.

We will have two types of paper discussions in this course: those that I facilitate where I choose the paper and we have a group discussion of the paper and its findings. And we will also have paper presentations where you will choose the paper and present it to the class.

For papers that I choose:

For these discussions, please come to class having read and annotated the paper with your thoughts. You can annotate your paper either as a printed copy or on a device of your choice (i.e. laptop, tablet, phone, etc.) You will be asked to discuss the methods and figures of the paper, and how they relate to the overall hypothesis of the paper. For each part of a given figure, you should be able to describe:

* Type of experiment
* What is the experiment designed to test/demonstrate
* What are the controls of the experiment
* What is the variable in the experiment
* What are the results of the experiment
* What inferences can be drawn from the results

**The figure analysis template on Blackboard can guide you through figure analysis. I highly recommend you use this to help you analyze the figures.**

**For classes where we discuss papers, you need to fill out the “Research Box Template” and submit it on Blackboard PRIOR to class.**

**Group Paper Presentations**

Small groups of students will select a primary virology research paper related to topics being discussed in class that week, and present the findings to the class. These presentations should include information on the background, methods, figures, and findings of the paper. You will need to do research outside of the information included in the paper that you choose and you do not necessarily need to present each figure from the paper. The discussion group should be prepared to answer questions that the class has, and guide the class through the paper. While only one group is presenting, everyone in class is responsible for reading the paper and asking questions of the presenters. The group that’s presenting should select a primary research paper no later than **6PM on the Thursday prior to your presentation** so I can distribute it to the class. These presentations will be graded by me, your peers, and through self and group evaluations. More details will be provided prior to the presentations.

**Scientific Topic Communication**

The goal of this assignment is for you to communicate a scientific topic to adults without a background in science, so think about those in your life who are not scientists and how you might communicate such a topic to them. You can choose one of the topics from the topics list on Blackboard, or you’re welcome to come up with your own topic. I’m happy to meet with you during student office hours to discuss and review potential topics. You also have free reign over how you want to communicate this information: via a written magazine article, a traditional essay, a handout, a podcast format, a video you develop, graphical depictions, through a website, or any other mode that you can think of. This is your chance to be creative! More details will be provided in the coming weeks.

## Attendance and participation

Much of your learning will come from active engagement with the material, and thus attendance at all synchronous class sessions is required, however I recognize that things come up! If you need to miss classes, please email me as soon as possible with a brief professional explanation. Please do not feel as though you need to share any doctor’s notes or other evidence to prove the validity of your absence – I trust you! Additionally, you are welcome **to miss up to three class periods without needing an excuse**. If you have something previously scheduled (e.g. job interview, non-reschedulable doctor’s appointment) and need to miss class, please reach out to me as soon as possible and we can discuss your situation.

Participation is also a large part of this course and accounts for 10% of your final grade. Participation includes coming to class prepared, paying attention to activities in class, engaging with reflections and questions asked of you, answering and asking questions, speaking and participating in small group activities, and maintaining a supportive and professional environment, among others.

## Late work and extensions

This course is designed to support your learning, and you will need to complete certain activities and assignments in a timely manner in order to facilitate this. Therefore, some deadlines are flexible and some are not, but this will be made abundantly clear to you from the assignment description, and you are always welcome to clarify the expectations with me. If you need an extension, please email me before the deadline with the assignment name and a reasonable timeframe for when you plan to submit the work (within three days of the original deadline). If the extenuating circumstance is such that it prevents you from notifying me in advance, please contact me as soon as possible.

# Diversity & Inclusion

I am committed to equitable and inclusive practices in education, and developing educational opportunities where all students can succeed because of, not despite, their background, and I hope that you are too. **There will be no racism, sexism, ableism, homophobia, transphobia, classism, xenophobia or any other discriminatory tactics within our learning environment.** Everyone deserves to feel comfortable in this classroom, so please reach out to me with any concerns that you have, witness, or experience. I will respond to any and all concerns seriously and with the utmost respect and concern for your privacy and wellbeing. We will also work together to develop class guidelines and norms during our first meeting together, so that we can all engage in the class effectively together.

# Academic and Student Support Services

## Academic Support Services

### Academic Success Coaching

[Academic Success Coaching](https://www.american.edu/provost/academic-access/academic-success-coaching.cfm) is a free one-on-one meeting between a student and a professional academic coach to build or enhance time management, organizational, reading, notetaking, test taking and study skills.  Students can work with an academic coach to develop an academic action plan, better understand how to break down large assignments, and discuss overcoming procrastination.  Coaching services are open to all students. (Location in Clark Hall Rooms 106/113 – Schedule appointments on the [Academic Coaching You Can Book Me](https://auacademiccoaching.youcanbook.me/) – [academiccoaching@american.edu](mailto:academiccoaching@american.edu))

### International Student & Scholar Services

[International Student & Scholar Services](https://www.american.edu/ocl/isss/index.cfm) has resources to support academic success and participation in campus life including academic counseling, support for second language learners, response to questions about visas, immigration status and employment and intercultural programs, clubs and other campus resources. (202-885-3350, Butler Pavilion 410).

### Supplemental Instruction

[Supplemental Instruction](https://www.american.edu/provost/academic-access/supplemental-instruction-homepage.cfm) (SI) is a free group tutoring program that supports historically challenging courses in disciplines such as accounting, biology, chemistry and economics. SI Leaders facilitate weekly group review sessions that reiterate course content. In your one or two hour session, an SI Leader can assist with learning course concepts, facilitating group learning, and sharing best strategies for studying and note taking. ([siprogram@american.edu](mailto:siprogram@american.edu))

### Research Librarian

Get Help from a Research Librarian: A research librarian can help you find high-quality information for your research projects and can save you time. For a quick question, librarians are available on chat 24/7. You can also request a personal meeting with a subject specialist librarian through here: <https://www.american.edu/library/ask/>

### Writing Center

The [Writing Center](http://www.american.edu/cas/writing/) offers free, individual coaching sessions to all AU students. In your 45-minute session, a student writing consultant can help you address your assignments, understand the conventions of academic writing, and learn how to revise and edit your own work. (Bender Library – 1st Floor Commons – [Schedule tutoring appointments on WC Online](https://american.mywconline.net/) – 202-885-2991)

## Student Support Services

### The Center for Well-being Programming and Psychological Services

The Center for Well-being Programing and Psychological Services was recently formed to help better meet the wellness needs of the American University student population. It is comprised of staff that previously worked in the Counseling Center and the Health Promotion and Advocacy Center. The Center provides American University students with a range of wellness related services. These services include: individual psychotherapy, group psychotherapy, victim/survivor advocacy services, crisis intervention through AUProtoCall Services 202-885-7979, alcohol and other drug education and consultations and wellness related programing. For more information please visit our website [www.american.edu/counseling](http://www.american.edu/counseling).

### Food Pantry and Food Insecure Students

Students should never go hungry or skip meals because they can’t afford enough to eat. To assist students who are facing food insecurity, AU offers the [Market Food Pantry](https://www.american.edu/student-affairs/the-market.cfm), providing free groceries and limited personal-care items to all students in need. The Market is stocked once per week to the best of our ability, with fruits, vegetables, grains, protein, and dairy. To access the market, students should fill out the Intake Form listed on the Market’s webpage.

Students facing challenges securing food or housing can also reach out to the Office of the Dean of Students ([www.american.edu/dos](http://www.american.edu/dos) or 202-885-3300) for support and referral to resources.

### Students with Disabilities

To register with a disability or for questions about disability accommodations, contact the Academic Support and Access Center at 202-885-3360 or [asac@american.edu.](mailto:asac@american.edu) For more information, visit AU’s [Disability Accommodations web page](https://www.american.edu/provost/academic-access/documentation-and-eligibility.cfm).

# Additional Policies and Relevant Information

## Defining and Reporting Discrimination and Non-Title IX Sexual Misconduct Policy

American University is an equal opportunity, affirmative action institution that operates in compliance with applicable laws and regulations. The University does not discriminate on the basis of race, color, national origin, religion, sex, pregnancy or parenting, age, sexual orientation, disability, marital status, personal appearance, gender identity and expression, family responsibilities, political affiliation, source of income, veteran status, an individual’s genetic information or any other bases under applicable federal and local laws and regulations (collectively “Protected Bases”) in its programs and activities. The University expressly prohibits any form of discriminatory harassment including sexual harassment, dating and domestic violence, rape, sexual assault, sexual exploitation and stalking.

As a faculty member, I am required to report discriminatory or harassing conduct to the university if I witness it or become aware of it – regardless of the location of the incident. There are four confidential resources on campus if you wish to speak to someone who is not required to report: Counseling Center, victim advocates in OASIS, medical providers in the Student Health Center, and ordained clergy in the Kay Spiritual Life Center. If you experience any of the above, you have the option of filing a report with [University Police](http://www.american.edu/finance/publicsafety/index.cfm) (202-885-2527), the [Office of the Dean of Students](http://www.american.edu/ocl/dos/) ([dos@american.edu](mailto:dos@american.edu) or 202-885-3300), or the [Title IX Office](http://www.american.edu/ocl/TitleIX/index.cfm) (202-885-8080 or [TitleIX@american.edu](mailto:TitleIX@american.edu)). For more information, including a list of supportive resources on and off-campus, contact [OASIS](https://www.american.edu/ocl/promote-health/OASIS.cfm) ([oasis@american.edu](mailto:oasis@american.edu) or 202-885-7070) or check out the [Support Guide on the Title IX webpage](https://www.american.edu/ocl/TitleIX/support.cfm).

Review the complete [Discrimination and Non-Title IX Sexual Misconduct Policy](https://www.american.edu/policies/au-community/discrimination-and-non-title-ix-sexual-misconduct.cfm).

## Defining and Reporting Title IX Sexual Harassment Policy

American University does not discriminate on the basis of sex in the education program or activity that it operates, which includes admission and employment. Consistent with the procedures set forth and referenced in this Policy, the University will take steps to eliminate Title IX Sexual 2 Harassment, prevent its recurrence, and remedy any discriminatory effects for members of the AU Community.

It is the responsibility of every member of the AU Community to foster an environment free of Title IX Sexual Harassment. All members of the AU Community are encouraged to take reasonable and prudent actions to prevent or stop an act of Title IX Sexual Harassment. Taking action may include direct intervention when safe to do so, enlisting the assistance of friends, contacting law enforcement, or seeking assistance from a person in authority.

AU Community members employed by the University (including student employees, such as teaching assistants, resident assistants, and orientation leaders) and individuals covered by the University’s Out-of-State Staffing Policy have a duty to report Title IX Sexual Harassment to the [Title IX Coordinator](mailto:%20TitleIX@american.edu) (202-885-8080), when they become aware of such conduct.

Review the complete [Title IX Sexual Harassment Policy](https://www.american.edu/policies/au-community/title-ix-sexual-harassment-policy.cfm).

## Incompletes

At the discretion of the faculty member and before the end of the semester, the grade of I (Incomplete) may be given to a student who, because of extenuating circumstances, is unable to complete the course during the semester. The grade of Incomplete may be given only if the student is receiving a passing grade for the coursework completed. Students on academic probation may not receive an Incomplete. The instructor must provide in writing to the student the conditions, which are described below, for satisfying the Incomplete and must enter those same conditions when posting the grades for the course. The student is responsible for verifying that the conditions were entered correctly.

Conditions for satisfying the Incomplete must include what work needs to be completed, by when the work must be completed, and what the course grade will be if the student fails to complete that work. At the latest, any outstanding coursework must be completed before the end of the following semester, absent an agreement to the contrary. Instructors will submit the grade of I and the aforementioned conditions to the Office of the University Registrar when submitting all other final grades for the course. If the student does not meet the conditions, the Office of the University Registrar will assign the default grade automatically.

The Associate Dean of the Academic Unit, with the concurrence of the instructor, may grant an extension beyond the agreed deadline, but only in extraordinary circumstances. Incomplete courses may not be retroactively dropped. An Incomplete may not stand as a permanent grade and must be resolved before a degree can be awarded. [More information on AU Regulations and Policies](http://catalog.american.edu/).

## Student Code of Conduct

The central commitment of American University is the development of thoughtful, responsible human beings in the context of a challenging yet supportive academic community. The [Student Code of Conduct](http://www.american.edu/ocl/sccrs/) is designed to benefit the American University community and to assist in forming the highest standards of ethics and morals among its members. By registering for this course, students have acknowledged their awareness of the Student Code of Conduct and they are obliged to become familiar with their rights and responsibilities as defined by the Code.