

BIOLGU4310_001_2024_1 - VIROLOGY

Welcome to Virology!

- For the course schedule, see [Syllabus](#).
- Classes are M, W 4:10pm-5:25pm in Havemeyer Hall Room 209
- Office Hours are Thursdays 11:00 AM-12:30 PM via Zoom (link in Syllabus)
- Instructor email: vrr1@cumc.columbia.edu (I usually respond within 24 hours)

Course Prerequisites

Two semesters of a rigorous, molecularly-oriented Introductory Biology course (such as C2005), or the Instructor's permission.

Course Objectives

The basic thesis of the course is that all viruses adopt a common strategy. The strategy is simple:

1. Viral genomes are contained in metastable particles.
2. Genomes encode gene products that promote an infectious cycle (mechanisms for genomes to enter cells, replicate, and exit in particles).
3. Infection patterns range from benign to lethal; infections can overcome or co-exist with host defenses.

Despite the apparent simplicity, the tactics evolved by particular virus families to survive and prosper are remarkable. This rich set of solutions to common problems in host/parasite interactions provides significant insight and powerful research tools. Virology has enabled a more detailed understanding of the structure and function of molecules, cells and organisms and has provided fundamental understanding of disease and virus evolution.

The course will emphasize the common reactions that must be completed by all viruses for successful reproduction within a host cell and survival and spread within a host population. The molecular basis of alternative reproductive cycles, the interactions of viruses with host organisms, and how these lead to disease are presented with examples drawn from a set of representative animal and human viruses, although selected bacterial viruses will be discussed.

Textbook

The recommended textbook for the course is Principles of Virology. Vol I: Molecular Biology, Vol. II: Pathogenesis and Control (S.J. Flint et al., Fifth Edition, ASM Press 2020). It has been ordered at the University bookstore, and may also be purchased at online sellers such as [amazon.com](#)[Links to an external site.](#) and [barnesandnoble.com](#)[Links to an external site.](#). You can download and read a sample chapter [here](#).

Please check the syllabus section of Courseworks for recommended reading for each lecture.

Other Course Resources

Resource	Info
Prof. Racaniello's Virology Blog	Students are encouraged to read (www.virology.ws (Links to an external site.)) which will contain information relevant to the course.
"This Week in Virology" Podcast	Students are encouraged to listen to the weekly podcast (at www.microbe.tv/twiv Links to an external site. (Links to an external site.) or on iTunes), produced by Prof. Racaniello, for additional material about viruses relevant to the course.
Videocasts of Lectures	The lecture slides with audio will be posted on Canvas and at virology.ws/course .
Office Hours	Office hours are held Thursdays 11:00 AM - 12:30PM via Zoom.
Instructor email	vrr1@cumc.columbia.edu (I usually respond within 24 hours)

Grading

Assignment	Weight and Info
Weekly Quizzes	These will comprise 10% of your grade. Weekly online quizzes of 3 questions per lecture to ensure that you are keeping up with course material. Each week a quiz on the previous weeks lectures will go up, usually Sunday night. You will have seven days to complete them - until the next set goes up the following Sunday. After seven days I will close the quiz so you won't be able to view them any longer. This policy is meant to ensure that you keep up with the lectures, not to penalize you.

	You can open the quiz, print it out, and then close the quiz without pressing the 'submit' button, then come back later and complete it. If you don't understand why you were warned, send me an email.
Midterm Exams (3)	60% of overall grade, 20% each. You may drop one of the three midterm exams, but you may not drop the final exam. If you are ill and cannot take an exam, that is the exam that will be dropped.
Final Exam	30% of overall grade.

We will use the following scale for grading:

90-100 A-, A

80-89 B-, B, B+

70-79 C-, C, C+

60-69 D

If all the students in the course get over 90, everyone will get some kind of A, no matter what the "curve" is. The grade cut-offs may be lowered, but they will not be raised. Adjustments will not be made to the detriment of the grades should the medians be high. Only the very highest scores will receive A+.

Disability-related Accommodations

In order to receive disability-related academic accommodations for this course, students must first be registered with their school Disability Services (DS) office. Detailed information is available online for both the [Columbia](#) and [Barnard](#) [Links to an external site.](#) registration processes.

Refer to the appropriate website for information regarding deadlines, disability documentation requirements, and [drop-in](#) <https://www.health.columbia.edu/content/same-day-service-hours> (Columbia)/[intake session](#) [Links to an external site.](#) (Barnard).

For this course, students are not required to have testing forms or accommodation letters signed by faculty. However, students must do the following:

- The Instructor section of the form has already been completed and does not need to be signed by the professor.
- The student must complete the Student section of the form and submit the form to Disability Services.
- Master forms are available in the Disability Services office or online: <https://health.columbia.edu/services/testing-accommodations>

About the Professor

Vincent Racaniello Ph.D., is Higgins Professor of Microbiology & Immunology at Columbia University Medical Center. He has been studying viruses for over 30 years, starting in 1975, when he entered the Ph.D. program in Biomedical Sciences at Mt. Sinai School of Medicine of the City University of New York. His thesis research, in the laboratory of Dr. Peter Palese, was focused on influenza viruses. In 1979 he joined the laboratory of Dr. David Baltimore at Massachusetts Institute of Technology, where he did postdoctoral work on poliovirus. In 1982 he joined the faculty in the Department of Microbiology at Columbia University College of Physicians & Surgeons in New York City. There he established a laboratory to study viruses, and to train other scientists to become virologists. Over the years his laboratory has studied a variety of viruses including poliovirus, echovirus, enterovirus 70, rhinovirus, and hepatitis C virus. As principal investigator of his laboratory, Prof. Racaniello oversees the research that is carried out by Ph.D. students and postdoctoral fellows. He also teaches virology to graduate students, as well as medical, dental, and nursing students. He has taught this Virology course at the Morningside campus since 2010.

Professor Racaniello is passionate about teaching virology to the World. His virology lectures can be found at [YouTubeLinks to an external site.](#). He blogs at [virology blogLinks to an external site.](#), produces the podcast '[This Week in VirologyLinks to an external site.](#)', and has co-authored the textbook '*Principles of Virology*'. He regularly posts about viruses on [TwitterLinks to an external site.](#), [FacebookLinks to an external site.](#), and [InstagramLinks to an external site.](#).