Course Summary / Syllabus

Oncology / Plant Pathology 640

GENERAL VIROLOGY - MULTIPLICATION OF VIRUSES

Fall Semester, 2022

Class meetings:

MWF at 1:20 – 2:10 pm, Room 125 McArdle Bldg, 1400 University Ave (**not** WIMR)

For Fall semester 2022, this course will be taught in person, with live lectures and class discussion on Mondays, Wednesdays and Fridays from 1:20 – 2:10 pm in room 125, McArdle Building, 1400 University Ave.

*** **Note** that this classroom is in the "old" McArdle Building on central campus, **not** the current medical campus WIMR site of the McArdle Laboratory for Cancer Research.

Course files, assignments, general communications, etc. will provided through the UW-Madison **Canvas** learning management system. Students can familiarize themselves with this system by starting with the following campus websites:

Canvas: https://it.wisc.edu/services/canvas/

Course URL in Canvas: https://canvas.wisc.edu/courses/206726

Number of credits per semester: 3

This class meets for three 50-minute class periods each week over the fall semester and carries the expectation that students will work on course learning activities (reading, writing, studying, quizzes, etc.) for about 2 hours out of the classroom for every class period.

Course Description

The structure, multiplication, genetics, pathology and control of animal and plant viruses.

Prerequisites

(GENETICS 466 or 467) and (BIOCHEM 501 or 508) or graduate/professional standing

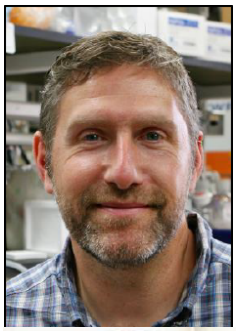
Course Instructors

Paul Ahlquist, PhD ahlquist@wisc.edu

Kaesberg Professor of Molecular Virology, Oncology and Plant Pathology
Steenbock Professor of Microbiology
Director, Rowe Center for Research in Virology, Morgridge Institute for Research
Associate Director for Basic Sciences, UW Carbone Cancer Center

Robert Kalejta, PhD rfkalejta@wisc.edu

Professor of Molecular Virology and Oncology
Assistant Director, McArdle Laboratory for Cancer Research
Vice-Chair, Institute for Molecular Virology



Nathan Sherer, PhD nsherer@wisc.edu

Professor of Molecular Virology and Oncology
Romnes Faculty Fellow

Kjell Sandstrom ksandstrom2@wisc.edu

Teaching Assistant
Graduate Student, Cellular & Molecular Pathology Graduate Program

Office Hours

The instructors and TA will generally be available for questions and discussion directly after the regular MWF class meetings. If this does not meet your schedule needs, please contact the TA or instructors to make an appointment.

Course Learning Outcomes

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

- Identify the major classes of viruses infecting animals and plants, and summarize their basic replication strategies.
- Identify the major innate and adaptive antiviral immunity mechanisms of animals and plants, and examples of viral countermeasures against these.
- Summarize the burdens and threats of viruses to public health, agriculture, etc.
- Identify the major approaches and challenges to virus control at the single organism and host population levels, including why viruses are generally harder to control than bacteria, and major steps in developing new antiviral agents.
- Illustrate beneficial uses of viruses and their genes in research, biotechnology and medicine.
- Design and evaluate basic experiments to address specific questions in virology.
- Read and evaluate primary literature papers in virology *(*****Specific to graduate students*** *– see also below)*

Graduate Student-Specific Primary Literature Evaluation

By UW-Madison Graduate School policy (https://kb.wisc.edu/vesta/39841), to satisfy graduate student credit requirements, 600-level courses must differentiate the grading of graduate and undergraduate students by including graduate-specific activities that contribute to grading graduate students but not undergraduates.

The graduate student-specific activities in this course are evaluations of three primary literature papers. As shown on the class schedule, after each of exams 1, 2 and 3, graduate students will be assigned a primary literature paper related to subjects covered in the prior exam. A set of discussion questions will be provided with each paper, and graduate students will respond by providing a total of ~2 pages of typed responses to each of these question sets. Each paper evaluation will be worth 20 points, for 60 points total. As shown in the next section, these 60 points correspond to ~10% of the total grade for graduate students.

Grading

As noted in the preceding section, graduate student grades are based in part on three primary literature paper reviews not required of undergraduates. Accordingly, course grades will be based on the following inputs for graduate and undergraduate students:

	Graduate Students	**Undergraduates**
Three regular exams (50 min and 100 points each)	300	300
One comprehensive final exam (120 min and 150 pts)	150	150
Quizzes (4 quizzes at 10 points each)	40	40
Three primary literature paper reviews (20 pts each)	60	Not applicable
Total points for the semester	**550**	**490**

** Separate grading curves will be used for graduate and undergraduate students.

** See below for grade distributions from recent years of the course.

** **Examples of prior year exams are provided on the course website.**

Students should review these sample exams to learn what kinds of questions to expect, and use them as one form of exam preparation. Note that the weekly quiz questions are mainly intended to encourage and assess that students are keeping up with the online lecture material. These quiz questions thus are generally simpler than the exam questions, which usually ask students to apply and reason from the basic facts of the lecture material.

Sample Distribution of Test Scores and Letter Grades in Recent Years

The following grades and scores are listed for illustration only
and do not necessarily reflect how grades will be given this year.

	Year	% of total course points required for indicated grade					
		A	**AB**	**B**	**BC**	**C**	**D**
Graduate	2021	87	81	72			
	2020	86	82	72			
	2019	87	82	73	66		
	2018	86	81	72			
	2017	88	82	72			
	2016	86	83	73	67		
	2015	86	82	70	66		
	2014	83	81	72		56	
	2013	89	85	75	65		
Undergrad	2021	82	76	66			
	2020	82	76	66	60	51	
	2019	84	79	69	66	55	47
	2018	83	79	67	62	54	
	2017	85	77	67	63	55	45
	2016	83	80	70	60	54	
	2015	83	80	66	63	51	42
	2014	81	77	69	60	55	43
	2013	85	81	70	63	55	
		Number of students with indicated grade					
		A	**AB**	**B**	**BC**	**C**	**D**
Graduate	2021	6	8	8			
	2020	7	11	10			
	2019	6	1	12	2		
	2018	6	1	7			
	2017	9	8	2			
	2016	2	3	3	2		
	2015	5	5	7	1		
	2014	7	2	8		1	
	2013	10	4	5	1		
Undergrad	2021	5	1	4			
	2020	7	5	5	1	1	
	2019	8	8	8	1	4	1
	2018	7	3	11		3	
	2017	7	7	6	2	3	1
	2016	5	4	5	6	1	
	2015	5	4	10	3	4	1
	2014	7	1	6	3	1	1
	2013	2	4	5	4	5	

Suggested Texts and References

There is no required textbook for this course.
All lecture slides, assignments and associated course materials will be available in Canvas.

Suggested reference books for further study

Principles of Virology: Molecular Biology, Pathogenesis, and Control (Fifth Edition, Two Volumes, 2020)
Flint, S. J., V. R. Racaniello, G. F. Rall, T. Hatziioannou, A. M. Skalka. Wiley.

Fields Virology (Sixth Edition, Two Volumes, 2013)
Knipe, D. and P. Howley (editors). Lippincott, Williams and Wilkins.

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NB: A seventh edition of **Fields Virology** in Four Volumes, P. Howley et al. (editors), has been partially released as follows:

Fields Virology: Emerging Viruses – published March 2020
Fields Virology: DNA Viruses - published October 2021
Fields Virology: RNA Viruses - published August 2022
Fields Virology: Fundamentals – *to be released in Fall 2022 ??*

Selected Virus Websites

All the Virology on the WWW http://www.virology.net/

International Committee on Taxonomy of Viruses (ICTV) https://talk.ictvonline.org

ICTV online Virus Taxonomy database https://talk.ictvonline.org/ictv-reports/ictv_online_report/

NCBI Viral Genomes Resource
http://www.ncbi.nlm.nih.gov/genomes/VIRUSES/viruses.html

U.S. Centers for Disease Control and Prevention (CDC) https://www.cdc.gov

Virus World – Virus Structures and Images http://www.virology.wisc.edu/virusworld/viruslist.php
(UW-Madison Institute for Molecular Virology)

Academic Integrity Statement

By enrolling, each student agrees to uphold the high academic standards of the University of Wisconsin-Madison; academic misconduct is behavior that negatively impacts the integrity of the institution. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these previously listed acts are examples of misconduct which may result in disciplinary action. Examples of disciplinary action include, but is not limited to, failure on the assignment/course, written reprimand, disciplinary probation, suspension, or expulsion.

Exam Procedures

Exam administration: Exams will be administered in class through the UW-Madison Canvas online learning management system – i.e., you will take exams in class, using your laptop computer to read questions and type in answers via Canvas. Selected features of Canvas and the associated Honorlock proctoring system will be used to assist in administering the exam by, e.g., limiting the use of other programs and controlling web browsing to prevent searching the web for possible answers (which would not be an effective exam strategy in any case).

Allowed short notes: The exams will test aspects of your relevant knowledge and ability to reason from that knowledge. To minimize memorization burdens and to encourage productive studying, each student will be allowed to generate and use in the exam two pages of notes - i.e., two sides of standard letter-sized 8.5 x 11 in paper, preferably back-to-back on a single sheet. As you prefer, these can be handwritten or printed in reasonably sized type (no microfiche readers allowed). This policy will be further discussed in class; If you have any questions, please see the instructors.

Sample prior year exams: As noted above under "Grading," examples of prior year exams are provided on the course website. Students are strongly encouraged to review these sample exams to learn what kinds of questions to expect and to as one useful component of their exam preparation.

Usage of Recorded Lectures Statement

Lecture materials, slides and recordings for this course are protected intellectual property at UW- Madison. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. If a lecture is not already recorded, you are not authorized to record my lectures without the instructor's permission unless you are considered by the university to be a qualified student with a disability requiring accommodation [Regent Policy Document 4-1]. Students may not copy or have lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

Diversity and Inclusion Statement

Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.

Accommodations for Students with Disabilities Statement

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform the course instructors of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. The instructors will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. (See: McBurney Disability Resource Center)