PLP6223C VIRAL PATHOGENS OF PLANTS

SPRING 2021

3 credit hours

Instructor:

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Course Time/Location:

M, W (Lectures): 1:55 PM – 2:45 PM (via ‘Zoom’ meeting)

F (Discussions/Laboratories): 1:55 PM – 3:50 PM (Discussions/Virtual Laboratories via ‘Zoom’ meeting); 11:45 AM – 1:40 PM or 1:55 PM – 3:50 PM (In-person Laboratories)

Lectures will be given on Mondays and Wednesdays. The lectures will be live-streamed using the ‘Zoom’ video conferencing. From a personal computer use the following link to connect:

https://ufl.zoom.us/j/96722021852?pwd=S0xoRXp1Ny9vOWNJcmwyUkZsa2c3QT09

Laboratories and research paper discussions will take place from 1:55 PM to 3:50 PM on Fridays using the ‘Zoom’ video conferencing. From a personal computer use the above link to connect.

The in-person laboratory portion of the course will be conducted on certain Fridays (see the schedule below) via a face-to-face mode in the teaching room 2306, Fifield Hall. As per the University of Florida COVID-19-related guidelines to meet the social distancing requirements, the enrolled students will be divided into groups, and each group will participate in a separate face-to-face section scheduled for a specific time slot between 11:45 AM and 3:50 PM.
The COVID-19-related safety guidelines will be followed during the in-person laboratory sessions. All students, the instructor, and the teaching assistant will wear approved masks at all times. Students will be stationed at a distance more than six feet from each other. The social distancing will be maintained throughout the entire class duration, including students’ arrival and departure. N95 masks (if desired) and disinfecting spray solution bottles will be available for the students’ use. Lab benches and supplies will be disinfected before the class and after their use. Prior to the beginning of the class, all the materials and supplies will be placed at the individual student stations by the instructor or the teaching assistant.

Course Materials Access:

Course website in Canvas at https://elearning.ufl.edu

Office Hours:

By appointment, via Zoom or over the phone

Course Overview:

The course discusses most important principles and concepts related to viruses, with the main focus on viruses that infect plants. Those include virus classification, architecture, genome organization, replication, movement, cytopathology of virus infections, virus-host interactions, transmission, epidemiology, and evolution. The course also discusses principals of virus diagnosis and control measures. Two lecture periods (Monday and Wednesday) will be followed by a discussion or laboratory session (Friday). Discussions will focus on research articles and virus case studies, which aim to advance the students’ knowledge in plant virology. Wet laboratories are designed to give students hands-on experience and improve their understanding of the fundamental concepts being discussed in the course.

Each student will be expected to prepare and deliver two presentations. For the “Viruses in Crops” presentations, students will select a crop from a list provided by the instructor. Students will work in teams of two. Each team will prepare a 7-10-minute PowerPoint presentation on viruses that are economically important for the specific crop and then deliver this presentation for the class in a form of an oral presentation at a scheduled date. These presentations should focus on the virus economic impact. The instructor will provide a selection of research articles, which students could use for preparing these presentations. The students are also encouraged to look for additional research articles and extension publications. For the “Virus Case Study” presentations, each student will select a virus from a list provided by the instructor. Each student will prepare a comprehensive 12-15-minute PowerPoint presentation on the biology of the selected virus and its economic importance and deliver the presentation for the class (oral presentation) at a scheduled date. For this assignment, students will be expected to conduct the literature search (research papers).

Course Objectives: through this course, students will:
1. Become familiar with most important principles and concepts related to viruses that infect plants;
2. Become familiar with the fundamental characteristics and biology of most economically important plant viruses;
3. Learn the experimental procedures and methods that are used in the plant virology research and plant virus diagnostics;
4. Improve professional skills, including skills in developing a scientific idea as well as in critical reading of scientific literature and presentation skills.

**Prerequisites:** Introductory courses in Plant Pathology, Genetics, and Biochemistry/Molecular Biology

**Course Schedule of Topics and Assignments:**

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Date</th>
<th>Class type</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1 M</td>
<td>01/11/21</td>
<td>Lecture 1, Zoom</td>
<td>Course Introduction</td>
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<tr>
<td>1 W</td>
<td>01/13/21</td>
<td>Lecture 2, Zoom</td>
<td>Introduction to Viruses</td>
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<tr>
<td>1 F</td>
<td>01/15/21</td>
<td>No class meeting: work remotely on your reading assignment</td>
<td>Are viruses alive?</td>
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<td><strong>Required reading:</strong> Moreira and Lopez-Garcia (2009); Forterre (2016)</td>
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<td>Video with Dr. Vincent Racaniello</td>
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<td><a href="https://youtu.be/QD7YLLyh_HE">https://youtu.be/QD7YLLyh_HE</a></td>
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<td>2 M</td>
<td>01/18/21</td>
<td>No class</td>
<td>HOLIDAY</td>
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<td>2 W</td>
<td>01/20/21</td>
<td>Lecture 3, Zoom</td>
<td>Virus Classification</td>
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<td>2 F</td>
<td>01/22/21</td>
<td>Discussion, Zoom</td>
<td>Are Viruses Alive? Discussion of the selected articles</td>
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<td>Moreira and Lopez-Garcia (2009); Forterre (2016)</td>
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<td>3 M</td>
<td>01/25/21</td>
<td>Lecture 4, Zoom</td>
<td>Architecture of Viruses</td>
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<td>3 W</td>
<td>01/27/21</td>
<td>Lecture 5, Zoom</td>
<td>Virus Infection Cycle</td>
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<td>3 F</td>
<td>01/29/21</td>
<td>No class meeting: work remotely on your presentation “Viruses in crops”</td>
<td>Viruses in Crops</td>
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<tr>
<td>4 M</td>
<td>02/01/21</td>
<td>Lecture 6, Zoom</td>
<td>Outcomes of Plant Viral Infections</td>
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<td>4 W</td>
<td>02/03/21</td>
<td>Lecture 7, Zoom</td>
<td>Genome Organization and Expression I</td>
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<td>4 F</td>
<td>02/05/21</td>
<td>Student presentations, Zoom</td>
<td>Viruses in Crops</td>
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<td>5 M</td>
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<td>Lecture 8, Zoom</td>
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<td>5 W</td>
<td>02/10/21</td>
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<td>Lecture 9, Zoom</td>
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<td>Lab exercises, In-person</td>
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<td>6 M</td>
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<td>Lecture 10, Zoom</td>
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<td>Lecture 11, Zoom</td>
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<td>Lecture 12, Zoom</td>
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<td>8 M</td>
<td>03/01/21</td>
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<td>8 W</td>
<td>03/03/21</td>
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<td>Lecture 15, Zoom</td>
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<td>8 F</td>
<td>03/05/21</td>
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<td>03/08/21</td>
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<td>Lecture 17, Zoom</td>
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<td>Lecture 19, Zoom</td>
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<td>10 F</td>
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<td>Lecture 20, Zoom</td>
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<td>Lecture 21, Zoom</td>
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<td>11 F</td>
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<td>12 M</td>
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<td>Lecture 22, Zoom</td>
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<td>12 W</td>
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<td>Lecture 23, Zoom</td>
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<td>12 F</td>
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<td>13 M</td>
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<td>13 F</td>
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<td>Student presentations, Zoom</td>
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<tr>
<td>14 M</td>
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<td>Lecture 26, Zoom</td>
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<td>14 W</td>
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<td>14 F</td>
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<td>15 M</td>
<td>04/19/21</td>
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<td>Lecture 28, Zoom</td>
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<td>15 W</td>
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<td>Exam</td>
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References for the Supplementary Reading Materials (these articles are provided as pdf files on the course website in Canvas):


Forterre P. To be or not to be alive: How recent discoveries challenge the traditional definitions of viruses and life. Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences. 2016 Oct 1;59:100-8.

Literature resources for the “Viruses in Crops” assignment*:

*These articles are provided as pdf files on the course website in Canvas and are suggested reading materials. Students are not required to use all of them in the assignment. Students may select and use only some of those. Alternatively, students may use other appropriate articles of their choice.

Potato viruses


Northwest Potato Research Consortium: Potato Aphid ( Macrosiphum euphorbiae )

Northwest Potato Research Consortium: Green Peach Aphid ( Myzus persicae )
https://www.nwpotatoresearch.com/insects/green-peach-aphid-myzus-persicae

Northwest Potato Research Consortium: Potato Leaf Roll Virus
https://www.nwpotatoresearch.com/diseases/potato-leaf-roll-virus

Northwest Potato Research Consortium: Potato virus Y
https://www.nwpotatoresearch.com/diseases/potato-virus-y


Grapevine viruses


**Tomato viruses**


Sugarcane viruses


Cotton viruses


**Cucurbit viruses**


Required and Recommended Textbooks:

Although there is no required textbook, students are expected to read all the reading materials provided by the instructor, which will include review and research articles. Those will be provided in electronic format. Among those materials will be papers selected specifically for in class discussions that students are expected to study in details in order to actively participate in discussions.

Required textbooks:


Grading:

Exams – Mid-Term Exam (20% of student’s grade); Final Exam (25% of grade)

Presentation on “Viruses in Crops” (15% of grade)

Presentation on “Virus Case Study” (25% of grade)

Participation in class discussions and labs (15% of grade)

Grading Scale:

93-100% A
90-92% A-
86-89% B+
83-85% B
80-82% B-
76-79% C+
73-75% C
70-72% C-
66-69% D+
63-65% D
Detailed and up-to-date information on UF grades and grading policies can be found at https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Attendance and Make-up Policy:

Students are expected to attend all course lectures, discussions, and labs as well as complete required assignments on time. Students should arrive to the class on time. No cell phone use is allowed in the class. Along with the fact that these are firm requirements for participating in the course, the ability to fulfill these expectations reflects your professional characteristics. If you unable to attend a class due to illness or an emergency, you must notify the instructor as soon as possible, preferably prior to the scheduled class. If you miss an exam for a valid and documented reason, a make-up exam will be scheduled with permission from the instructor. These requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Accommodations for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. The respective students should first register with the Disability Resource Center at 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/ and provide appropriate documentation.

On-line course evaluation:

According to the UF Policy on Course Syllabi, “students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.”

Materials and supplies fees:

$35; the fees are used to purchase materials for the laboratory exercises.

Academic Honesty

As a student enrolled at the UF, you committed yourself to the highest standards of honesty and integrity required by the honor code. You are expected to be consistent with this commitment.
The following is the UF Honor Pledge: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.” As it is stated by the UF student honor code, “all work submitted for credit by students at the university, the following pledge is either required or implied: On my honor, I have neither given nor received unauthorized aid in doing this assignment. The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council or Student Conduct and Conflict Resolution in the Dean of Students Office.” (Source: 2013-2014 Undergraduate Catalog).

It is expected that you will complete all work independently unless the assignment is designed as a group project as explicitly indicated by the instructor.

This policy will be firmly upheld at all times during this course.
For more information regarding academic honesty and student responsibilities, please see:

http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/

Software Use:

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources

The university’s counseling resources are available for students experiencing personal problems that interfere with their general well-being and/or academic performance. The Counseling & Wellness Center provides confidential counseling services at no cost for students that are currently enrolled with the university.

- University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/
- Counseling Services
- Groups and Workshops
- Outreach and Consultation
- Self-Help Library
- Training Programs
- Community Provider Database
The instructor reserves the right to modify information provided in the syllabus. Any modifications will be communicated to the enrolled students via class announcements in advance.