

## **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=S0xoRXp1Ny9vOWNJcmwvUkZsa2c3QT09>

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:**

Week No.	Date	Class type	Topic
1 M	01/11/21	Lecture 1, Zoom	Course Introduction
1 W	01/13/21	Lecture 2, Zoom	Introduction to Viruses
1 F	01/15/21	No class meeting: work remotely on your reading assignment	Are viruses alive?  <b>Required reading: Moreira and Lopez-Garcia (2009); Forterre (2016)</b>  Video with Dr. Vincent Racaniello <a href="https://youtu.be/QD7YLLyh_HE">https://youtu.be/QD7YLLyh_HE</a>
2 M	01/18/21	No class	HOLIDAY
2 W	01/20/21	Lecture 3, Zoom	Virus Classification
2 F	01/22/21	Discussion, Zoom	Are Viruses Alive? Discussion of the selected articles  Moreira and Lopez-Garcia (2009); Forterre (2016)
3 M	01/25/21	Lecture 4, Zoom	Architecture of Viruses
3 W	01/27/21	Lecture 5, Zoom	Virus Infection Cycle
3 F	01/29/21	No class meeting: work remotely on your presentation “Viruses in crops”	Viruses in Crops
4 M	02/01/21	Lecture 6, Zoom	Outcomes of Plant Viral Infections
4 W	02/03/21	Lecture 7, Zoom	Genome Organization and Expression I
4 F	02/05/21	Student presentations, Zoom	Viruses in Crops

5 M	02/08/21	Lecture 8, Zoom	Genome Organization and Expression II
5 W	02/10/21	Lecture 9, Zoom	Viral Cycle of (+) RNA Viruses
5 F	02/12/21	Lab exercises, In-person	Electron microscopy of viruses; sample preparation
6 M	02/15/21	Lecture 10, Zoom	Viral Cycle of (-) RNA and dsRNA Viruses
6 W	02/17/21	Lecture 11, Zoom	Viral Cycle of DNA Viruses
6 F	02/19/21	Lab exercises, Zoom	Electron Microscopy of Virus Samples; Visualization
7 M	02/22/21	Lecture 12, Zoom	Multipartite Viruses
7 W	02/24/21	Exam	Mid-term Exam
7 F	02/26/21	Lab exercises, In-person	Virus inoculation: mechanical inoculation; <i>Agrobacterium</i> -mediated infiltration
8 M	03/01/21	Lecture 14, Zoom	Virus Movement
8 W	03/03/21	Lecture 15, Zoom	Cytopathology of Plant Virus Infections
8 F	03/05/21	Lab exercises, In-person	Observations of the outcomes of virus inoculations (viral symptoms and movement)
9 M	03/08/21	Lecture 16, Zoom	Virus Interactions with Plant Immunity
9 W	03/10/21	Lecture 17, Zoom	RNA silencing I
9 F	03/12/21	Lab exercises, In-person	RNA silencing demonstration; Inoculation of plants with silencing inducers
10 M	03/15/21	Lecture 18, Zoom	RNA silencing II
10 W	03/17/21	Lecture 19, Zoom	Virus Transmission
10 F	03/19/21	Lab exercises, In-person	RNA silencing demonstration; Observations of RNA silencing induction
11 M	03/22/21	Lecture 20, Zoom	Viroids
11 W	03/24/21	Lecture 21, Zoom	Satellite Viruses
11 F	03/26/21	Student presentations, Zoom	Virus Case Study
12 M	03/29/21	Lecture 22, Zoom	Diagnosis I
12 W	03/31/21	Lecture 23, Zoom	Diagnosis II
12 F	04/02/21	Lab exercises, In-person	Virus detection by ELISA
13 M	04/05/21	Lecture 24, Zoom	Virus Evolution
13 W	04/07/21	Lecture 25, Zoom	Virus Epidemiology
13 F	04/09/21	Student presentations, Zoom	Virus Case Study
14 M	04/12/21	Lecture 26, Zoom	Control Measures
14 W	04/14/21	Lecture 27, Zoom	“Making Allies from Enemies”
14 F	04/16/21	Student presentations, Zoom	Virus Case Study
15 M	04/19/21	Lecture 28, Zoom	Course Review, Question-Answer Session
15 W	04/21/21	Exam	Final Exam

**References for the Supplementary Reading Materials** (these articles are provided as pdf files on the course website in Canvas):

Moreira D, López-García P. Ten reasons to exclude viruses from the tree of life. *Nature Reviews Microbiology*. 2009 Apr;7(4):306-11.

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**

CABI,2020. Potato spindle tuber viroid (spindle tuber of potato). [Review by J. Th. J. Verhoeven]. In: *Invasive Species Compendium*. Wallingford, UK: CAB International. <https://www.cabi.org/isc/datasheet/43659>.

EPPO . Data sheet on Potato spindle tuber viroid. EPPO, Paris. Retrieved Jan 3, 2021, from <https://gd.eppo.int/taxon/PSTVD0/documents>

EPPO. 2011. Potato spindle tuber viroid on potato. EPPO, Paris. Retrieved Jan 3, 2021, from <https://gd.eppo.int/taxon/PSTVD0/documents>

Frost K, and Ocamb C.M. 2020. Potato (*Solanum tuberosum*)-Potato Mop-Top Virus . Pacific Northwest Plant Disease Management Handbook. Retrieved Jan 3, 2021, from <https://pnwhandbooks.org/node/3335>.

Frost K, and Ocamb C.M. 2020. Potato (*Solanum tuberosum*)-Latent Viruses. Pacific Northwest Plant Disease Management Handbook. Retrieved Jan 3, 2021, from <https://pnwhandbooks.org/node/3326>.

Frost K, and Ocamb C.M. 2020. Potato (*Solanum tuberosum*)-Potato Virus Y. Pacific Northwest Plant Disease Management Handbook. Retrieved Jan 3, 2021, from <https://pnwhandbooks.org/node/24021>.

Hamm P.B, and Ocamb C.M. 2020. Potato (*Solanum tuberosum*)-Potato Leafroll Virus (Leaf Roll). Pacific Northwest Plant Disease Management Handbook. Retrieved Jan 3, 2021, from <https://pnwhandbooks.org/node/3334>.

Johnson D. Potato Leaf Roll. Washington State University Extension. Plant Disease EB1994E. Retrieved Jan 3, 2021, from <https://pubs.extension.wsu.edu/potato-leaf-roll>.

Kreuze J.F, Souza-Dias J.A.C, Jeevalatha A, Figueira A.R, Valkonen J.P.T, and Jones R.A.C. 2020. Viral Diseases in Potato. In: Campos H, Ortiz O. (eds) The Potato Crop. Springer, Cham.

Murray K, Jepson P, Sandlin I, Jensen A. 2020. Integrated Pest Management for Potatoes in Oregon, Washington and Idaho. OSU Extension Catalog EM 9275. Retrieved Jan 3, 2021, from <https://catalog.extension.oregonstate.edu/em9275>.

Northwest Potato Research Consortium: Potato Aphid (*Macrosiphum euphorbiae*)  
<https://www.nwpotatoresearch.com/insects/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>

Rondon S. 2012. Pest Management Strategies for Potato Insect Pests in the Pacific Northwest of the United States. In: Perveen F.K. (eds) Insecticides- Pest Engineering. IntechOpen.

## Grapevine viruses

Appel D, McBride S, and Alabi O. 2018. EPLP-041: Virus Disease Guide in Grapes. Texas A&M AgriLife Extension Service. Retrieved Jan 3, 2021, from  
<https://www.agrilifebookstore.org/Virus-Disease-Guide-in-Grapes-p/eplp-041.htm>

CABI,2020. Grapevine red blotch virus (grapevine red blotch virus). [original text by Marc Fuchs]. In: Invasive Species Compendium. Wallingford, UK: CAB International.  
<https://www.cabi.org/isc/datasheet/120024>

Golino D.A, Sim S.T, Gill R, Rowhani A. 2002. California mealybugs can spread grapevine leafroll disease. California Agriculture 56(6):196-201.

Grape-Grape mealybug. In: Hollingsworth, C.S. (Ed.).2021 Pacific Northwest Plant Disease Management Handbook. © Oregon State University. URL:  
<https://pnwhandbooks.org/node/7447>.

Grape (*Vitis* spp.)-Virus Diseases. In: Pscheidt, J.W., and Ocamb, C.M. (Senior Eds.). 2021 Pacific Northwest Plant Disease Management Handbook. © Oregon State University.  
<https://pnwhandbooks.org/node/2788>.

Jordan S. 2019. Ringspot Virus Decline. Retrieved Jan 3, 2021, from <https://grapes.extension.org/ringspot-virus-decline/>

Martin R, and Pscheidt J. Grape (Vitis spp.)-Grapevine Red Blotch Disease. In: Pscheidt, J.W., and Ocamb, C.M. (Senior Eds.). 2021 Pacific Northwest Plant Disease Management Handbook. © Oregon State University. <https://pnwbooks.org/node/2776>.

Miles L , Byrne J, Gillett J, Longstroth M, Isaacs R, and Miles T. 2020. Michigan Grape Facts: Managing Grapevine Leafroll Disease. Michigan State University Extension. Retrieved Jan 3, 2021, from <https://www.canr.msu.edu/resources/michigan-grape-facts-managing-grapevine-leafroll-disease>.

Rayapati N, O'Neal S, Walsh D. 2008. Grapevine Leafroll Disease (EB2027E). Washington State University Extension. Retrieved Jan 3, 2021, from <http://pubs.cahnrs.wsu.edu/publications/pubs/eb2027e>.

Ricketts K.D, Gómez M.I, Fuchs M.F et al. 2017. Mitigating the Economic Impact of Grapevine Red Blotch: Optimizing Disease Management Strategies in U.S. Vineyards. *Am J Enol Vitic.* 68: 127-135.

Sudarshana MR, Perry KL, Fuchs MF. 2015. Grapevine Red Blotch-Associated Virus, an Emerging Threat to the Grapevine Industry. *Phytopathology.* 105(7):1026-32.

Skinkis P.A. 2009. Field Monitoring for Leafroll Virus and Mealybug in Pacific Northwest Vineyards (EM 8985). Oregon State University Extension Catalog. Retrieved Jan 3, 2021, from <https://catalog.extension.oregonstate.edu/em8985>.

Walton V, Dreves A.J, Skinkis P, Kaiser C, Buchanan M, Hilton R, Martin B.R, Castagnoli S, and Renquist S. 2009. Grapevine Leafroll Virus and Mealybug Prevention and Management in Oregon Vineyards (EM 8990). Oregon State University Extension Catalog. Retrieved Jan 3, 2021, from <https://catalog.extension.oregonstate.edu/em8990>.

## **Tomato viruses**

Adkins S. 2015. Thrips Vectored Tospoviruses. *Berry Vegetable Times* Winter 2015. Retrieved Jan 3, 2021, from <https://gcrec.ifas.ufl.edu/publications-and-newsletters/berry-vegetable-times-archives>.

Baker C, and Adkins S. 2000. Peppers, Tomatoes, and Tobamoviruses. Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Plant Pathology Circular No. 400.

Batuman O, Yilmaz S, Roberts P, McAvoy E, Hutton S, Dey K, and Adkins S. 2020. Tomato Brown Rugose Fruit Virus (ToBRFV): A Potential Threat for Tomato Production in Florida (PP360). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <https://edis.ifas.ufl.edu/pp360>.

Dey K. 2019. Tomato brown rugose fruit virus (Tobamovirus, ToBRFV) (FDACS-P-02114). Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Pest Alerts FDACS-P-02114. Retrieved Jan 3, 2021, from <https://www.fdacs.gov/Divisions-Offices/Plant-Industry/Plant-Industry-Publications/Pest-Alerts>.

Fonsah E.G, Yu C, Diffie S, Srinivansan R.B, and Riley D. 2018. Economic Productivity and Profitability Analysis for Whiteflies and Tomato Yellow Leaf Curl Virus (TYLCV) Management Options. Journal of Agriculture and Environmental Sciences. 7(1):. 1-9.

Funderburk J, Adkins S, Freeman J, Hutton S, Stansly P, Smith H, McAvoy G, Snodgrass C, Paret M, and Leppla N. 2018. Managing Thrips and Tospoviruses in Tomato (ENY859). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <http://edis.ifas.ufl.edu/in895>.

Kurowski C.J. 2017. Tomato Disease - Field Guide. Seminis Vegetable Seeds. Retrieved Jan 3, 2021, from <https://www.seminis-us.com/resources/download>.

Luria N, Smith E, Reingold V, Bekelman I, Lapidot M, Levin I, Elad N, Tam Y, Sela N, Abu-Ras A, Ezra N, Haberman A, Yitzhak L, Lachman O, Dombrovsky A. 2017. A New Israeli Tobamovirus Isolate Infects Tomato Plants Harboring Tm-22 Resistance Genes. PLoS ONE 12(1): e0170429.

Paret M, Pernezny K, and Roberts P. 2020. Disease Control for Florida Tomatoes (PPP35). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <https://edis.ifas.ufl.edu/vh056>.

Polston J.E, Wood E, Palmateer A.J, and Zhang S. 2019. Tomato Chlorotic Spot Virus (PP306). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <https://edis.ifas.ufl.edu/pp306>.

Smith H.A, Stansly P.A, Seal D.R, McAvoy E, Polston J.E, Gilreath P.R, and Schuster D.J. 2018. Management of Whiteflies, Whitefly-Vectored Plant Virus, and Insecticide Resistance for Tomato Production in Southern Florida ( ENY-735). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <http://edis.ifas.ufl.edu/in695>.

## Sugarcane viruses

Asinari, F., Pérez Gómez, S.G., Easdale, C. et al. 2020. Impact of yellow leaf virus on sugarcane commercial fields. Tropical plant pathology.

Beuzelin J.M, Cherry R.H, Nuessly G.S, and Sandhu H.S. 2019. Insect Management in Sugarcane (ENY-406). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <https://edis.ifas.ufl.edu/ig065>.

Boukari W, Wei C, Tang L, Hincapie M, Naranjo M, et al. 2020. Lack of transmission of Sugarcane yellow leaf virus in Florida from Columbus grass and sugarcane to sugarcane with aphids or mites. PLOS ONE 15(3): e0230066.

CABI,2020. Sugarcane mosaic virus (sugarcane mosaic). [original text by Olufemi Alabi]. In: Invasive Species Compendium. Wallingford, UK: CAB International.  
<https://www.cabi.org/isc/datasheet/49801>

Harmon P. 2019. Mosaic Disease of St. Augustinegrass Caused by Sugarcane Mosaic Virus (PP313). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <https://edis.ifas.ufl.edu/pp313>.

Hoy J. 2019. Field Crops: Sugarcane. In: Louisiana Plant Disease Management Guide. Retrieved Jan 3, 2021, from  
[https://www.lsuagcenter.com/portals/communications/publications/management\\_guides/plant\\_disease\\_guide/field-crops-sugarcane#title4](https://www.lsuagcenter.com/portals/communications/publications/management_guides/plant_disease_guide/field-crops-sugarcane#title4).

Ring D, et al. Sugarcane – Commercial. In: Louisiana Insect Pest Management Guide. Retrieved Jan 3, 2021, from  
[https://www.lsuagcenter.com/portals/communications/publications/management\\_guides/insect\\_guide/sugarcane](https://www.lsuagcenter.com/portals/communications/publications/management_guides/insect_guide/sugarcane).

Rott P, Odero D.C, Beuzelin J.M, Raid R.N, VanWeelden M, Swanson S, and Mossler M. 2018. Florida Crop/Pest Profile: Sugarcane (PI-171). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <https://edis.ifas.ufl.edu/pi207>.

Viswanathan R, Parameswari B, Nithya K.2018. Molecular Characterization of Sugarcane Viruses and Their Diagnostics. In: Prasad R, Gill S.S, Tuteja N. (eds) Crop Improvement Through Microbial Biotechnology. Elsevier.

Wu L, Zu X, Wang S, Chen Y. 2012. Sugarcane mosaic virus e Long history but still a threat to industry. Crop Protection 42: 74-78.

## Cotton viruses

Avelar S, Ramos-Sobrinho R, Conner K, Nichols R.L, Lawrence K, and Brown J.K. 2020. Characterization of the Complete Genome and P0 Protein for a Previously Unreported Genotype of Cotton Leafroll Dwarf Virus, an Introduced Polerovirus in the United States. Plant Disease. 104(3):780-786.

Barman A, Toews M, and Roberts P. 2020. Sampling and Managing Whiteflies in Georgia Cotton. UGA Extension Circular 1184. Retrieved Jan 3, 2021, from <https://extension.uga.edu/publications/detail.html?number=c1184>.

CABI,2020. Cotton leaf curl Gezira virus (African cotton leaf curl begomovirus). [original text by Judith K Brown]. In: Invasive Species Compendium. Wallingford, UK: CAB International. <https://www.cabi.org/isc/datasheet/13816>.

CABI,2020. Cotton leaf curl disease complex (leaf curl disease of cotton). [original text by Judith K Brown]. In: Invasive Species Compendium. Wallingford, UK: CAB International. <https://www.cabi.org/isc/datasheet/16813>.

Funderburk J, Casuso N, Leppla N, and Donahoe M. 2016. Insect and Mite Integrated Pest Management in Florida Cotton (ENY-886). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <https://edis.ifas.ufl.edu/in1111>.

Roberts P.M. 2020. Cotton: Cotton Insect Control. In: UGA Extension Special Bulletin 28 • Georgia Pest Management Handbook—2020 Commercial Edition. Retrieved Jan 3, 2021, from <https://extension.uga.edu/programs-services/integrated-pest-management/publications/handbooks.html#commercial>.

Sattar M.N, Kvarneden1 A, Saeed M, Briddon R.W. 2013. Cotton leaf curl disease – an emerging threat to cotton production worldwide. *Journal of General Virology*. 94(4):695–710.

Vyavhare S, and Kerns D. 2019. 2019 Insect and Mite Pests Control Suggestions for Cotton (ENTO-090). Texas A&M AgriLife Extension Service. Retrieved Jan 3, 2021, from <https://agrilifeextension.tamu.edu/library/farming/cotton-insect-control-suggestions>.

### **Cucurbit viruses**

Ali A, Abdalla O, Bruton B, Fish W, Sikora E, Zhang S, Taylor M. 2012. Occurrence of viruses infecting watermelon, other cucurbits, and weeds in the parts of Southern United States. *Plant Health Progress*, (No.August), PHP-2012-0824-01-RS.

Baker C, Webb S, and Adkins S. 2008. Squash Vein Yellowing Virus, Causal Agent of Watermelon Vine Decline in Florida. Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Plant Pathology Circular No. 407.

CABI,2020. Cucurbit aphid-borne yellows virus (Cucurbit aphid-borne yellows). [original text by Hervé Lecoq, Cécile Desbiez, and Alexandra Schoeny]. In: Invasive Species Compendium. Wallingford, UK: CAB International. <https://www.cabi.org/isc/datasheet/110067>

CABI,2020. Cucumber green mottle mosaic virus. [Updated by Webster C, and Jones R.]. In: Invasive Species Compendium. Wallingford, UK: CAB International. <https://www.cabi.org/isc/datasheet/16951>

CABI,2020. Squash leaf curl virus (leaf curl of squash). In: Invasive Species Compendium. Wallingford, UK: CAB International. <https://www.cabi.org/isc/datasheet/15038>.

Chitambar J. 2018. California Pest Rating for Cucumber Green Mottle Mosaic Virus. California Department of Food and Agriculture. Jan 3, 2021, from <https://blogs.cdfa.ca.gov/Section3162/?p=4314>

Damicone J, Brandenberger L. 2020. Watermelon Diseases (EPP-7679). Oklahoma State University Extension. Retrieved Jan 3, 2021, from <https://extension.okstate.edu/fact-sheets/watermelon-diseases.html>.

Falk B, Pitman T, Aegerter B, Ling K. USDA CGMMV Recovery Plan. Retrieved Jan 3, 2021, from <https://www.ars.usda.gov/ARSUserFiles/OPMP/NPDRS%20Recovery%20Plans/USDA%20CGMMV%20Recovery%20Plan%20V.2.pdf>

Martini X, Webb S.E, Schuster D.J, Stansly P.A, Polston J.E, Adkins S, Baker C.A, Roberts P, Liburd O.E, Nyoike T, McAvoy E, and Whidden A. 2019. Recommendations for Management of Whiteflies, Whitefly-Transmitted Viruses, and Insecticide Resistance for Production of Cucurbit Crops in Florida (ENY-478). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <http://edis.ifas.ufl.edu/in871>.

Menzel W, Maeritz U, Seigner L. 2020. First report of Cucurbit aphid-borne yellows virus infecting cucurbits in Germany. New Disease Reports 41, 1.

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Roberts P. 2018. 2018 Florida Plant Disease Management Guide: Watermelon (PDMG-V3-55). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <https://edis.ifas.ufl.edu/pg060>.

Squash Leaf Curl Virus In Cucurbits. Seminis. Retrieved Jan 3, 2021, from [https://www.seminis-us.com/resources/agronomic-spotlights/squash-leaf-curl-virus-in-cucurbits/#:~:text=THE%20PATHOGEN,leaf%20curl%20virus%20\(SLCV\).&text=The%20most%20severe%20losses%20from,an%20melon%20are%20usually%20minor](https://www.seminis-us.com/resources/agronomic-spotlights/squash-leaf-curl-virus-in-cucurbits/#:~:text=THE%20PATHOGEN,leaf%20curl%20virus%20(SLCV).&text=The%20most%20severe%20losses%20from,an%20melon%20are%20usually%20minor).

Syngenta. Potyvirus resistant cucurbit plants. Retrieved Jan 3, 2021, from <https://www.traitsability.com/native-trait/potyvirus-cucurbits>.

Webb S.E, Liburd O.E, Nyoike T.W, Akad F, and Polston J.E. 2020. Whitefly-Transmitted Cucurbit Leaf Crumple Virus in Florida (ENY-477). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from <http://edis.ifas.ufl.edu/in716>.

### **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.

#### Recommended textbooks:

Hull R. Comparative plant virology. Academic press; 2009 Mar 10.

Hull R. Plant virology. Academic press; 2013 Oct 31.

### **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

60-62% D-  
Below 60% E

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 are 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/](http://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/](http://www.counseling.ufl.edu/cwc/)

- Counseling Services
- Groups and Workshops
- Outreach and Consultation
- Self-Help Library
- Training Programs
- Community Provider Database

Career Resource Center, First Floor JWRU, 352-392-1601, [www.crc.ufl.edu/](http://www.crc.ufl.edu/)

**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.**