PLP6223C VIRAL PATHOGENS OF PLANTS

SPRING 2024

3 credit hours

Instructor:

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Class Location: 2306 Fifield Hall and online via Zoom
Only lectures and discussions can be attended via Zoom. Labs should be attended in-person.

Class Times: 7-week module: Feb 19 to April 12, 2024
Lectures: M, T, R (9:35 am – 10:25 am)
Labs/Discussions/Quizzes/Lectures: W, F (9:35 am - 11:30 am)

Join Zoom Meeting

TBE

Course Materials Access:

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

Office Hours:

By appointment, in-person, 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. The course includes lectures, discussions, and laboratory sessions. 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 graduate student will be expected to prepare and deliver one presentation. For the "Virus Case Study" presentation, each graduate student will select a virus from a list provided by the instructor and 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, graduate students will be expected to conduct the literature search (research papers). Upon delivery of their presentations, students are expected to be prepared to answer questions related to the presentation content as well as general questions related to the material learned in this course.

This course is co-taught with PLP4222C "Introduction to Plant Virology". Grading for undergraduate students will rely more heavily on exams and class participation than for graduate students. Undergraduate students will not be expected to have the same depth of understanding of the information and concepts as graduate students, and this will be reflected by more rigorous exams and quizzes for graduate students relative to the undergraduate students enrolled in the course. Undergraduate students will not be expected to complete the "Virus Case Study" assignment, which is required for graduate students.

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 Genetics and Biochemistry/Molecular Biology. Prior completion of introductory courses in Plant Biology and Plant Pathology is desired.

Course Schedule of Topics and Assignments:

Week No.	Date	Class type	Topic
1 M	02/19/24	Lecture 1	Course Introduction
1 T	02/20/24	Lecture 2	Introduction to Viruses
1 W	02/21/24	No class meeting: work remotely on your reading assignment	Are viruses alive? **Required reading: Moreira and Lopez-Garcia (2009); Forterre (2016)** Video with Dr. Vincent Racaniello https://youtu.be/QD7YLLyh_HE
1 R	02/22/24	Lecture 3	Virus Classification
1 F	02/23/24	Discussion	Are Viruses Alive? Discussion of the selected articles Moreira and Lopez-Garcia (2009); Forterre (2016)
2 M	02/26/24	Lecture 4	Architecture of Viruses
2 T	02/27/24	Lecture 5	Virus Infection Cycle
2 W	02/28/24	Lecture 6	Outcomes of Plant Viral Infections
2 R	02/29/24	Lecture 7	Genome Organization and Expression I
2 F	03/01/24	Quiz 1 and Lecture 8	Genome Organization and Expression II
3 M	03/04/24	Lecture 9	Viral Cycle of (+) RNA Viruses
3 T	03/05/24	Lecture 10	(+) RNA viruses of plants; Expression of viral genomes I
3 W	03/06/24	Lab exercises	Electron microscopy of viruses; sample preparation
3 R	03/07/24	Lecture 11	(+) RNA viruses of plants; Expression of viral genomes II
3 F	03/08/24	Quiz 2 and Lecture 12	Viral Cycle of (-) RNA and dsRNA Viruses of plants
	03/09-03/17/24	NO CLASSES	SPRING BREAK
4 M	03/18/24	Lecture 13	Viral Cycle of plant DNA Viruses
4 T	03/19/24	Exam I (no class meeting)	Take-home exam: the exam questions will be provided on 3/18/24, after the class; your answers are due by 03/24/24 at 11:59 pm
4 W	03/20/24	Lab Exercises	Electron Microscopy of Virus Samples; Visualization
4 R	03/21/24	Lecture 14	Virus Movement within plant hosts: cell-to-cell movement

4 F	03/22/24	Lecture 15	Virus Movement within plant hosts: long-distance movement
5 M	03/25/24	Lecture 16	Virus Interactions with Plant Immunity
5 T	03/26/24	Lecture 17	RNA Silencing I
5 W	03/27/24	Lab exercises	Virus inoculation: mechanical inoculation; *Agrobacterium*-mediated infiltration
5 R	03/28/24	Lecture 18	RNA Silencing II
5 F	03/29/24	Quiz 3 and Lecture 19	Transmission of Plant Viruses
6 M	04/01/24	Lecture 20	Viroids
6 T	04/02/24	Lecture 21	Satellite Viruses and Satellite RNAs
6 W	04/03/24	Quiz 4 and Lab exercises	Observations of the outcomes of virus inoculations (viral symptoms and movement) RNA silencing demonstration; Inoculation of plants with silencing inducers
6 R	04/04/24	Lecture 22	Virus Evolution
6 F	04/05/24	Lectures 23 and 24	Diagnosis I and II
7 M	04/08/24	Lecture 25 and Lab exercises	Plant viruses in agriculture and industry RNA silencing demonstration; Observations of RNA silencing induction
7 T	04/09/24	Graduate Student presentations	Virus Case Study
7 W	04/10/24	Lab exercises	Observations of RNA silencing progression Virus detection by ELISA
7 R	04/11/24	Graduate Student presentations	Virus Case Study
7 F	04/12/24	Exam II	Final exam; the answers are due by 4/18/24 at 11:59 pm.

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.

Additional literature resources:

These articles are provided as pdf files on the course website in Canvas and are suggested reading materials. Students may select and use some of those for their presentation assignment. 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://pnwhandbooks.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.

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.

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, Kvarnheden1 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.

Natwick E.T, Stapleton J.J, Stoddard C.S. 2016. Melon Aphid. UC IPM Pest Management Guidelines: Cucurbits. UC ANR Publication 3445.

Natwick E.T, Stapleton J.J, Stoddard C.S. 2016. Whiteflies. UC IPM Pest Management Guidelines: Cucurbits. UC ANR Publication 3445.

Roberts P. 2018. 2018 Florida Plant Disease Management Guide: Squash (PDMG-V3-49). Gainesville: University of Florida Institute of Food and Agricultural Sciences. Retrieved Jan 3, 2021, from https://edis.ifas.ufl.edu/pg055.

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,and%20melon%20are%20usually%20minor.

Syngenta. Potyvirus resistant cucurbit plants. Retrieved Jan 3, 2021, from https://www.traitability.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 – Exam I (20% of student's grade); Exam II (25% of grade)

Quizzes – 10%

Presentation on "Virus Case Study" (30% of grade)

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

Exams: There will be two open-book take-home exams. The students will be given a few days to complete the exams (see the course schedule above). In brief, there will be no in-class meetings on those dates when the exam questions are distributed. The students may use those time slots plus an additional time necessary to work on the exams. This provides an opportunity for the students to select the best time among their busy schedules to complete the exam.

Quizzes: There will be four in-class quizzes. Each quiz will take about 10-15 minutes to complete. Only the three quizzes with highest grades will be used toward the final course grade. These quizzes are designed to help students stay current with the course materials.

Presentation on "Virus Case Study": Each graduate student will be expected to prepare and deliver one presentation. For the "Virus Case Study" presentation, each graduate student will select a virus from a list provided by the instructor and 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, graduate students will be expected to conduct the literature search (research papers). Upon delivery of their presentations, students are expected to be prepared to answer questions related to the presentation content as well as general questions related to the material learned in this course.

Participation in class discussions and labs: Students are expected to participate in discussions during discussion sections and class lectures and labs by answering questions from the instructor and volunteering to ask their own questions related to the course material. Students should demonstrate an understanding of the concepts and ability to integrate the information presented. Grading will be based on demonstration of understanding of the concepts, preparedness for the discussions, and frequency of participation.

Grading Scale:

92-100% A
90-91% 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 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

Career Resource Center, First Floor JWRU, 352-392-1601, 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.