

**PLANT VIROLOGY**  
**PLP-6223/4222**  
4 credits

**◆◆◆ Fall 2005 Syllabus ◆◆◆**

**Course Instructor:**

**Jane E. Polston**  
**Rm. 1439 Fifield Hall**  
**Email: [jep@ufl.edu](mailto:jep@ufl.edu), Tel. 352-392-331 x 341**

**Lab Instructor:**

**Kris Beckham**  
**Rm. 1431 Fifield Hall**  
**Email: [kabe@mail.ifas.ufl.edu](mailto:kabe@mail.ifas.ufl.edu), Tel. 352-392-331 x 342**

**Course Objectives**

A contemporary survey of concepts and principles of Plant Virology

Principles of Plant Viral Taxonomy  
Principles of Plant Viral Structure and Genetics  
Principles of Plant Virus Vectors  
Principles of Plant Virus Epidemiology  
Principles of Plant Virus Management  
Learn and apply techniques for plant virus diagnosis and characterization

**Class Format:**

◆ Lectures. Tuesday and Thursday, period 3 (9:35 am - 10:25 am) Rm. 2306 Fifield  
Two 50 minute lectures per week. The lectures will mainly focus on specific topics and representative viruses from selected viral families or genera.

◆ Discussion Sessions.

Papers, reviews, and book chapters will be assigned for discussion. Format is a question and answer approach using randomly selected class participants. Discussion sessions will be scheduled during periods 3-4 alternating with laboratories. Class discussions are designed to extend and clarify the lectures. Your participation in the class discussion is an integral part of the learning (and grading) process.

◆ Laboratory Exercises.

The laboratory exercises are designed to “walk you through” selected techniques for the culture and maintenance of plant viruses, for the biological characterization of a virus isolate, and for sensitive differential detection.

## **Laboratory Exercises**

(Tue. & Thurs., periods 4-5 (10:30 am-12:30pm), Room 2306 Fifield or as announced).

- Students will be given “unknown viruses” for the viral diagnostic techniques and characterization studies in the laboratory exercises.
- Students will work in teams of two with a laboratory partner assigned by the instructors.
- Students will present a jointly written paper, based on the laboratory results (10% of the grade), due Nov. 3, 2005.
- Students will present the results of their paper on Nov. 15 and 22, 2005. Oral presentations will be 10 minutes in length with a five minute question period.
- The greenhouse will be sprayed with pesticides every Wednesday at 8.30 am so students will be unable to enter the greenhouse on those days.

## **Grading**

Two “midterm written exams” (20% each)

- 1) Oct. 4, covering material presented in Lectures 1-10, and
- 2) Nov. 8 covering material Lectures 11-19.

Final Exam, (30%)

Dec 13 (13B) 12:30 pm-2:30 pm.

The Final Exam will cover lectures 20-27 plus be comprehensive

Joint Paper on Laboratory “Virus Unknown” (10%) due on Nov. 1, 2005.

The paper should be typed, double-spaced, 1 inch margins, and should be no less than 10 typed pages (excluding Illustrations, Figures, Tables). Paper should describe the virus, provide and explain the data used to determine the identity of the virus, some background on the virus and the disease(s), and what approaches are used to manage the virus. A Plant Disease style should be followed. An example will be provided.

Oral presentations (10%)

Students working together on the laboratory “unknown” virus will give an oral presentation during the Lecture/Laboratory period Nov. 15 and 22, 2005.

Class participation (10%)

This will include participation in discussion sections and class lectures.

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**2005 Syllabus**

| <b>Date</b>       | <b>Lecture No.</b> | <b>Title</b>   | <b>Lecturer</b> |
|-------------------|--------------------|--|-----------------|
| Thursday, Aug 25  | 1.                 | Orientation, Introduction  |                 |
| Tuesday, Aug 30   | 2.                 | Viruses as Pathogens   |                 |
| Thursday, Sept 1  | 3.                 | Classification and Taxonomy  |                 |
| Tuesday, Sept 6   | 4.                 | Virus Strains, Variability   |                 |
| Thursday, Sept 8  | 5.                 | Virus Purification   |                 |
| Tuesday, Sept 13  | 6.                 | Cytology and Light Microscopy  | Baker           |
| Thursday, Sept 15 | 7.                 | Serology   |                 |
| Tuesday, Sept 20  | 8.                 | Serology/Serological Techniques  |                 |
| Thursday, Sept 22 | 9.                 | Electron Microscopy  |                 |
| Tuesday, Sept 27  | 10.                | Virus Identification   |                 |
| Thursday, Sept 29 | 11.                | Virus Genomic Org. and Structure   |                 |
| Tuesday, Oct 4    |                    | <b>EXAM</b> (Lectures 1-10)  |                 |
| Thursday, Oct 6   | 12.                | Viral Genes, Expression and Function                                     |                 |
| Tuesday, Oct 11   | 13.                | Virus Life Cycle – plus sense ssRNA viruses                              |                 |
| Thursday, Oct 13  | 14.                | Virus Life Cycle – dsRNA and minus sense RNA viruses                     |                 |
| Tuesday, Oct 18   | 15.                | Virus Life Cycle – DNA viruses   |                 |
| Thursday, Oct 20  | 16.                | Sub-viral Agents   |                 |
| Tuesday, Oct 25   | 17.                | Host Mechanisms of Resistance  |                 |
| Thursday, Oct 27  | 18.                | Post-transcriptional Gene Silencing                                      | Hiebert         |
| Tuesday, Nov 1    | 19.                | Genetic Engineering Plants for Virus Resistance                          |                 |
| Thursday, Nov. 3  | 20.                | Seed Transmission  |                 |
| Tuesday, Nov 8    |                    | <b>EXAM</b> (Lectures 11 – 19)   |                 |
| Thursday, Nov. 10 | 21.                | Virus Vectors - Whiteflies   |                 |
| Tuesday, Nov. 15  | 22.                | Virus Vectors - Leafhoppers, Thrips                                      | S. Webb         |
| Thursday, Nov 17  | 23.                | Virus Vectors - Aphids   | S. Webb         |
| Tuesday, Nov. 22  | 24.                | Virus Vectors - Beetles, Nematodes                                       | S. Webb         |
| Thursday, Nov 24  |                    | Thanksgiving, no class   |                 |
| Tuesday, Nov 29   | 25.                | Virus Epidemiology   |                 |
| Thursday, Dec 1   | 26.                | Virus Management   |                 |
| Tuesday, Dec 6    | 27.                | Plant Virology Wild Card   | Dawson          |
| Tuesday, 13 Dec   |                    | <b>FINAL EXAM</b> (13B) 12:30 – 2:30 pm<br>(Lectures 20-27 plus Overall) |                 |

## Information for Students / Course Policy

**UF COUNSELING SERVICES:** Resources are available on campus for students having personal problems or lacking clear career and academic goals which interfere with their academic performance. These resources include: 1. University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling; 2. Student Mental Health, Student Health Center, 392-1171, personal counseling; 3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual assault counseling; and 4) Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

**ACCOMMODATION:** Students requesting classroom accommodation must first register with the Dean of Students Office (Students with Disabilities Office, Peabody 202 at 352-392-1261). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. Further information is available from the Disability Resource Center at <http://www.dso.ufl.edu/OSD/>.

**SOFTWARE USE / COPYRIGHT:** 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.

**ACADEMIC HONESTY:** As a result of completing the registration form at the University of Florida, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University." We agree to comply with the new Honor Code, which specifies that "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."

University policy regarding "Standard of Ethical Conduct" is available from the 2002-2003 Student Guide at: <http://www.dso.ufl.edu/stg/>

Further information on academic honesty and integrity is available from the Graduate School at: [http://gradschool.rgp.ufl.edu/handbook/graduate\\_student\\_handbook/integrity.html](http://gradschool.rgp.ufl.edu/handbook/graduate_student_handbook/integrity.html)

*[Instructor may wish to add course policy about academic misconduct, for example:]*

*The minimum consequence for cheating and/or plagiarism is getting a zero on the assignment and possibly failing this course. Exams and written assignments should represent your own work. If you are not sure what constitutes plagiarism, please read these webpages, and ask your instructor to clarify before beginning the project.*

**UF POLICY ON E-MAIL:** "Official University business email will be communicated to students using the University GatorLink email account. That is, official email will be sent exclusively to GatorLinkUserName@ufl.edu. The preferred email address recorded for all students will be the GatorLink address. This is the email address displayed in the online phonebook. Students may continue to use the forwarding mechanism to deliver their email to other mail services, if they wish. However, it is the student's responsibility to insure that the forwarding address is current so that they receive official communications from the University."

## PLANT VIROLOGY REFERENCES

1. **Matthews Plant Virology 4e**, by Roger Hull, 2002. Publisher Academic Press, San Diego, CA, 92101-4495.
2. **Virus Taxonomy: Seventh Report of the International Committee on Taxonomy of Viruses** edited M. H. V. van Regenmortel et al., 2000. Academic Press.
3. Referred publications (selected by the instructors).
4. **Diagnosis of Plant Virus Diseases** Matthews, R. E. F. ed 1993. CRC Press, Boca Raton.
5. **Plant Pathology** Fourth Edition Agrios, G. N. 1997. Academic Press. Chap 14.
6. **Plant Viruses, Unique and Intriguing Pathogens; A Textbook of Plant Virology.** Bos, L. 1999. Backhuys Publishers B. V.
7. **Plant Virology Protocols, from Virus Isolation to Transgenic Resistance** Foster, G. D. and Taylor, S. C. eds. 1998., Humana Press, Totowa, NJ.
8. **Plant Virus Disease Control.** Hadidi, A., Khetarpal, R. K., and Koganezawa, H. 1998.. APS Press, St. Paul, MN.
9. **Plant Viruses as Molecular Pathogens.** Khan, J. A. and Dijkstra, J. eds. 2002. Food Products Press, NY.
10. A CD containing lecture notes, previous exams, lab protocols, and references in the PDF format.
11. Websites for Plant Virology  
[www.helsinki.fi/~dguo/plvirus.htm](http://www.helsinki.fi/~dguo/plvirus.htm)  
[www.virology.net/garryfavwebplant.html](http://www.virology.net/garryfavwebplant.html)  
[www.ingenta.com/](http://www.ingenta.com/)  
[www.uct.ac.za/microbiology/tutorial/isometric\\_nuclearcapsids.htm](http://www.uct.ac.za/microbiology/tutorial/isometric_nuclearcapsids.htm)  
[www.els.net](http://www.els.net)
12. Plant Pathology Library, Room 2502 Fifield Hall.  
Instruction Lab, Room 2306 Fifield Hall.