
Biology Department, College of Arts & Sciences, Valdosta State University

SPRING 2012----COURSE SYLLABUS*

BIOL 4510 Virology (CRN 21394) -- 3 credit hours

BIOL 6510 Virology (CRN 21417) – 3 credit hours

Class: MW 3:30-4:45 pm, 2022 Bailey Science Center

Instructor: Dr. Jenifer Turco

Telephone: 229-249-4845

Email: jturco@valdosta.edu

Office: 2091 Bailey Science Center

Office Hours: Tues. 4:30-5:30 pm & Thurs. 12:30-1:30 pm; or by appointment.

Course Description:

BIOL 4510 Virology 3-0-3 (3 credit hours) Prerequisites: BIOL 3100 or consent of instructor.

BIOL 6510 Virology 3-0-3 (3 credit hours) Prerequisite: Admission into the graduate program or permission of the instructor.

An introduction to viruses and other non-cellular infectious agents. Topics include the structure and composition of these agents, their replication, effects on their host, and host responses. Methods for studying these agents, their origins and evolution, and their uses in biotechnology will also be discussed.

Textbook: BASIC VIROLOGY, Third Edition

by Edward K. Wagner, Martinez J. Hewlett, David C. Bloom, and David Camerini
Blackwell Publishing 2008

Other Materials:

Calculator that is not integrated with a cell phone

One CD (or jump drive) for oral presentation

One thin, light-weight folder for handing in assignments (No 3-ring binders, please)

Paper clips or stapler/staples for organizing references and assignments

SPECIAL NOTES TO STUDENTS:

1. In order to respect the privacy of each student, exam scores and grades will not be posted, given out by telephone, or sent to students by email.
 2. Students should consult the VSU Student Handbook, Undergraduate Catalog, Spring Semester Calendar, Schedule of Classes, & Registration Guide for information about VSU policies and procedures regarding registration, conduct, drop/add, and withdrawal. March 1 is midterm. Students are not permitted to withdraw after midterm except in cases of hardship.
 3. Students requesting classroom accommodations or modifications because of a documented disability should discuss this need with the instructor at the beginning of the semester. These students must contact the Access Office for Students with Disabilities located in Farber Hall. The phone numbers are 245-2498 (V/VP) and 219-1348 (TTY).
 4. Cell phones and music players (iPod, mp3) may not be used at any time in class or lab. Students are especially cautioned to be certain that cell phones are silenced during examinations. Should a cell phone ring during an exam, the student's exam will be terminated.
 5. Please use the rest room before you come to class to take an exam. Should a student need to leave the classroom during an exam, the student's exam will be terminated.
 6. Students must read and follow the Biology Department policy on plagiarism (available online through the departmental web site). The instructor may use a variety of methods for detecting plagiarism. Plagiarism will result in a grade of "0" for the assignment. A student who plagiarizes on more than one assignment will receive a grade of "F" in the course.
 7. No disruptive behavior will be tolerated during class or lab. A student who engages in disruptive behavior will be asked to leave. If necessary, the campus police will be contacted.
 8. Students who wish to use laptop computers as part of the class are required to sit in the first three rows of the classroom.
-

***This is a tentative syllabus. Changes to this syllabus will be announced during class or laboratory periods; alternatively, changes may be posted on BlazeView.**

COURSE OBJECTIVES

After successful completion of this course, the student should be able to:

- (1) Describe the biochemical composition, replication strategies, functions, and significance of viruses and other non-cellular infectious agents.
- (2) Read and understand current scientific literature related to viruses and other non-cellular infectious agents.
- (3) Convey orally and in writing information from the scientific literature related to viruses and other non-cellular infectious agents.

Alignment of Assignments with Course Objectives:

The course objective(s) aligned with each assignment are given on the last page of this syllabus.

Alignment of Course Objectives with Educational Outcomes:

The **Student Learning Goals for the Core Curriculum in the University System of Georgia (USG)** are available online at <http://www.valdosta.edu/academic/VSUCore.shtml>. Each Core Area (A1, A2, B, C, D, and E) has one or more learning goals. There are also three additional learning goals for the Core Curriculum as follows: Learning Goal 1: US Perspectives (US Goal): Students will demonstrate an understanding of the United States and its cultural, economic, political, and social development; Learning Goal 2: Global Perspectives (GL Goal): Students will demonstrate an understanding of the cultural, religious, or social dimensions of societies around the world; and Learning Goal 3: Critical Thinking (CT Goal): Students will identify, evaluate, and apply appropriate models, concepts, or principles to issues, and they will produce viable solutions or make relevant inferences.

The **VSU General Education Outcomes** (numbered 1-8) are available online at <http://www.valdosta.edu/pers/gened.shtml>. The **Biology Undergraduate Educational Outcomes** (numbered 1-5) are available in the VSU Undergraduate Catalog. The **Biology Graduate Educational Outcomes** are available in the VSU Graduate Catalog and are numbered 1 through 4.

Alignment of Course Objectives with Educational Outcomes:

Course objective (1) relates to USG Core Curriculum Learning Goals for Core Area D; Learning Goal 3: Critical Thinking; VSU General Education Outcomes 3, 4, 5, and 7; Biology Undergraduate Educational Outcomes 2, 3, 4, and 5; and Biology Graduate Educational Outcome 1.

Course objectives (2) & (3) relate to USG Core Curriculum Learning Goals for Core Area D; Learning Goal 3: Critical Thinking; VSU General Education Outcomes 3, 4, 5, and 7; Biology Undergraduate Educational Outcomes 1-4; and Biology Graduate Educational Outcomes 1 and 2.

CLASS SCHEDULE

| Date | Topics | Related material in text |
|--------------|--|--------------------------|
| Mon. Jan. 9 | General course information Introduction to viruses Impact of viruses Viruses: composition, structure, classification Virus replication in the cell Other non-cellular infectious agents | Chapters 1, 2, & 5 |
| Wed. Jan. 11 | Viral pathogenesis Viral disease in populations & individual animals Patterns of some viral diseases of humans BIOL 6510 students should meet with the instructor to discuss topics for their term papers. | Chapters 2, 3, & 4 |
| Mon. Jan. 16 | Martin Luther King, Jr., Holiday | |

| Date | Topics | Related material in text |
|--------------|--|--|
| Wed. Jan. 18 | Viral pathogenesis Viral disease in populations & individual animals Patterns of some viral diseases of humans | Chapters 2, 3, & 4 |
| Mon. Jan. 23 | Virus replication: Entry of viruses into host cells Assembly and release of new virions Vertebrate immune response to viruses Measurement of the immune response | Chapter 6 Chapter 7 |
| Wed. Jan. 25 | Vertebrate immune response to viruses Measurement of the immune response Examples of viral responses to host immunity | Chapter 7 |
| Mon. Jan. 30 | Examples of viral responses to host immunity Antiviral strategies (vaccines, cytokines, drugs) ***First written report is due*** (BIOL 4510) ***References for paper are due*** (BIOL 6510) | Chapter 7 Chapter 8 |
| Wed. Feb. 1 | Antiviral strategies (vaccines, cytokines, drugs) | Chapter 8 |
| Mon. Feb. 6 | EXAM 1 (material covered through Feb. 1) | |
| Wed. Feb. 8 | Visualization and enumeration of viruses Replicating viruses and measuring their biological activities | Chapters 9 and 10 |
| Mon. Feb. 13 | Characterization of structural components of viruses | Chapter 11 |
| Wed. Feb. 15 | Study of viral products expressed in host cells | Chapter 12 |
| Mon. Feb. 20 | Nucleic acid replication, transcription, translation (Read chapter 13 on your own. It will not be covered in class.) Viral replication strategies Positive sense RNA viruses Negative-sense/ambisense RNA viruses | Chapter 13 Chapter 14 Chapter 15 |
| Wed. Feb. 22 | Negative-sense/ambisense RNA viruses Double stranded RNA viruses ***Second written report is due (BIOL 4510). Students should be prepared to briefly discuss their papers during class. | Chapter 15 |
| Mon. Feb. 27 | DNA viruses | Chapters 17 and 18 |
| Wed. Feb. 29 | DNA viruses | Chapters 17 and 18 |
| Mon. Mar. 5 | EXAM 2 (material covered through Feb. 29) | |

| Date | Topics | Related material in text |
|-------------------|---|----------------------------------|
| Wed. Mar. 7 | DNA viruses | Chapters 17 and 18 |
| | SPRING BREAK | |
| Mon. Mar. 19 | Retroviruses ***Term paper is due (BIOL 6510).*** | Chapters 19 and 20 |
| Wed. Mar. 21 | Retroviruses Hepadnaviruses | Chapters 19 and 20 Chapter 21 |
| Mon. Mar. 26 | Viroids and prions Molecular genetics of viruses (selected topics) | Chapter 15 Chapter 22 |
| Wed. Mar. 28 | Molecular genetics of viruses (selected topics) | Chapter 22 |
| Mon. Apr. 2 | Molecular viral pathogenesis | Chapter 23 |
| Wed. Apr. 4 | Molecular viral pathogenesis Viral bioinformatics | Chapter 23 Chapter 24 |
| Mon. Apr. 9 | Viruses and the future Student oral reports (attendance required) | Chapter 25 |
| Wed. Apr. 11 | Student oral reports (attendance required) | |
| Mon. Apr. 16 | Student oral reports (attendance required) | |
| Wed. Apr. 18 | Student oral reports (attendance required) | |
| Mon. Apr. 23 | Student oral reports (attendance required) | |
| Wed. Apr. 25 | Student oral reports (attendance required) | |
| Mon. Apr. 30 | Student oral reports (attendance required) | |
| Fri. May 4 | Comprehensive Final Exam 5-7 pm | |

ATTENDANCE. Attendance will be checked in class. As stated in the VSU Undergraduate Catalog, “A student who misses more than 20% of the scheduled classes of a course will be subject to receiving a failing grade in the course.” Students are required to attend and participate during all classes in which student reports are scheduled. Missing or not participating in more than two of these required classes during which student oral reports are scheduled will result in the loss of points as follows: fifty points will be deducted for each absence beyond the second absence.

EXAMINATIONS. Examinations may include questions of the multiple-choice, matching, true-false, short answer, problem, and essay formats. Three exams will be given (two exams plus the final exam). The second exam will be comprehensive in that up to 25% of the points on the exam may include material covered before the first exam. The final exam will be fully comprehensive. Each examination will be worth 220 points. A student should notify the instructor as soon as possible if he/she misses an exam. Arrangements for a make-up exam must be made within one week after the exam date; otherwise, a make-up exam will not be given. A make-up exam will be worth 185 points rather than 220 points, and it may consist entirely of questions of the short answer and essay formats. Cell phones may not be used during examinations or at any time in class.

WRITTEN REPORTS.

BIOL 4510: Each student must select and read two articles (approximately 3 to 10 pages per article) about viruses (published between 2006 and 2012) and submit a **complete** copy of each article plus a 2-page, typed, **double-spaced** report summarizing each article. These articles may include informal articles from *Science*

or other scientific publications, articles from *Scientific American*, short review articles from *Science* or *Emerging Infectious Diseases*, articles from *Morbidity and Mortality Weekly Report*, formal articles from other scientific journals, etc. Please note that these articles may NOT be any of the articles being used for the oral presentations. For the written reports, margins must be set at 1 inch on all sides of the paper, and a 12-point font should be used. Each report will be worth 50 points. Plagiarized reports will receive a score of 0.

BIOL 6510: In consultation with the instructor, each student will select a topic for a term paper. The topic chosen for the term paper should not be closely related to the topic chosen for the oral report. The paper must be typed in a 12-point font, double-spaced, and be 8 to 9 pages in length. Margins must be set at 1 inch on all sides of the paper. At least three peer-reviewed, primary references from the formal scientific literature (published between 2006 and 2012) must be used in writing the paper. These articles may not include any of the articles being used for student oral presentations. Complete copies of the chosen articles must be submitted to the instructor on January 30; these copies will be returned to the student. However, copies of the articles must be resubmitted to the instructor along with the term paper. A review article(s) may be used in addition to the primary references; however, the review article(s) should be used for background information and should not be the main focus of the paper. A copy of any review article that is used must also be submitted to the instructor. The main focus of the paper should be the three primary references. It is expected that the student will critically discuss the three primary references. Plagiarized papers will receive a score of 0.

ORAL REPORTS (BIOL 4510 & 6510). Each student will be required to give an oral report based on a formal scientific article selected from a list of articles provided by the instructor. A lottery will be used to determine the order in which students select their articles and give their presentations. Students are required to use library and electronic resources to obtain background information about the subjects of their articles. Each student must submit a formal, complete, and organized list of references used before presenting the oral report. The library has several books in the reference section that may be useful (for example, *Encyclopedia of Virology*, *Infectious Diseases*, *Encyclopedia of Infectious Diseases*, and *Fields Virology*). In addition, there are other books in the library about viruses and cell culture; these may be in the regular collection or on reserve. Students are required to use PowerPoint software for preparing their oral presentations, which must include and explain at least some of the figures and tables from the original selected formal scientific article. Students are expected to attend ALL student presentations. Material related to these presentations may be included on the final examination.

There will be no makeups for the oral presentations.

LATE ASSIGNMENTS. Students are expected to submit assignments on time. Substantial penalties will be applied to late assignments. For example, for BIOL 4510, a written report that is more than one week late will receive a score of zero. The maximum score on a written report that is between two and seven days late will be 25 points.

Grading scale: ≥ 900 , A; 800-899, B; 700-799, C; 600-699, D; ≤ 599 , F

| | | |
|------------------------------|---|------------|
| Points for BIOL 4510: | Exam 1 | 220 points |
| | Exam 2 | 220 points |
| | Final Exam | 220 points |
| | Written reports (course objectives 2 & 3) | 100 points |
| | Oral report (course objectives 2 & 3) | 240 points |
| | ----- | |
| Total | 1000 points | |
| Points for BIOL 6510: | Exam 1 | 220 points |
| | Exam 2 | 220 points |
| | Final Exam | 220 points |
| | Term paper (course objectives 2 & 3) | 150 points |
| | Oral report (course objectives 2 & 3) | 190 points |
| | ----- | |
| Total | 1000 points | |