BSC 584
Virology
Fall, 2007

Instructor:
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Course Prerequisites: None required

Course Credit Hours: 3

Catalog Description: Viral Classification, replication and molecular biology

Course Description and Format:

This course can be offered 1) fully online or 2) as a traditional classroom lecture. Certain passages below explain the requirements for online setup and function, but do not readily apply to the classroom version.

General Virology is offered on-line both as an undergraduate course (BSC 484) and for graduate credit (BSC 584). The course is offered using WebCT. The instructor recommends that the computer that you use for this course be at least a 1G Pentium model with 512 MB of RAM and high speed connection (T1, DSL). Students who use this type of hardware will experience fewer problems with the course. This course was written in Netscape Communicator; the files operate best using this browser than others I have tested. Netscape is free; students are asked to use the latest version of this program. The instructor requests that all potential students refer to the skills page which can be found by following on the WebCT website at USM.

The course consists of the series of lectures listed below. Questions for course examinations come from these notes; all tests are comprehensive to the beginning of the course and are only offered online.

Please be aware that distance learning/lecture supplements are not for every student and science classes such as Virology are often difficult to comprehend without hands-on, personal attention from a professor. Therefore, students who require a direct relationship with a professor, or who enjoy engaging dialogue and a sense of class community may not appreciate this a distance learning type presentation.
Students who prefer self teaching, the challenges of computer testing, and the freedom from the responsibility of attending class will like this format.

**Course Objectives:**
Following the successful completion of this course you will:

1. name the basic characteristics of viruses and how they differ from other microbial parasites;
2. identify the components of virus structure and symmetry;
3. recognize the stages of viral replication and the molecular biology of replication;
4. list the major characteristics of animal viral families;
5. discuss the major characteristics of microbial, plant and insect viral families and how they differ from animal viruses;
6. define basic aspects of anti-viral chemotherapy and viral immunity;
7. explain basic concepts of viral pathogenesis; viral genetics; viruses and cancer, and viral evolution;
8. describe prions and emerging viruses and their threat to humankind.

**Textbook:**
Much of the information associated with this course can be found in *Fundamental Virology* (Raven Press) 4th (or later) Ed.; Bernard N. Fields, David M. Knipe and Peter M. Howley, Editors-in-Chief (ISBN 0-7817-1833-3; 2001; Lippincott-Raven Publishers). It is not required that you purchase this text for the course, but it is strongly recommended that you own at least one authoritative text in Virology and this is an excellent example. Another recent and valuable textbook is "*Principles of Virology: Molecular Biology, Pathogenesis, and Control*" by S.J. Flint, L.W. Enquist, R.M. Krug, V.R. Racaniello and A.M. Skalka (ISBN 1-55581-127-2; 2000 (or later edition); American Society for Microbiology (ASM) Press).

**Weekly Questions:**
Weekly questions in Virology are presented and is a **required** portion of the course. Questions are designed to initiate dialog between the instructor and the individual student. The student response is **sent to the instructor via Viromail**. The responses to each question are read, archived and recorded into the course grade book. At the end of the semester, a value is given to the quality of the answer and a percent response to the list of questions is calculated. The instructor may modify the final letter grade based on the quality and quantity of responses to the weekly questions. This option is strictly at the discretion of the instructor.
Course Contents:

1. Basic Viral Information
   1.1. Brief History of Virology
      1.1.1 Weekly Questions
   1.2. General Information
   1.3. Basic Nomenclature
   1.4. Viral Taxonomy
      1.4.1. Viral Families
   1.5. Nature and Properties of viruses
   1.6. Viral Genera, Families, Orders
   1.7. Viral Architecture
   1.8. Viral Symmetry
   1.9. Viral Nucleic Acids
   1.10. Viral Replication
   1.11. Origin of Viral Membranes

2. Vertebrate Viral Families
   2.1. Picornaviruses
   2.2. Poxviruses
   2.3. Retroviruses
   2.4. Orthomyxoviruses and Paramyxoviruses
   2.5. Adenoviruses
   2.6. Papovaviruses
   2.7. Coronavirus
   2.8. Herpesviruses
   2.9. Hepatitis B Virus
   2.10. Arboviruses
      2.10.1. Togaviridae
      2.11. AstrocaclicReo
   2.12. Filoviruses
   2.13. Rhabdoviruses
   2.14. Paroviruses
   2.15. Iridoviruses

3. Plant Virus Families
   3.1 Plant Virology
   3.2 Potyviridae
   3.3 Bunyaviridae
   3.4 Bromoviridae
   3.5 Reoviridae
   3.6 Dianthoviridae
4. Insect Virus Families (in development)

5. Additional Viral Information

5.1. Antiviral Drugs
5.2. Viruses and Cancer
5.3. Viral Immunity
5.4. Viral Pathogenesis
5.5. Viral Evolution
5.6. Plant Viruses
5.7. Prions and Emerging Virus Diseases

6. Suggested Readings

**Registration and Refund Policy**
Beginning with the Fall 2002 there were new pre-registration and new refund policies. Please check with Business Services about these changes and know that you have properly registered for this course and that if you drop the course, there are certain limitations on repayment of fees.

**Course Communications and Office hours:**
During the course, contact between the instructor and the undergraduate student(s) will be through the WebCT mail function (Viromail). Students are encouraged to contact the instructor when they encounter problems. Note that if WebCT is not functional you can reach me via rudolph.ellender@usm.edu. Also, members of the WebCT team (part of the Learning Resource Center (LEC) are available to help you with problems (Chad Seals 6-6611). My official office hours are from 9-11 on Monday morning at which time I will answer email. The instructor reserves the right to answer email at other times during the week.

**Internet Resources:**
The internet is rich in virological information and can be considered a on line library. I have taken advantage of this resource and you are welcome to examine the same material as part of your study habit. Within the course are a variety of internet links which will guide you to information on specific course topics.

**Student Evaluation:**
A student questionnaire, expressing an opinion of the course, will be required of each student toward the end of the semester. Beginning SP 05, this function moved to an online version and I ask that you evaluate the course via this mechanism during the open period.

**Extra Credit/Makeup Policy:**
Extra credit is not an option in this course. Makeup test are not given for any reason.
Quizzes (2 per week): All students are encouraged to take the weekly tests since they are a valuable resource in your study of Virology, and since they will help you to prepare for the major exams given during the semester.

Course work Evaluation:
Your grade in this class will be based on the following criteria:

a) Quality of Answers to Weekly Questions (see text above), b) Three major proctored examinations worth a minimum of 100 points), c) Final Exam (taken during finals weeks for a minimum of 150 points); the final examination is also a proctored examination. Graduate students are required to create an internet paper in Virology.

Proctored, closed book/notes examinations are defined as tests taken by you in the presence of a qualified educator. It is your responsibility to find a proctor for each course examination and to present his/her credentials to a representative of the LEC for examination. You are to pay the proctored a specified amount (usually 8-9 dollars) for each examination. Proctors are defined as high school teachers, professionals from senior or junior colleges or other professionals qualified to monitor an examination. There is a form that you will give to a proctor, that must be completed and sent to USM for qualification. The responsibility of the proctor is to determine that the examination has been taken honestly. Information on proctored exams can be found at http://dl.cice.usm.edu/master/facresources. Dr. Ellender is the proctor for all classroom versions of this course and the above statement does not apply.

The graduate grading scale is: A = 95 - 100%; B = 88 - 94%; C = 80 - 87%; D = 70 - 79%; F = 69% or below.

Course Deficiencies

If a student is having difficulty with any aspect of the course, he/she should contact the instructor via email and discuss the problem.

An incomplete grade will be given only for documented reasons beyond the control of the student, and not for failing work.

Policies:

Students enrolled in online courses are expected to observe the same strict codes of academic honesty required of students in the classroom. Failure to do so can result in various penalties ranging from resubmission of assignment(s) or re-examination to the immediate expulsion or failure of the course. Unacceptable behavior includes, but is not limited to, submitting another's work as your own, cheating on examinations, and plagiarizing in any way.

When Virology is taught as a classroom experience, you are required to attend each class. Unannounced, for credit quizzes may be given at any time during the course.
**Academic Honesty**
The University of Southern Mississippi bulletin contains an "Academic Honesty Policy." All students are required to adhere to this policy and to the Code of Student Conduct, performing all aspects of this course in a professional manner. The policy can be found in the latest editions of the Undergraduate Bulletin and the Graduate Bulletin.

**Additional requirements:**
Hardware:
Click here to review CICE recommendations for minimum computer requirements for on-line courses.

**Office for Disability Accommodations**
If a student has a disability that qualifies under the Americans with Disabilities Act and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by the ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies. Mailing address: 118 College Drive #8586, Hattiesburg, MS 39406-0001; Telephone: (601) 266-5024; TTY: (601) 266-6837; Fax: (601) 266-6035.