BIOLOGY 5378

VIROLOGY

3 CREDIT HOURS
SPRING 2017
LECTURE 12:30-1:50, LEE DRAIN BLD, RM 139,

Course Instructor: Aaron Lynne, Ph.D.
Department of Biological Sciences
Office in LDB 125C, phone 294-1544, email aml027@shsu.edu
Office Hours are MWF 10:00-11:00 or by appointment (best)
Email is the surest way to reach me to set an appointment

Course Description: A study of viruses that infect plants, animals, and bacteria. Areas considered include chemical and structural properties of viruses, virus-host relations, and infection and growth phenomena, including interference and regulation. Also included are the roles of viruses as agents of disease and malignancy, and as gene vectors in natural settings, but also as tools in biotechnology and gene therapy

Course objectives: This course will introduce the student to the underlying principles of virology. On completion of this course, the student will be expected to

1. Describe the replication strategies of DNA and RNA viruses
2. Describe the pathogenesis of viral diseases in humans
3. Describe strategies to prevent and combat viral disease
4. Understand the ecology and evolution of viruses.

Required Course Texts: *none*

Attendance and Expectations: As a University faculty member, I will provide my knowledge and expertise and try to give a supportive educational environment. As University students, I expect you to behave professionally (cell phones off in class, prompt attendance, respect to other students, etc). Exam material is primarily from lectures and in-class discussions, thus if you miss class you will suffer. Lecture attendance is expected and important. If something does cause you to miss class, I do not require any notification, but I expect you to be proactive and obtain lecture notes from a trusted colleague. If you miss an exam due to an unexcused absence without notifying me in advance, I do not provide a makeup. If you do notify me in advance (at least 24 hrs) and provide verification, and I accept your absence (official University activity or medical), then I reserve the right to give written or oral exams for makeup. I want you to learn and enjoy this course, however, that decision is up to you. The more you put in, the more you get out.

Course evaluation: Two exams of 100 points each will be given. Each will contribute equally to the final grade. The exams will be primarily short answer/essay type exams that will be

designed to test your comprehension/understanding of the basics that we cover in class as well as the material in the corresponding chapters.

Over the course of the semester, each student will need to prepare a small grant proposal on a research project related to virology. The proposal guidelines will be given at a later date but will follow the NSF guidelines for preliminary proposals. You will be required to meet with the instructor prior to writing the proposal to have your topic approved. During the semester, each student will present a powerpoint of a draft of proposal. Each project will be peer-reviewed (graded) by two other students and by the instructor. The proposal will be worth 100 points.

An additional component to the course will involve student presentations of research papers. Each student will be required to present/lead discussion on a research article during class. The presenter will be expected to study these specific papers in detail and to familiarize themselves with the previous research in this particular area. The presentation should include a brief review of the background for this research, a discussion of research techniques and tools used in the papers, a discussion of the important findings from the research and some discussion of the presenter's view of the relative merits of the research. **The presentations will be evaluated on the scientific accuracy, the organization of the presentation and the quality of the presentation/discussion.**

The audience will be expected to be active participants – asking questions, making comments, etc. For this reason, it is absolutely necessary that each member of the class read the papers very carefully ahead of time. 20 points will come from student participation in discussion of the research articles.

Point breakdown

2 lecture exams	200 pts
Grant proposal	100 pts
Student presentations	80 pts
Student participation	20 pts
Total	400 pts

I use the typical 90/80/70 breakdown for grades. < 70 = F.

For official University guidelines and policies related to students with disabilities, academic dishonesty, visitors in the classroom, and religious holidays, see http://www.shsu.edu/syllabus/

Course Topics:

Introduction	Pathogenesis
The Infectious Cycle	Innate response
Structure	Immune Evasion
Attachment & Entry	Transformation & Oncogenesis
RNA Synthesis	Antivirals
Reverse Transcription	Vaccines
DNA Replication	Evolution
Transcription/Translation	Mechanisms of Pathogenesis
Assembly	Emerging Viruses

Course Calendar:

Tentative In-class Test Dates:

Test1	Oct 19
Test 2	Finals week

Tentative In-class Preliminary Proposal Presentations:

Oct 31 and Nov 2.

Final Proposal Due Date:

November 21.