

INTRODUCTION TO COMPARATIVE VIROLOGY

Spring, 2014

MCB c114, PMB c114, ESPM c138

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Office Hours by Appointment

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Office Hours: Every Wednesday 1-2pm in 438 Koshland Hall

COURSE DESCRIPTION

This course will provide a comparative overview of virus life cycles and strategies viruses use to infect and replicate in hosts. We will discuss virus structure and classification and the molecular basis of viral reproduction, evolution, assembly, and virus-host interactions.

Prerequisites: Introductory biology (1A-1B or equivalent), introductory chemistry (1A and 3A-3B or equivalent) and general biochemistry (MCB 100, 102 or equivalent).

CLASS SCHEDULE

The class will meet **MWF from 2:00 - 3:00 p.m. in 101 Barker and Thursdays from 5:00 – 6:30 p.m. in 159 Mulford.**

COURSE ASSIGNMENTS

LECTURE MATERIALS AND READING:

Recommended Textbook: Virology- Molecular Biology and Pathogenesis (Leonard Norkin). NOTE: This text is available on reserve in the Moffitt library.

A website will be maintained on bcourses (called Comparative Virology Sp14) containing copies of the lectures and pdf files of assigned reading, usually uploaded the day before the lecture. The reading assignments will mostly consist of review articles and current information that can be accessed through the web.

DISCUSSION SECTION: This mandatory section is intended to stimulate interest in viruses and the roles they play in our lives. We will view some informative films and discuss various human interest and hot topics. **The weeks that “Viruses in the News” appears, you should come prepared with current topics in the media, newspapers, journals, etc. and bring these to class for discussion.** We can put these on the website if you provide them in advance to the GSI. **There are 2 discussion sessions in which we will break into small groups to evaluate Case Studies of various viral outbreaks. You will earn points for participating in these case study activities!**

EXAMS: Two midterms and a final exam will be given. Please note that if a midterm exam is missed, your score on the one you take will be doubled, and then 10 points will be subtracted to encourage full participation. The only exceptions to this rule are if arrangements are approved before the exam. Skipping an exam for an illness requires a doctor's note in order to re-schedule.

GRADING

A final grade will be assigned based on the percentage of points earned relative to those earned by other class members (i.e. on a curve). **Note that the curve always operates in your favor!** In other words, if everyone scored $\geq 90\%$ of the total points, everyone would get an 'A'. However, if very few people score in this range, then the point percentage required for an 'A' etc. would drop. **The curve is not determined until the end of the course, when all points are taken into consideration.**

Point breakdowns are as follows:

EVENT	POSSIBLE # POINTS
Midterm 1	100
Midterm 2	100
Case Studies (2)	30
Final Exam (cumulative)	150
Total points	380

SCHEDULE OF LECTURES AND DISCUSSIONS

DATE	TOPIC
JAN. 22 W	Introduction
23 Th	DVD: Ebola-The Plague Fighters
24 F	Viruses & History
27 M	Mechanisms of Capsid Self-Assembly
29 W	Structural Aspects of Viruses
30 Th	Application of Viruses to Nanotechnology
31 F	Virus Classification
FEB 3 M	Viral Discovery/Quantifying Virus Infection
5 W	Early Events in Infection
6 Th	Case Study Group Activity: EBOLA
7 F	Molecular Evolution of Viruses and their hosts
10 M	Cross Domain Anti-viral Defense and Immunity
12 W	Viral Immune Evasion Mechanisms
13 Th	DVD: The Final Inch (Polio Eradication)

	14 F	(+) ss RNA viruses: Picornaviridae
	17 M	<i>President's Day</i>
	19 W	(+) ss RNA viruses: Coronaviruses & SARS
	20 Th	Case Study Group Activity: SARS
	21 F	Arboviruses and Arthropod Vectors
	24 M	(+) ss RNA viruses: Alphaviruses
	26 W	(+) ss RNA viruses: Flaviviridae
	27 Th	Midterm 1 Review
	28 F	Dengue Virus & Global Health
MAR	3 M	RNA Bacteriophages "Leviviridae"
	5 W	MIDTERM 1
	6 Th	West Nile Update
	7 F	Plant RNA Viruses
	10 M	Plant Satellites and Viroids
	12 W	Nonsegmented (-) RNA Viruses: Rhabdoviridae
	13 Th	DVD: Influenza 1918 & what happened after!
	14 F	Movement Proteins
	17 M	Nonsegmented (-) RNA Viruses: Paramyxoviridae
	19 W	Nonsegmented (-) RNA Viruses: Filoviridae
	20 Th	Review Midterm 1 results
	21 F	Segmented (-) RNA Viruses: Orthomyxoviridae
	24-28	
	31 M	Segmented (-) RNA Viruses: Influenza II
APR	2 W	Segmented (-) RNA Viruses: Arenaviridae
	3 Th	Midterm II review
	4 F	Segmented (-) RNA Viruses: Bunyaviridae
	7 M	Double Stranded RNA Viruses: Reoviridae
	9 W	MIDTERM II
	10 Th	viruses in the news
	11 F	Retroviruses
	14 M	HIV
	16 W	Hepadnaviruses
	17 Th	Global Viral!
	18 F	ds DNA viruses: Polyomaviridae
	21 M	ds DNA viruses: Papillomaviridae
	23 W	ds DNA viruses: Adenoviridae
	24 Th	Review Midterm II Results
	25 F	ds DNA Viruses: Herpesviridae

	28 M	ds DNA viruses: Small Pox
	30 W	Viruses & the advent of molecular biology
MAY	1 Th	Panel Discussion: Careers in Virology
	2 F	Baculovirus exploitation of the actin cytoskeleton
	end of formal instruction	
	5 M	RNA virus review
	7 W	DNA virus review
	8 Th	Final exam review session
		FINAL EXAM

*This syllabus is subject to change at anytime.