Virology

Biology 475 (3 credits)

Biology Department, New Mexico State University, Spring 2011

Instructor
Dr. Kathryn Hanley
Office: Foster 471
Phone: 646-4583
E-mail: khanley@nmsu.edu

Meetings
MWF 10:30-11:20, Jett Hall 209

Office Hours
W and F 9:00-10:00, or by appointment; Foster 479

Messages
Official course communication to you will often come through your Blackboard e-mail box. Please access it regularly.

Text
The required text is *Principles of Virology* (third edition; 2 volumes) by S.J. Flint, L.W. Enquist, V.R. Racaniello, and A.M. Skalka, which is available from the NMSU bookstore. Readings from the book will be supplemented with papers from the primary and secondary literature, which will be made available on the class website through Blackboard. I strongly encourage you to complete the reading assigned to each class prior to that class.

Webpage
The course web page is available in Blackboard. General course information, supplementary readings, lecture notes, and exam keys will be posted on this site. Note that lecture notes posted on Blackboard will contain substantial omissions of actual material presented in class, thus downloading the notes is not a substitute for attending lecture.

Overview
The diversity of viruses exceeds that of all other living organisms, combined. This course will introduce students to virus genome organization and composition, transmission cycles and epidemiology, mechanisms of infection and replication, as well as strategies to prevent or treat virus infections.

Virus families that infect animals will be discussed, with a focus on virus species of medical relevance. Bacteriophage and prions will be addressed briefly; viruses of plants are covered in EPWS 451/551 and will not be considered here.
# BIOL 475: Virology

## Spring 2011 Syllabus

**Instructor:** Dr. Kathryn A. Hanley  
*khanley@nmsu.edu; 6-4583; Foster 479*

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
<th>Readings*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/14</td>
<td>F</td>
<td>Class Overview &amp; History of Virology</td>
<td>Syllabus</td>
</tr>
<tr>
<td>1/17</td>
<td>M</td>
<td><strong>Martin Luther King Day: No Class</strong></td>
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</tr>
<tr>
<td>1/19</td>
<td>W</td>
<td>Foundations</td>
<td>Flint I.1</td>
</tr>
<tr>
<td>1/21</td>
<td>F</td>
<td>Infectious Cycle &amp; Methods.1</td>
<td>Flint I.2</td>
</tr>
<tr>
<td>1/26</td>
<td>W</td>
<td>Infectious Cycle &amp; Methods.3</td>
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**Molecular Virology**

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
<th>Readings*</th>
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</thead>
<tbody>
<tr>
<td>1/28</td>
<td>F</td>
<td>Genomes.1</td>
<td></td>
</tr>
<tr>
<td>1/31</td>
<td>M</td>
<td>Evolution.1</td>
<td>Flint II.10 (omit boxes)</td>
</tr>
<tr>
<td>2/2</td>
<td>W</td>
<td>Evolution.2</td>
<td>Lauring &amp; Andino 2010</td>
</tr>
<tr>
<td>2/4</td>
<td>F</td>
<td>Attachment and Entry</td>
<td>Flint I.5 (omit boxes)</td>
</tr>
<tr>
<td>2/7</td>
<td>M</td>
<td>Replication. RNA viruses</td>
<td>Flint I.6 (omit boxes)</td>
</tr>
<tr>
<td>2/9</td>
<td>W</td>
<td>Replication. DNA viruses</td>
<td>Flint I.9 (omit boxes)</td>
</tr>
<tr>
<td>2/11</td>
<td>F</td>
<td>Translation.1</td>
<td>Flint I.11 (omit boxes)</td>
</tr>
<tr>
<td>2/14</td>
<td>M</td>
<td>Translation.2</td>
<td></td>
</tr>
<tr>
<td>2/16</td>
<td>W</td>
<td>Review</td>
<td></td>
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<tr>
<td>2/18</td>
<td>F</td>
<td><strong>Exam I</strong></td>
<td></td>
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</table>
Host Antiviral Immunity

2/21  M  Intrinsic Host Defenses I
       RNA interference  Haasnoot et al. 2007

2/23  W  Intrinsic Host Defenses. 2  Flint II.3 pgs 55-77

2/25  F  Immune Defenses. 1  Flint II. 4 pgs 87-99 (paragraph 1)

2/28  M  Immune Defenses. 2  Flint II. 4 pgs 99-131

RNA Viruses

3/2   W  Orthomyxoviridae. 1  Taubenberger and Kash 2010

3/4   F  Orthomyxoviridae. 2  Lambert & Fauci. 2010

3/7   M  Orthomyxoviridae. 3
       Last day to drop class with a “W”

3/9   W  Orthomyxoviridae. 4

3/11  F  Picornaviridae. 1  De Jesus 2007 pgs 1-9
       Nathanson & Kew 2010

3/14  M  Picornaviridae. 2

3/16  W  Reoviridae

3/18  F  Exam II

3/21-3/5  Spring Break. No Class

Prions

3/28  M  Prions.1

3/30  W  Prions.2  Aguzzi & Callela 2009
       pgs 1105-1127

RNA viruses (Resumed)

4/1   F  Flaviviridae  Gould&Solomon 2008
       ** Homework I assigned **

4/4   M  Dengue virus  Kyle&Harris 2008
Viruses and Cancer

4/6  W  Viral Oncogenesis. 1  Flint II.7 pgs 201-240

4/8  F  Viral Oncogenesis. 2

4/11 M  Viral Oncolysis  Russell&Peng 2009

Other DNA viruses

4/13 W  Herpesviruses  Flint II.5 pgs 150-160

4/15 F  Exam III

Retroviruses

4/18 M  Retroviruses. 1  Flint II.6
  HIV molecular biology & epidemiology

4/20 W  Retroviruses. 2  Sharp&Hahn 2010
  Origins and evolution of HIV
  ***Homework I due ***

4/22 F  Spring Holiday

4/25 M  Retroviruses. 3  Stoye 2009
  Natural resistance to HIV;  Dupressoir et al. 2009
  Retroviruses & Host genome evolution

4/27 W  Retroviruses. 4  Barouch 2008
  AIDS vaccines & antivirals

4/29 F  Review

5/2 M  FINAL EXAM: 10:30-12:30

* For textbook (Flint) readings, Roman numerals refer to volume (I or II) and Arabic numerals refer to the chapter within the volume. Other readings are posted on Blackboard and a complete bibliography is listed at the end of the syllabus.
Evaluation

Final grades will be based on the following exercises/exams:

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Points/Percent of grade</th>
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<tbody>
<tr>
<td>Class Participation</td>
<td>--</td>
<td>5%</td>
</tr>
<tr>
<td>Homework</td>
<td>1</td>
<td>10%</td>
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<tr>
<td>Midterm exams</td>
<td>3</td>
<td>60% (20% each)</td>
</tr>
<tr>
<td>Final exam</td>
<td>1</td>
<td>25%</td>
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The association between point totals and letter grades will be determined at the conclusion of the course at the discretion of the instructor, with the stipulation that students who receive 90%, 80%, 70% and 60% of point totals will receive no less than an A, B, C and D respectively, and students who receive less than 50% of possible points will fail.

Missed Exercises/Exams

Students are expected to complete all exercises/exams as scheduled; exercises/exams will be rescheduled only for university business or grave emergencies. The former must be documented a minimum of two weeks in advance and alternative arrangements scheduled with me. The latter must be formally documented, for example with a letter from a physician or funeral home.

Late homeworks and other exercises will be downgraded by 10% of the total available points for each day they are late. Any exercise is not considered “turned in” until it is in my hands. If you slide a homework under my door on Friday night, and I don’t see it until Monday morning, the submission date is Monday morning.

Extra Credit

Three optional, graded, in-class extra credit exercises, worth 10 points each, will be offered. These will NOT be announced prior to the class. The best two grades will be added to the total point score as extra credit. Since only the best two grades will be used, no make-ups will be offered under any circumstances.

Academic Honor

I expect each student to submit his or her own original work in every exercise and exam. Evidence of cheating will result in failure of the specific exercise or the entire class, at the instructor’s discretion.

The current Student Code of Conduct definition of plagiarism can be found at: [http://www.nmsu.edu/~vpsa/SCOC/misconduct.html](http://www.nmsu.edu/~vpsa/SCOC/misconduct.html). Students are expected to read it within the first week of class.

Even with a citation, failure to put quotation marks around direct quotations also constitutes plagiarism, because it implies that the writing is your own. Material should either be paraphrased or clearly designated as a quotation. Note that replacing words with synonyms, changing verb
tense or other minor alterations do not qualify as paraphrasing.

**Intentional or unintentional plagiarism will result in a 0 on the specific exercise and, depending on the gravity of the plagiarism and at the discretion of the instructor, failure of the class. If a student is unsure whether he or she is being academically dishonest, then he or she should ask me for clarification (in person or via email) prior to completing the exercise.**

**Withdrawals:** It is the responsibility of the student to complete the necessary paperwork to withdraw from the class should they decide to do so.

**Attendance:** Lecture attendance is expected except for documented university business or extreme emergencies, and regular participation will greatly improve your success in the course. It is the responsibility of the student to be aware of material or schedule changes presented in any class that he or she has missed.

**Syllabus** I reserve the right to modify the syllabus as needed to appropriately address the material. Changes will be announced in class and posted on Blackboard. It is the responsibility of the student to be aware of material or schedule changes presented in any class that he or she has missed.

**Disabilities & Accomodation** If you have or believe you have a disability and would benefit from accommodations, you may wish to self-identify by contacting the Services for Students with Disabilities (SSD) Office located in the Garcia Annex (Phone 646-6840; TTY 646-1918; http://www.nmsu.edu/~ssd/). No students will be given accommodations for disabilities unless SSD has requested them.

Feel free to call Jerry Nevarez, Director of Institutional Equity, at 505-646-3635 with any questions you may have about NMSU's Non-Discrimination Policy and complaints of discrimination, including sexual harassment. Feel free to call Diana Quintana, Coordinator of Services for Students with Disabilities, at 575-646-6840 with any questions you may have on student issues related to the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act of 1973. All medical information will be treated confidentially.
Supplemental Readings