<table>
<thead>
<tr>
<th>DATE</th>
<th>DAY</th>
<th>LEC/ EXAM</th>
<th>SUBJECT</th>
<th>VOLUME (I or II)</th>
<th>PAGES(p)</th>
<th>INDEX PAGE (i)</th>
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<tbody>
<tr>
<td>Jan. 22</td>
<td>Tu</td>
<td>#1</td>
<td>Introduction: course goals, overview, history of virology. (Virology has spawned over 25 Nobel Laureates. We shall consider their contributions throughout the course)</td>
<td>I (Chap. 1)</td>
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<td>Jan. 24</td>
<td>Th</td>
<td>#2</td>
<td>What is a virus? Should viruses be added to the tree of life (Precise mini-packaged genomes of RNA or DNA which require specific host cells for replication).</td>
<td>I (p18)</td>
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<td>Jan. 29</td>
<td>Tu</td>
<td>#3</td>
<td>Virus purification and structure. [Exp. #1] (Viruses are small and complex, yet are amenable to purification, and analysis at molecular/atomic levels)</td>
<td>I (Chap. 4)</td>
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<tr>
<td>Feb.  5</td>
<td>Tu</td>
<td>#5</td>
<td>Virus-cell interaction I. The cell as a host. The virus: concept of an infectious unit. (An infection can start with the proper delivery into the cell of a single genomic molecule of RNA or DNA)</td>
<td>I (Chap.2)</td>
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<td>Feb.  7</td>
<td>Th</td>
<td>#6</td>
<td>Virus-cell interaction II. Virus detection and quantitation. (How to measure the action of a single virus particle)</td>
<td>I (Chap.2)</td>
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<td>Feb. 12</td>
<td>Tu</td>
<td>#7</td>
<td>Virus-cell interaction III. Early events. (The initiation of infection)</td>
<td>I (Chap. 5)</td>
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<td>Feb. 14</td>
<td>Th</td>
<td>EXAM #1</td>
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<td>EXAM 1</td>
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When in doubt, ask – preferably before the exam!
Feb. 19 Tu #8  Virus inactivation.  *(Physical and chemical inactivation)*

Plant viruses.  *(Unique ways to organize a genome)*

Feb. 21 Th #9  Viruses of birds, fish, insects, bacteria, etc.  *(Viruses are widely distributed in nature)*

Viroids.  *(The smallest known RNA infectious agent)*  I (p385-386)

Satellite viruses/RNA  I (p387)

(Sometimes viruses need help)

Feb. 26 Tu #10  Prions  I (p387-391)

*(A new kind of infectious entity: A protein. It that takes years to express the disease symptoms)*

RNA animal viruses I. Rhabdoviridae  I (p564i)

(The family with rabies virus. Vesicular stomatitis virus as the prototype [-]RNA virus)

(The concept of quasispecies virus populations)  I (p195), I (p314--316)

Feb. 28 Th #11  RNA animal viruses II. Rhabdoviridae (cont’d).  (see Rhabdovirus above)

(A molecular view of the life cycle of a virus)

Mar. 5 Tu #12  RNA animal viruses III. Rhabdoviridae (cont’d)

Bunyaviridae.  I (549i), II (401i)

(The family with hantaviruses –an “emerging” lethal virus)

Mar. 7 Th #13  RNA animal viruses IV. Picornaviridae.

Poliovirus  I (560i), II (413i)

*(Poliovirus: an eradicable virus –the power of vaccines and molecular virology)*

Mar. 12 Tu #14  RNA animal viruses V.

Arenaviridae: Lassa Fever virus  (Arenavirus: I 548i, II 400i)

Coronaviridae: SARS virus  (Coronavirus: I 550i, II 402i)

Filoviridae: Ebola virus  (Filovirus: I 553i, II 405i)

Flaviviridae: West Nile virus  (Flavivirus: I 553i, II 405i)

Reoviridae: Rotavirus  (Reovirus: I 562i, II 414i)

Togaviridae: EEE  (Togavirus: I 567i, II 417i)

Caliciviridae: Norwalk virus  (Calicivirus: I 549i, II 401i)

RNA viruses as biological weapons

Mar. 14 Th  **EXAM #2**

Mar. 17-23  **SPRING RECESS**

“To not know is not a sin. To not ask is.”  *Unknown*
Mar. 26  Tu #15  RNA viruses VI. Orthomyxoviridae.  
(Orthomyxovirus: I 559i, II 412i)
(A virus with pandemic potential. A master at changing its
antigenic coat. Had your influenza shots: seasonal & H1N1?
The concept of noninfectious biologically active particles)
Vaccines  
(I 568i, II 417i)

Mar. 28  Th #16  Paramyxoviridae  
(Paramyxovirus: I 560i, II 417i)
(Mumps, measles, and a killer horse virus)
Retroviridae I. RNA oncogenic viruses.  
(Retrovirus: I 563i, II 414i)
(How viruses convert a normal cell into a tumor cell. The
discovery and significance of reverse transcriptase)

Apr. 2  Tu #17  Retroviridae II. Lentiviruses: Human immunodeficiency
virus (HIV) and AIDS.  
(The virus and pandemic of the century)

Apr. 4  Th #18  Retroviridae III. Current status of HIV/AIDS
(Is a cure based on molecular virology imminent?)
DNA animal viruses I. Poxviridae.  
(Smallpox: a scourge eradicated or a bioterrorist weapon?
A good time to have read: “The Demon in the Freezer”)
Vaccinia virus – a fountainhead in biotechnology:

Apr. 9  Tu #19  DNA animal viruses II. Hepadnaviridae.  
(see Hepadnavirus and Hepatitis B) The etiologic agent of hepatitis B.
A small virus with a complex and amazing mode of replication)
Parovirus  
(Parovirus: I 560i, II 412i)
(A small DNA virus that needs help from a large DNA virus)
Adenovirus. (Discovery of splicing).  
(I 547i, II 399i, I p345)
Gene therapy: DNA and RNA virus-based.  
(II 405i)

Apr. 11  Th #20  DNA animal viruses III. Herpesviridae.  
(An abundant, but unpopular virus family)
DNA oncoviruses I. Papovaviridae.  
(Small DNA viruses that cause tumors).
(see Papillomavirus)  
(I 560i, II 412i)

Apr. 16  Tu #21  DNA oncoviruses II. Papovaviridae (cont’d).
Viral interference I. Defective-interfering particles.  
(Viruses with defective genomes interfere with
homologous viruses that have complete genomes)

Apr. 18  Th  EXAM #3  EXAM #3  EXAM #3

“He who is afraid to ask is ashamed of learning. “ Danish proverb

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<th>Topic</th>
<th>Notes</th>
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<tr>
<td>Apr.</td>
<td>23</td>
<td>Tu</td>
<td>Viral interference II. Intrinsic interference.</td>
<td>(Viruses that interfere with heterologous viruses)</td>
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<td><strong>Viral interference III. The interferon system.</strong></td>
<td>(I p404, II p409)</td>
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<td>(Interferons: prototype cytokines recruit novel cellular defenses against viruses)</td>
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<td><strong>Interferons: induction and regulation.</strong></td>
<td>(I p404, II 409i)</td>
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<td>(Molecular pathways to initiate interferon production)</td>
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<td>Apr.</td>
<td>25</td>
<td>Th</td>
<td>Viral interference IV. Interferon action.</td>
<td>(as above).</td>
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<td><em>(The bodies first line of defense against viruses: Innate Immunity)</em></td>
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<tr>
<td>Apr.</td>
<td>30</td>
<td>Tu</td>
<td>How viruses kill cells: apoptosis.</td>
<td>(II 400i)</td>
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<td><em>(Viruses can initiate programmed cell death)</em></td>
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<td><strong>Persistent infection.</strong></td>
<td>(II 413i))</td>
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<td><em>(Some viruses have evolved means to establish a persistent infection)</em></td>
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<td>May</td>
<td>2</td>
<td>Th</td>
<td>Guest Lecture: Dr. Margaret J. Sekellick.</td>
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<td><strong>Virus defense strategies.</strong></td>
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<td><em>(Viruses have evolved mechanisms to fight host cell defenses)</em></td>
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**FINAL EXAM (#4):** Date, time, and place to be announced (May ? - May?)

“He who asks may be a fool for five minutes, but he who does not ask remains a fool forever.”

*Old Chinese Saying*
Footnotes: Volume (I or II), Pages (p), and Index page (i) refer to the required text *PRINCIPLES OF VIROLOGY: Vol I Molecular Biology; Vol II Pathogenesis and Control*. 3rd Ed., 2009, by S.J. Flint, L.W. Enguist, V.R. Racaniello, & A.M. Skalka, ASM Press, Washington, D.C. ISBN 978-1-5581-480-9 (softcover; pbk: set). Vol I = 569 pages. Vol II = 419 pages, $127.50.(??) The Demon in the Freezer, 2002, by Richard Preston, Random House, N.Y., 240 pages, $7.99 (??), is also a required text. This book was added because of the accuracy of the virology described in it and, unfortunately, the nature of the society we now live in. I have added another easy to read book because of new public health concerns associated with influenza virus: Flu, 1999, by Gina Kolata; Farrar, Strauss, & Giroux Press, 330 p., $15 (??). A book just appeared in late 2012 by an author who is a master of scientific writing, He has chosen to describe the viruses of animal origin that have been the reservoirs of human pandemics, and are likely to be the source of new pandemics. The book is entitled *SPILOVER: animal infections and the next human pandemic*. By David Quammen, W.W. Norton & Company, New York/London, 587 pages [I am trying to negotiate the price down from $28.95]. At this time I will rate it as highly recommend –but not required reading. Fields *VIROLOGY*, 5th Ed, 2007, Eds, D.M. Knipe & P.M. Howley; Williams & Wilkins Publ, Philadelphia, PA. 2 Volumes, 3,092 pages, ≈ $369. The ultimate comprehensive text for the discriminating (and wealthy) virologist to be. It is contained in two volumes, and is too heavy to carry around. It is an excellent text for the serious virologist. There are several relatively recent texts and virology books noted in the *Reading List*.

Notes: A few comments on the text: *Principles of Virology* was chosen for the course because it contains much of the information expected in an up to date text written by excellent scientists, and many of its figures are clearly illustrated. Since it is a third edition you should find a minimal numbers of errors in it. Please let me know if you do find errors and I will pass them on to the class and the authors. The 3rd Ed has benefited from input from my classes, myself, and many other readers. Websites of potential interest to virologists are listed on page 23 of Vol. I. Let me know if you find them useful. You may find the text a challenge because of its organization. It tends to group viruses together because of shared features of structure and replication rather than considering them in separate chapters as families with unique attributes. This shortcoming, from my view –not shared by all, is compensated in part by the excellent illustrations and good descriptions of selected, and now expanded, virus life-cycles at the back of Vol. II. Once we learn some basic aspects of virology in the first part of the course, unlike the text, we will consider viruses as members of a particular family and learn of their molecular and genetic peculiarities. Since vaccination has assumed much importance, we will fit it into this semester at the cost of discussing some families of viruses. We will end the course finding out how cells of our body defend themselves against viruses and how viruses counteract those defenses—the war between host and virus. The text is not all encompassing in that it is restricted primarily to animal viruses. I will provide some lectures on viruses from other biological systems, and for the more curious I will supply a supplemental list of reading material. Although the additional reading is not required for the course, many of the books will provide you with a deeper appreciation of virology and its importance to society as new viruses appear to emerge and threaten our tranquility—such as it is. Since several terms in virology may be new to you, and their spelling a challenge, a list of words frequently encountered and often misspelled also will be included in handouts.

Although this schedule is reasonably accurate, viruses or items of topical interest may displace scheduled lectures. For example, one year bunyaviruses, previously glossed over, were discussed in detail because of an outbreak of a “newly emerging” and lethal strain of hantavirus in the southwest, and a verified lethal case in Rhode Island. The “emergence” of Ebola virus, the film “Outbreak,” and the book “The Hot Zone” (by Richard Preston) also resulted in a change in scheduled lectures. Recent “breakthroughs” in AIDS, like the role of chemokines in HIV infection, have had their influence on the
course. The recent first appearance of West Nile virus (a flavivirus) in the U.S., and the emergence of SARS virus (a coronavirus) turned our focus on the two families of viruses responsible. Mad cow disease and its transmission to humans will also command our attention as it has in the near past in Great Britain, and challenges our constant vigil in the U.S. The declaration of an influenza pandemic involving a novel HIN1 virus will command more attention than usual. I will remind you of the benefits of annual influenza vaccinations more than once in the course because of the low frequency of vaccinations among your peers in college. When applicable, handouts will be used to supplement the lecture and text.

All lectures will be digitally recorded. These recording, once generated, will be made available over the student internet service to those enrolled in the course. Also, most of the Power Point slides shown during a lecture will be made available. This once pilot program is in its seventh year of availability through the HuskyCT Site of Virology 3246/5240. They are not for general circulation. I ask you to honor that request. They will be made available as soon as possible after each lecture.

**Important:** You are **urged** to ask questions in class when you do not understand something I’ve said, or if you would like some clarification of a statement or concept, or if you can contribute information to the discussion. I invariably open each lecture with a call for questions based on the preceding lecture. Do not hesitate to plumb my decades of experience as a virologist. That’s what I’m here for. My credo on this subject is clear: **Ask questions!**

**Availability:** I am available in TLS 281/285, especially on Tuesdays from 4-6 PM, Thursdays from 4-5 PM, and on some Wednesdays from 10AM until noon. However, my office is located in TLS 281 within the Virus and Interferon Research Laboratory, a BSL-2+ (Biosafety Level 2+) limited access laboratory where we work with animal viruses –mostly influenza virus (and everyone is vaccinated). Consequently, I would be glad to meet you outside of the laboratory. If this is not convenient please E-mail me to make other arrangements. I am here to help you learn about the intriguing world of virology. Tel: 486-4254. It is best if you E-mail me: **philip.marcus@uconn.edu**. I will make every effort to respond to your questions by E-mail but prefer those questions be asked in class because the answer is likely to be of interest to others. Please share your questions in class so I may share my answers with everyone. Do not hesitate to ask questions in class!

**PIM/Virology 2013 Schedule**