General Parasitology MB 480/580
Winter 2015

Time: MWF 12-1
Room: Wiegand 115

INSTRUCTORS: Michael Kent, Nash 532 Michael.Kent@oregonstate.edu,

Course Structure: The emphasis of this course is an introduction to parasitology. The course covers a broad overview of parasitology, covering important groups and host/parasite relationships among all taxa from lower vertebrates through mammals (including humans). Captive and wild animal hosts will be included. Most of the lectures are a comprehensive overviews of important parasite groups, emphasizing host/parasite interrelationships. The remaining lectures will cover selected current topics in parasitology of regional interest or pertaining to emerging diseases (e.g., malaria epidemiology and approaches to assessing impacts of parasites in wild animals).

Lectures are presented by Dr. Kent, with guest lectures by: Justin Sanders

OFFICE HOURS: By appointment with Dr. Kent. We are open to answering questions by email.

TEXT: Foundations of Parasitology, 9th edition. Roberts, Janovy and Nadler. 2012 (7th or 8th edition is acceptable, but page numbers are slightly different).

ADDITIONAL MATERIALS: Specific journal articles, etc. pertaining to the Selected Topics lecture will be provided.

GRADES AND COURSE POLICIES: 2 mid-terms (90 and 120 pts each), 1 cumulative final (170 pts). Quizzes: Three 10 point quizzes will be given throughout the quarter. These will be unannounced, and the top two scores will be selected.

Grading is on a straight curve if the average is below 75%. If above 75%, then grades are a follows: A, 90-100%; B 80-89%; C 65-79%; D, 55-64%. Depending on scores and cutoffs, we Feb adjust the grade cutoffs down a 1-2 percent for each category.

Graduate students taking the course as 580 will be graded separately, and will also be required to present a 25 min lecture to the class on a special topic in parastiology.

Make up exams will available only to those with documented medical excuses or other documented emergencies. These include 1) illness of the student or 2) death in the immediate family. All make up exams will have written essays and/or oral components.

PREREQUISITES: BI 314 or BB450 (or equivalent) or ZOO 361, MB 302 (or equivalent)

STUDENT LEARNING OUTCOMES:

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1. Students will acquire knowledge of the basics in general and medical parasitology.

2. Students will acquire and demonstrate retention of fundamentals in host-parasite interactions, taxonomy and life cycle strategies.

3. Students will be expected to recognize and identify important aspects of the pathology, life cycles, epidemiology, and control and treatment for the most important parasitic diseases of humans.

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In addition to the expectations above, students will

1. Synthesize information and evaluate published literature through preparing a 25 min lecture of their choice (and agreed on by the instructors) regarding a current and important issue in parasitology.

2. Demonstrate the ability to communicate scientific concepts and analytical arguments clearly and concisely in writing.

3. Demonstrate the ability to evaluate a biological problem and determine which aspects are understood and which are not understood.

Class Conduct

This is a large, somewhat crowded class, and we must respect fellow students, professors, and guest speakers.

1) No texting
2) Discussion with the class and professor is welcome during lectures, but no chatting with class mates
3) Computers are OK, but only for use with the PPT presentations
4) No cheating
5) Participation. It is your choice if you come to class, but do not leave until the end of the lecture unless pre-arranged with the speaker for the day.

The following information is summarized from the OSU Student Conduct Regulations:
Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:

*cheating- use/attempted use of unauthorized materials, information or study aids
*fabrication- falsification or invention of any information
*assisting- helping another commit an act of academic dishonesty
*tampering- altering or interfering with evaluation instruments and documents
*plagiarism- representing the words or ideas of another person as one's own

When evidence of academic dishonesty comes to the instructor's attention, the instructor will document the incident, permit the accused student to provide an explanation, advise the student of possible penalties, and take action. The instructor Feb impose any academic penalty up to and including an "F" grade in the course after consulting with his/her department chair and informing the student of the action taken.

The goal of Oregon State University is to provide students with the knowledge, skill and wisdom they need to contribute to society. Our rules are formulated to guarantee each student's freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. Behaviors that create a hostile, offensive or intimidating environment based on gender, race, ethnicity, color, religion, age, disability, marital status or sexual orientation will be referred to the Affirmative Action Office

University and Departmental Policy:

"Students with documented disabilities who Feb need accommodations, who have any emergency medical information the instructor should know or who need special arrangements in the event of evacuation, should make an appointment with the instructor as early as possible, no later than the first week of the term. In order to arrange alternative testing, the students should make the request at least one week in advance of the test. Students seeking accommodations should be registered with the Office of Services for Students with Disabilities."

The Department of Microbiology follows the university rules on civility and honesty. These can be found at osu.orst.edu/instruct/cssa556/CIVHON556. The section on plagiarism is required reading. The Department has additional concerns about referencing material from the Internet. Any information obtained from the Internet should be cited as completely as possible with the author's name, title of the web site, affiliation of the author and date the material was put on the web or last updated. You should also do some critical analysis of the credibility of the information as anyone can put information onto the web.

Date	Topic	
5 Jan	Introduction-Concepts, General Terminology, Course Structure	
7 Jan	Intro to Helminths and Nematodes. Large round worms (ascarids): *Toxacara, Ascaris,*	
9 Jan	Continue ascarids: *Baylisascaris, anisakines* Pinworms.	
12 Jan	*Nematodes 2: Strongyloides*, - Strongyles of Ruminants, Hookworms	
14 Jan	Nematodes 3 – Filarial Worms	
16 Jan	*Nematodes 4 - Trichinella*, Whipworms, Sprurids, and others	
19 Jan	Holiday MLK day	
21Jan	Intro to flatworms, Monogenes, and Tapeworms 1 – *Diphylobothrium* and *Spirometra*	
23 Jan	Tapeworms 2. Cyclophelidia – Taeinia, Echinoccous	
26 Jan	**Mid Term 1**	
28 Jan	Flatworms: *Fasciola hepatica, Dicrocelium, Nanophyetus*	
30 Jan	Flatworms: Continue digenes, *Clonorchis*, *Paragonimus,* schistosomes and other blood flukes	
2 Feb	Acanthocephala & Assessing Impacts of Parasites in Wild Animal Populations	
4 Feb	Myxozoa & Sarah Vojnovich *Ceratomyxa*	Vojnovich
6 Feb	Protozoans: Introduction *Coccidia – Eimeria, Cyclospora, Sarcocystis, etc*	
9 Feb	Coccidia con't – Cryptosporidium, Babesia	
11 Feb	*Toxoplasma and Neospora*	Dr. Sanders
13 Feb	Malaria	Dr Jacobson
16Feb	Giardia and Trichomonads	
18 Feb	Trypanosomes	Dr Jacobson
20 Feb	580 students: Milo (Chip) Ullstad – Malaria in Congo Crystal Herron: Copepod Parasites	Ullstad/Herron
23 Feb	*Leishmania*	Dr Jacobson
25 Feb	Amoebae – Entamoebae and free living opportunists Daniel presents free living amoeba	Daniel Mozell
27 Feb	**Mid Term 2**	
2 Mar	Microsporidia, and *Blastocystis*	
4 Mar	*Arthropods 1: Fleas, Flies, Maggots and Bots*	
6 Mar	Arthropods 2: Lice and Bed Bugs	
9 Mar	Arthropods 3: Ticks and Tick-borne diseases	
11 Mar	Arthropods 4: Mites and others arthropods	
13 Mar	Arthropods 5: Pentastomes and Crustacea Finals Week	
16-20 Mar Finals		

Reading Assignments (pages based on 7th Edition of Foundations of Parasitology)

You will not be tested on reading material that I haven't covered in class. The intent is providing another medium to present the same material and possibility another way of presenting concepts that Feb help you obtained the required knowledge for the class.

Concentrate on the sections that pertain to the specific parasites covered in lectures.
Also, you might find some of the additional information interesting, even if you will not be tested on it.

5 Jan Introduction Chapter 1. I also recommend reviewing Chapter 3 on immunology and pathology. This will be useful for those who have taken classes in these subjects.

For those who have not taken immunology, I recommend more in depth study of this chapter as it will provide very useful background for understanding host-parasite interactions in future lectures and chapters.

7 & 9 Jan. Intro to Nematodes: Chapter 22: pages 349-352. Ascarid worms Chap 26– read sections on *Ascaris, Toxocara*, *Baylisascaris*, Anisakidae

Chapter 27: Pinworms, read sections on *Enterobius*.

12 Jan –Chapter 24: *Strongyloides stercorlis* pages 393-396. Stongyles of livestock (Trichostrongylidae) – pages 406-407.
Chapter 25: Hookworms (family Ancylostomaidae. Page 397-405

14 Jan Filarial worms: Chapter 29: read sections on *Dirofilaria immitus, Wucheria bancrofti*, *Onchocerca volvulus.*

16 Jan. Trichinella, Whipworms (Chapter 23) & Spirurid nenamtodes.
Read sections on the genus *Trichuris* (Whip worm) 377-379 and *Trichinella* species (381-388)

19 Jan. MLK day Holiday

21 Jan. Introduction to flatworms.

Monogenoidea (Monogenes) Chapter 19. Read sections on Form and Function- Body Form (page 284-285). and Development ((page 291)

Cestoda (Tapeworms). Chapter 20; General structure overview pages 299-302 and section on development and effects on host 312-316, 326-330.

Chapter 21: Sections on *Diphylobothrium* and sparaganosis pages 325-329.

23 Jan Cestoda (Tapeworms) continued. Chapter 21 Sections on *Taenia saginata*, *Taenina solium* and *Echinoccous*: spp.

26 Jan. Midterm 1.

28 Jan. Digenea (Trematodes): Chapter 15: 209-210, Development section 219-227 (not metabolism).

Chapter 17: *Fasciola hepatica*: 256-259, Chapter 18: *Dicrocelium dendriticum* 265-267 *Nanophyetus* pages 274-275

30 Jan. Chapter 18: *Paragoniumus* (269-273) *Clonorchis* (275-278)
And Chapter 16 : *Schistosoma* spp. And swimmer's -ich Pages 238-249

2 Feb. Chapter 32 Acanthocephala, pages 473, 480 (Development and Life cycle. Also, PDF by Lester on Assessing parasite associated mortality

4 Feb Myxozoa. PDFs provided by Kent and Hallett

6 Feb Protozoa Intro; Chapter 4 Pages 41-53

Chapter 8 Apicomplexa: pages 119 (general intro), read sections on *Eimeria*, Sarcocystis and *Cyclospora*

9 Feb. Toxoplasma: Chapter 8 pages 132-137. Neospora – page very end of 137-140.

11 Feb Apicomplexa (con't) *Cryptosporidium*: Chapter 8 – pages 122- 124

Chapter 9: Babesia pages very end of 160-165

13 Feb: Malaria: Chapter 9. Plasmodium sections pages 143-157.

16 Feb Giardia and Trichomonads. Chapter 6 "Other flagellated protozoa". Page 88-92 Giardia section. Pages 93-97. Trichonomans vaginalis and Tritrichomonas foetus sections.

18 Feb: Trypanosomes: Chapter 5: pages 61-75

20. Guest Lecture. To be announced

23 Feb: *Leishmania*: Chapter 5: 77-85.

25 Feb. Amoebae: Chapter 7: read sections on *Entamoeba histolytica*, *Naegleria* and *Acanthamoeba*

27 Feb MID TERM 2

Mar 2 : Microsporidia Chapter 11 pages 175-178
Blastocystis - PDF in Blackboard.

Mar 4. Arthropods – Intro and fleas: Chapter 38 . Concentrate on general development, dog flea, cat flea, oriental rat flea (vector of plague) and the plague. Flies Chapter 39: muscid flies, maggots and bots (pages 591- 598

Mar 6 . Lice Chapter 36 Sucking Lice Page Pediculus 549 Crab louse 550
Bed bugs Chapter 37: Pages 557-559

Mar 9. Ticks Chapter 41 Read sections on *Ixodes* spp (pp 613-614), *Dermacentor* spp. (p.615), *Ripicephalus* sanguineus (p. 616).

Mar 11. Mites: Chapter 41 *Demodex* (p. 625), Sarcoptes (p.638-629).

Mar 13. Pentastomes: Chapter 35 page 535, 538-539 (*Liguatula* species).Crustacea. Chapter 34: Lernaeidae Page 514 and 515. Caligidae 519 and perhaps a PDF on the Sea Lice in netpen reared salmon issues.

Mar 16-20 Finals week