

COURSE SYLLABUS for BIO 446 – Parasitology
4credit hours; Fall 2007

Important Note: This syllabus is subject to change at the discretion of the instructor

INSTRUCTOR: Dr. Tamara J. Cook
Lee Drain Building 105B
Phone: 294-1557 email: tcook@shsu.edu
Office Hours: the following or by appointment
8:00—10:00 MW
2:00—4:00 Tu

LOCATION & TIME: LDB 136, MWF 11:00 – 11:50; Lab W 1:00 – 3:50 p.m.

EVALUATION:	3 Lecture Exams @ 100 pts	300 pts
	Comprehensive Essays	50 pts
	3 Case Studies @ 25 pts	75 pts
	2 Laboratory Practicals @ 100 pts	200 pts
	Laboratory Notebook	75 pts
	TOTAL POSSIBLE POINTS	700 PTS

GRADING: A = 630+ B = 560-629 C = 490-559 D = 420-489 F < 420

LECTURE TEXT: *Foundations of Parasitology*, 7th edition, by Roberts & Janvy
You must bring your textbook to ALL laboratory sessions.

Course Content: Parasitology is an introduction to the biological relationship known as parasitism. Although there are many different types of parasites, our discussions will focus primarily on parasites that cause disease in humans. Lectures are intended to be dynamic, interactive presentations/discussions of the general biology of selected parasites. I feel that my role as instructor is to be a guide to learning rather than simply a dispenser of knowledge. Your active participation in the course will provide you with a basic, contemporary understanding of the material.

Lectures focus on the morphology, life cycles, physiological adaptations, evolution and ecology of the major parasitic organisms of humans. Parasitology is really an interdisciplinary course, encompassing the fields of pathology, immunology, ecology, entomology, epidemiology, and systematics. Thus, you will not only learn about parasites but you will gain valuable knowledge of related disciplines.

Laboratory exercises focus on morphology, anatomy, and classification of parasites. We will concentrate on diagnostic life cycle stages and all labs will include extensive drawing of examined material.

Course Objectives: To learn and understand the principles of parasitology through acquisition of: 1) a basic working vocabulary, 2) the ability to diagnose parasitic infections, 3) knowledge of the theories and principles, and 4) the intellectual tools that allow students to apply facts and concepts to novel situations.

Preparation and Expectations: You are expected to attend all lecture and laboratory sessions. Parasitology is an advanced course that will demand careful preparation and study, and as such, attendance is absolutely essential for success in meeting the basic course requirements. Further, the lectures are drawn from a wide variety of sources including the primary literature. The textbook serves as a reference, but the course does not directly tract its content. I operate on the assumption that you actively participate in your own education and therefore I also assume that you are doing your part to prepare for class by completing the appropriate textbook reading. Because of the quantity of material we cover in this class, it will be to your advantage to keep up on your readings and to regularly attend lecture. Because your laboratory notebook is a significant portion of your grade and because the scheduled lab time is the ONLY time you will be able to complete assignments, there are obviously serious penalties for missing labs!

COURSE EVALUATION

LECTURE EXAMINATIONS (350 POINTS): There will be three lecture exams (100 points each) consisting of a combination of true/false, multiple choice, matching, short answer, and essay questions taken from lecture material and reading assignments. They will require you to not only recall definitions and facts, but to also understand their meaning and context and to synthesize information from more than one lecture. The third exam will be given during the regularly scheduled final exam time and in addition to the 100 points for the regular lecture exam, there will be 50 points worth of comprehensive essay questions.

CASE STUDIES (75 POINTS): At approximately midsemester (sometime in October), I will provide you with various scenarios regarding parasitic infections in humans. You will formulate solutions, outside of class, to problems presented by these case studies. Adequate responses to case studies typically will require you to use knowledge acquired via active participation in lecture/lab, information you acquire as you research the areas of responsibility for species on taxonomic lists, as well as through independent consultation with other resources. Your responses to case study questions are to be typewritten. **Three case studies** will be assigned during the semester; due dates will be announced as cases are assigned. Each case study is worth **25 points** for a total of 75 possible points. Students who demonstrate exceptional ability in their responses may earn extra credit points beyond the stated limit.

LABORATORY EXAMINATIONS (200 POINTS): There will be two lab practicals (100 points each). Approximately 25 items, representative of the parasites presented to you during the lab sessions, will be displayed either grossly or microscopically for identification.

LABORATORY NOTEBOOK (75 POINTS): You are to prepare, **in lab**, a set original drawings of lab material **as you observe it**. Detailed instructions will be provided in lab.

MISCELLANESOUS IMPORTANT STUFF

ACADEMIC DISHONESTY: All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused in any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.

CLASSROOM RULES OF CONDUCT: Students are expected to assist in maintaining a classroom environment that is conducive to learning. Students are to treat faculty and students with respect. Students are to turn off all cell phones while in the classroom. Under no circumstances are cell phones or any electronic devices to be used or seen during times of examination. Students may tape record lectures provided they do not disturb other students in the process.

STUDENT ABSENCES ON RELIGIOUS HOLY DAYS: Students are allowed to miss class and other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. Students remain responsible for all work. *See Student Syllabus Guidelines.*

VISITORS IN THE CLASSROOM: Only registered students may attend class. Exceptions can be made on a case-by-case basis by the professor. In all cases, visitors must not present a disruption to the class by their attendance. Students wishing to audit a class must apply to do so through the Registrar's Office.

LECTURE SEQUENCE: The following schedule is a list of the lecture sequence. The numbers in parentheses represent the number of lecture periods I intend to spend on each topic and the corresponding chapter in *Foundations of Parasitology*. It is assumed that you will follow this schedule in preparing for class and completing the appropriate textbook reading.

Course Introduction (3, chapters 1-3)

Grading; significance of parasitism in world affairs; general principles and concepts; transmission; factors influencing parasitism; outcomes and implications of parasitism
Outline of “areas of responsibility” for selected groups of parasites

Introduction to the protozoa (1, chapter 4)

Terminology, structures, major life cycle events, and systematics

Amoebae (3, chapter 7)

General: structure, life history
Amebiasis: course of infection, pathology, treatment and prognosis
Epidemiology: of intestinal amoebae
Diagnosis: various techniques

Flagellates (intestinal and urogenital) (2, chapter 6)

General: structure, life history

Hemoflagellates of humans (5, chapter 5)

General: structure and life history
Leishmania: Kala azar, cutaneous and mucocutaneous
Trypanosomes: trypanosomiasis & world affairs, African and American trypanosomiasis

Lecture Exam 1 (September 26, 2007; given during lab)

Apicomplexa (3, chapter 8)

General: anatomy, structure, life history
General Coccidiosis: economic impact in animals, role as human pathogens
Toxoplasma, Eimeria & Cryptosporidium: epidemiology and course of infection

Plasmodium (5, chapter 9)

General: life history and course of infection
Malaria: pathology, symptoms, treatment and prognosis
Malaria and human affairs
Current research on malarial control
Malaria and the genetics of resistance

Introduction to Trematoda (1 chapters 13, 15, 17-18)

General: Adult anatomy/ reproductive biology; life cycles/development

Schistosomes (4, chapter 16)

General: course of infection, histopathology, treatment and prognosis
Schistosomiasis and human affairs: antigenic mimicry
Ecological models: approaches to parasite control
Cercarial dermatitis

Other Trematodes (3, chapters 17-18)

Liver flukes: life histories, epidemiology, and pathology

Lung flukes: life histories, epidemiology, and pathology

Lecture Exam 2 (November 7, 2007; given during lab)

Cestodes (4, chapters 20-21)

General: life history patterns among cestodes

Pseudophyllidea of humans: dibothriocephaliasis and sparganosis

Cyclophyllidea of humans: *Taenia* and *Echinococcus*

Larval tapeworms: human disease

Nematodes (5, chapters 22-30)

Enterobia: clinical manifestations, treatment/prognosis, parasitism & human institutions

Trichinella: course of infection, diagnosis/treatment, epidemiology, moral implications

Intestinal nematodes of humans: the diseases, intestinal nematodes and human nutrition

Hookworm disease

Filariasis: course of infection, pathology, treatment and control

Athropods (3, parts of chapters 36-41)

Arthropods as parasites

Arthropods as intermediate hosts/vectors for important human parasites

Parasitism and World Affairs (1)

Molecular techniques in control and prevention of parasitic disease

Why are there no vaccines?

Lecture Exam 3 & Comprehensive Final (December 12 11:00 a.m.– 1:00p.m.)

Please note that we will not have class on the following dates:

Sep. 3 Labor Day Holiday

Nov. 21, 23 Thanksgiving Holiday

INFORMATION FOR PARASITOLOGY LABORATORY

This laboratory is designed to teach you the basics of identification of common parasites of humans. There is no required laboratory manual. I will provide you with the necessary information, **but you must bring your textbook to ALL laboratory sessions.**

It is imperative that you are familiar with good microscope practices, therefore we will spend some time during the first lab period reviewing basic skills. You are responsible for the microscope and slides you examine this semester. I know how many slides of each specimen we have and I expect that there will be the same number at the end of the lab period as there was at the beginning. Of course, an occasional slide is inadvertently broken during the semester and we have budgeted for that. However, I ask you to please be particularly careful when handling the slides. One common way of misplacing and/or breaking slides is to accidentally leave them on the stage of your microscope at the end of the class period, so please check microscope stages before you leave at the end of each laboratory period.

The lab portion of this course meets on Wednesday afternoons from 1:00 – 3:50 p.m in LDB 136. The laboratory will NOT be open at any other time, and because LDB 136 is an extremely busy classroom this fall, there will be NO exceptions so don't ask. If you have another course that conflicts with a portion of the laboratory, then you simply need to make a decision about which course you want to take. A duplicate laboratory will NOT be created for you, and a duplicate laboratory practical will NOT be created for you. Again, do not ask. This is probably a no brainer for most of you, but I receive multiple requests for these types of special favors each year. You may NOT take slides or microscopes out of the laboratory or to another room. The way I see it, if you miss a class, you can either 1) study intensely during the next laboratory to make up the material, or 2) drop the course.

During some laboratories, demonstrations may be set up to supplement the slide collections. These demonstrations generally consist of specimens either too valuable or too rare to allow you to look at them at your own work station. Demonstrations will be set up for ONE laboratory period only and you will be tested over this material.

It was pretty much impossible to have lecture and lab topics coincide. However, I will have at least introduced every major group in lecture prior to looking at it in lab. Therefore, if you prepare well for lecture, you will be prepared for lab. At the very least, it will be helpful, and will save laboratory time, if you briefly review each group of parasites before coming to lab. Believe me, it reduces confusion on your end and helps to reduce blood pressure on my end.

Tentative Lab Schedule

Aug	22	No Lab
	29	Discussion of lab requirements
Sept.	5	Parasitic Amoebae
	12	Parasitic Amoebae/ Intestinal and urogenital flagellates
	19	Hemoflagellates
	26	Lecture Exam 1
Oct.	3	Apicomplexa: Coccidia, gregarines and <i>Plasmodium</i>
	10	Complete parasitic protist drawings; review for lab practical
	17	Lab Practical 1
	24	Platyhelminthes: Trematoda
	31	Platyhelminthes: Trematoda
Nov.	7	Lecture Exam 2
	14	Platyhelminthes: Cestoda
	21	Nematoda; review for lab practical
	28	<i>Thanksgiving Holiday; NO LAB</i>
Dec.	5	Lab Practical 2

Requirements for lab notebook:

1. 3H or 4H drawing pencils (#2 lead is great for scantron exams, but it's awful for drawing!)
2. A three ring binder (probably 1 inch will do)
3. A good eraser
4. High quality, 60lb, slick finish paper (8^{1/2} x 11).
5. Ruler