

**Biology 3870/5870 Parasitology**  
**CRN (3870-81633, 5870-81652) – 4 credit hours**  
**Fall Semester, 2011**

**Instructor** - Dr. J. Mitchell Lockhart

**Office** - Science Building 2029

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**Office Hours:** As posted or by appointment

**Course hours:** Lecture – Tuesday and Thursday, **9:30-10:45**, Science Building Rm. 2022

Lab – **12:00** – 2:50 Wednesday – Science Building 2073

**Textbook** – Foundations of Parasitology, 8<sup>th</sup> edition. Gerald D. Schmidt and Larry S. Roberts, McGraw Hill (**Required**). Text is available online through CourseSmart.

**Laboratory Textbook** – None. Lab material will be available on Blazeview.

**Prerequisites:** BIOL 1107, 1108, 3200 and 3250 or permission of instructor.

**Course Objectives:** A study of the morphology, life cycles, and host-parasite relationships of representative protozoan and metazoan parasites. Human parasites are emphasized.

**Attendance: MANDATORY!** I do keep track of who is and isn't attending lecture and laboratory. This course has a tremendous amount of new concepts and terminology and it serves your best interest to attend class regularly. The ability to digest and incorporate large amounts of information quickly is **CRITICAL** for success in this course. There will be **NO** make-ups of missed labs, quizzes, and other assignments. Any student disrupting the classroom and affecting the learning experience of others will be asked to leave. Cell phone and pager disruptions will **NOT BE TOLERATED**. Should one of these devices disrupt lecture **OR** lab, **you will lose one letter grade on your overall course grade for each occurrence for the owner of said device**. Viewing a cell-phone or pager that activates on "silent" mode during a quiz or exam will be treated as an instance of cheating and handled accordingly (in addition to the prior penalty).

**Students With Documented Disabilities:** Students requiring accommodations or modifications because of documented disabilities should discuss this need with Dr. Lockhart at the beginning of the quarter. Students not registered with Special Services Program must contact the Access Office for Students with Disabilities in Farber Hall. Their phone number is 245-2498.

**Grades:** Since the lecture and laboratory for this course are intimately associated, we will have 3 combined lecture/laboratory exams. Exam questions will be in a variety of formats including (but not limited to) essay, short answer, multiple choice, fill in the blank, drawings, etc...Any questions concerning grading should be brought to the attention of the instructor **NO LATER** than one week following return of the exam. **NO make-up exams will be given**. Laboratory exam questions will involve powerpoint projection of parasitology images.

The final grade will be a combination of your exam scores, final exam score, and the various projects discussed below:

Lecture Exam 1, 2, and 3	200 pts. each (each worth equal)
Laboratory Portfolio	250 pts.
Powerpoint Assignments (2-3)	100-150 pts (each worth equal)
Additional Assignments (?)	???
Comprehensive Final Exam -	250 pts.
Total	1200-1250 pts.

**Grade Scale: 90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, <60 = F**

**Privacy Act:** Because of the Buckley Amendment or Privacy Act, grades will not be discussed over the phone, via email, given to friends, or given to relatives. Final grades will be posted, only at your request, under an anonymous 6 digit number which you choose later in the semester.

**Cheating:** Refer to the Student Code of Ethics in the Valdosta State University Student Handbook. A student caught cheating will be penalized ranging from receiving a zero for that assignment or test to failing the class.

Important Dates: **Midterm day**, October 6, **FINAL EXAM: Friday, December 9, 9:30-11:30 AM**

\* **The Instructor reserves the right to modify the above contents with proper notification.**

**Additional Assignments for Graduate Students:** Graduate students may be asked to give at least one lecture (potentially more) during the semester and will have at least one extra powerpoint assignment.

**Other Assignments:** Your instructor MAY periodically assign some tasks to be completed during class or outside of class. These can be based on lab exercises or lecture material. Your grade will be determined by how well you complete the assignment. Point values remain to be determined.

**Laboratory Portfolio (250 points)**

In laboratory, you will be preparing an exhaustive series of original drawings of your observations of parasites and vectors through the microscope. Each lab unit has a series of designated drawings you are to do. These are to be drawings of your observations through a microscope, not of your ability to copy an image at home from a picture. Should it become necessary that I check every notebook at the end of each lab I will. I will spot check notebooks during lab to see that you are making satisfactory progress. Each drawing should be on the laboratory drawing sheet fill and should be labeled to include identification of the image and magnification. Any significant features of your drawing should be labeled. You will be graded on effort (which isn't hard to determine) **NOT** on artistic ability. Keep these drawings in a notebook and **PROTECT IT CAREFULLY!** You will also scan each of these images and at the end of the semester, you will turn in an original AND electronic portfolio.

**Due Date: One day after the final laboratory period.**

**Powerpoint Assignments (50 points each)**

For these assignments, you will do a "research powerpoint" on a parasite topic from a list that I will provide. Include a complete description of the parasite/group that you choose and look for images and information from the web. Look for both gross and pathologic images if possible. If you can't find any good information on the disease that you chose, start over with another. Do not worry about citing references in your powerpoint images. I am interested in good topics and good images. The number of slides is not important, but be thorough (5 is too few, 500 is too many). You must confirm the topic from the list with me as only one person will do any one topic.

In addition, you must provide three **primary** literature articles on your disease. Both the literature articles and powerpoint should be turned in to me in printed form AND electronically.

**Due Date: Variable**

**Course Outcomes:**

**Course:**

By the end of BIOL 3870, students who successfully complete the course should have:

1. Gained factual knowledge, to include anatomy/histology terminology, methods, and principles, about Parasitology. (DO – 2,3,5; VSUGEO – 5)
2. Learned fundamental principles, generalizations, or theories of Parasitology. (DO – 2,3,5; VSUGEO – 5)
3. Learned to apply course material (to improve thinking, problem-solving, and decisions) in Parasitology. (DO – 2,3,5; VSUGEO – 5)
4. Developed specific skills, competencies and points of view needed by professional in the fields most closely related to Parasitology. (DO – 2,3,5; VSUGEO – 5)
5. Acquired an interest in learning more by asking questions and seeking answers about Parasitology. (DO – 2,3,5; VSUGEO – 5)

**Department:**

1. Develop and test hypotheses, collect and analyze data, and present the results and conclusions in both written and oral formats used in peer-reviewed journals and at scientific meetings.
2. Describe the evolutionary processes responsible for biological diversity, explain the phylogenetic relationships among the major taxa of life, and provide illustrative examples.
3. Demonstrate an understanding of the cellular basis of life.
4. Relate the structure and the function of DNA/RNA to the development of form and function of the organism and to heredity.
5. Interpret ecological data pertaining to the behavior of the individual organism in its natural environment; to the structure and function of populations, communities, and ecosystems; and to human impacts on these systems and the environment.

**Valdosta State University General Education Outcomes:**

1. Students will demonstrate understanding of the society of the United States and its ideals. They will possess the requisite knowledge of the society of the United States, its ideals, and its functions to enable them to become informed and responsible citizens. They will understand the connections between the individual and society and the roles of social institutions. They will understand the structure and operational principles of the United States government and economic system. They will understand United States history and both the historical and present role of the United States in the world.
2. Students will demonstrate cross-cultural perspectives and knowledge of other societies. They will possess sufficient knowledge of various aspects of another culture, including the language, social and religious customs, aesthetic expression, geography, and intellectual and political history, to enable them to interact with individuals within that society from an informed perspective. They will possess an international viewpoint that will allow them to examine critically the culture of their own nation and to participate in global society.
3. Students will use computer and information technology when appropriate. They will demonstrate knowledge of computer concepts and terminology. They will possess basic working knowledge of a computer operating system. They will be able to use at least two software tools, such as word processors, spreadsheets, database management systems, or statistical packages. They will be able to find information using computer searching tools.
4. Students will express themselves clearly, logically, and precisely in writing and in speaking, and they will demonstrate competence in reading and listening. They will display the ability to write coherently in standard English; to speak well; to read, to understand, and to interpret the content of written materials in various disciplines; and to listen effectively and to understand different modes of communication.
5. Students will demonstrate knowledge of scientific and mathematical principles and proficiency in laboratory practices. They will understand the basic concepts and principles underlying scientific methodology and be able to collect, analyze, and interpret data. They will learn a body of scientific knowledge and be able to judge the merits of arguments about scientific issues. They will be able to perform basic algebraic manipulations and to use fundamental algebraic concepts to solve word problems and equations. They will be able to use basic knowledge of statistics to interpret and to analyze data. They will be able to evaluate arguments based on quantitative data.
6. Students will demonstrate knowledge of diverse cultural heritages in the arts, the humanities, and the social sciences. They will develop understanding of the relationships among the visual and

performing arts, literature and languages, and history and the social sciences. Students will be versed in approaches appropriate to the study of those disciplines; they will identify and respond to a variety of aesthetic experiences and engage in critical thinking about diverse issues. They will be able to identify the components of and respond to aesthetic experiences in the visual and performing arts. They will develop knowledge of world literature within its historical and cultural frameworks. They will understand modern issues within a historical context and the role of the individual in various forms of societies and governments.

7. Students will demonstrate the ability to analyze, to evaluate, and to make inferences from oral, written, and visual materials. They will be skilled in inquiry, logical reasoning, and critical analysis. They will be able to acquire and evaluate relevant information, analyze arguments, synthesize facts and information, and offer logical arguments leading to creative solutions to problems.
8. Students will demonstrate knowledge of principles of ethics and their employment in the analysis and resolution of moral problems. They will recognize and understand issues in applied ethics. They will understand their own value systems in relation to other value systems. They will judge values and practices in a variety of disciplines.

**BIOL 3870/5870 Parasitology**  
**Dr. J. Mitchell Lockhart**

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**Tentative Lecture Outline - This is the order in which we will cover topics.**

**TOPIC**

Introduction to Parasitology  
Basic Principles and Concepts I: Parasite Systematics, Ecology and Evolution  
Basic Principles and Concepts II: Immunology and Pathology  
Parasitic Protozoa: Form, Function, and Classification  
Kinetoplasta: Trypanosomes and Their Kin  
Other Flagellated Protozoa  
The Amebas  
Phylum Apicomplexa: Gregarines, Coccidia, and Related Organisms  
Phylum Apicomplexa: Malaria Organisms and Piroplasms  
Phylum Ciliophora: Ciliated Protistan Parasites  
Phyla Microspora and Myxozoa: Parasites with Polar Filaments  
The Mesozoa: Pioneers or Degenerates?  
Introduction to Phylum Platyhelminthes  
Trematoda: Aspidobothrea  
Trematoda: Form, Function, and Classification of Digeneans  
Digeneans: Strigeiformes  
Digeneans: Echinostomatiformes  
Digeneans: Plagiorchiformes and Opisthorchiformes  
Monogenoidea  
Cestoidea: Form, Function, and Classification of the Tapeworms  
Tapeworms  
Phylum Nematoda: Form, Function, and Classification  
Nematodes: Trichinellida and Dioctophymatida, Enoplean Parasites  
Nematodes: Tylenchina, Pioneering Parasites  
Nematodes: Strongyloidea, Bursate Rhabditians  
Nematodes: Ascaridomorpha, Intestinal Large Roundworms  
Nematodes: Oxyuridomorpha, Pinworms  
Nematodes: Gnathostomatomorpha and Spiruromorpha, A Potpourri  
Nematodes: Filarioidea, Filarial Worms  
Nematodes: Dracunculoidea, Guinea Worms, and Others  
Phylum Nematomorpha, Hairworms  
Phylum Acanthocephala: Thorny-Headed Worms  
Phylum Arthropoda: Form, Function, and Classification  
Parasitic Crustaceans  
Phylum Pentastomida: Tongue Worms  
Parasitic Insects: Phthiraptera, Chewing and Sucking Lice  
Parasitic Insects: Hemiptera, Bugs  
Parasitic Insects: Fleas, Order Siphonaptera  
Parasitic Insects: Diptera, Flies  
Parasitic Insects: Strepsiptera, Hymenoptera, and Others  
Parasitic Arachnids: Subclass Acari, Ticks and Mites

**Lecture Exams:**

- 1 – September 15
- 2 – October 20
- 3 – December 1

Final Exam: Friday, December 9, 9:30-11:30 AM

**Tentative Lab Schedule:**

Lab 1 – Order Trypanosomatida – Trypanosomes

Lab 2 – Order Kinetoplastida – Leishmania

Lab 3 – Other Flagellate Protozoa

Lab 4 – Phylum Ciliophora

Lab 5 – Phylum Sarcodina

Lab 6 – Phylum Apicomplexa- Plasmodium vivax

Lab 7 – Phylum Apicomplexa – Plasmodium falciparum

Lab 8 – Phylum Apicomplexa – Coccidia

Lab 9 – Phylum Platyhelminthes – Order Strigeiformes

Lab 10 – Echinostomatiformes

Lab 11 – Nematoda I

Lab 12 – Nematoda II

Lab 13 – Cestoda

Lab 14 - Ectoparasites