

Biology 3870 Parasitology
CRN 52136 – 4 credit hours
Summer Semester, 2019

Instructor - Dr. J. Mitchell Lockhart

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Office Hours: As posted or by appointment

Course hours: Lecture – M T W R F, **9:35AM** - 11:05AM, Science Building Rm. 1202

Lab – M T R **11:15AM** – 2:05PM – Science Building 2071

Textbook – Foundations of Parasitology, 9th edition. Gerald D. Schmidt and Larry S. Roberts, McGraw Hill (**Suggested**). Text is available online through CourseSmart.

Laboratory Textbook – None. Lab material will be available on Blazevue.

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 considerable amount of new concepts and terminology and it serves your best interest to attend class regularly. Any student disrupting the classroom and affecting the learning experience of others will be asked to leave. Along these lines, **NO** cell-phones, beepers, and/or associated earpieces or headphones are allowed either in the **lecture room or laboratory**. If you bring them to class, they must be turned off (**not on vibrate**) and placed **out of view**. Students are not permitted to leave the lecture or laboratory rooms to receive messages during regular course time. My policy is not to give a warning, rather, if a cell-phone or beeper activates during lecture/laboratory or you attempt to view or send messages, **you will lose one LETTER GRADE from your final grade**. 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 above penalty**). Those wishing to utilize laptop computers as part of the class are required to sit in the first 2 rows of the classroom. Viewing any material other than class material will result in the same penalties above. University guidelines dictate that students missing 20% of lecture or laboratory sessions for this class are subject to receiving a grade of "F" regardless of their standing in the course.

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 semester. Students with disabilities who are experiencing barriers in this course may contact the Access Office for assistance in determining and implementing reasonable accommodations. The Access Office is located in Farber Hall. The phone numbers are 229-245-2498 (V), 229-375-5871 (VP) and 229-219-1348 (TTY). For more information, please visit VSU's Access Office or email: access@valdosta.edu.

Grades: Lecture 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	100 pts. each (each worth equal)
Laboratory Portfolio	150 pts.
Powerpoint Assignment	50 pts
Laboratory Exams (2)	100 pts each
Comprehensive Final Exam -	200 pts.
Case History Assignments	Variable
Total	600-700 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

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**, TBD, **FINAL EXAM: August 1 9:35AM – 11:35PM**

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

Other Assignments/Case History 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 (200 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 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)

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.

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: Plagiorchiiformes and Opisthorchiiformes
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 – July 8 or 9
- 2 – July 16 or 17
- 3 – July 31

Final Exam: August 1, 9:35-11:35AM

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

Lab Exam 1 – July 15

Lab Exam 2 – July 30