Biology 5870A Parasitology
CRN 86217 – 4 credit hours
Fall Semester, 2023
Instructor - Dr. J. Mitchell Lockhart
Office - Science Building 2029
Phone: 333-5767 / 333-5759 (Biology Office)
Email: jmlockha@valdosta.edu
Office Hours: Monday 10:00-11:00AM, Tuesday 8:30-9:30AM, Wednesday 11:00AM-2:00PM (virtual by Microsoft Teams) or by appointment
Course hours: Lecture – Monday, Wednesday, Friday 8:00-8:50 AM, BCB 2202
Laboratory – Monday, 11:00AM – 1:50PM, BCB 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 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 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.

From the Valdosta State University Catalog:

Whether online or face-to-face, a student who misses or does not participate in more than 20% of the scheduled course or course activities could be subject to receiving a failing grade in the course.

The University does not issue an excuse to students for class absences. In case of absences as a result of illness or special situations, instructors may be informed of reasons for absences, but these are not excuses.

I will enforce this absence limit, therefore after 9 lecture absences (for any reason) a student will be assigned an F for the course. After 3 laboratory absences (for any reason), a student will be assigned an F for the course. Repeated tardiness will be dealt with by administratively withdrawing the student(s) from the course AND/OR mandatory first of class quizzes for the entire class.

Students With Documented Disabilities: Students with disabilities who are experiencing barriers in this course may contact the Access Office (**https://www.valdosta.edu/student/disability/**) for assistance in determining and implementing reasonable accommodations. The Access Office is located in University Center Room 4136 Entrance 5. The phone numbers are 229-245-2498 (V), 229-375-5871. For more information, please visit VSU's Access Office or email: **access@valdosta.edu**. To request reasonable accommodations for pregnancy and childbirth, contact Ms. Myia Miller, Title IX Compliance Officer, at **maburden@valdosta.edu**. Please note, you will be required to provide documentation from an appropriately licensed medical professional indicating the requested accommodations are medically necessary.

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.

For the laboratory grade, 2 lab practicals (tentative) will be given. These practical will be given online. Lockdown Browser and a Webcam are MANDATORY. If your laptop cannot perform these functions then find one that can or you will be required to take exams in the VSU Testing Center. The **Lab practicals cannot be made up. If a lab practical is missed, you will receive a zero for that lab grade.**

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	200 pts.
Powerpoint Assignments (1-2)	50-100 pts (each worth equal)
Laboratory Exams (2) (online)	100 pts each
Comprehensive Final Exam	200 pts.
Total	950-1000 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.

Title IX: Valdosta State University (VSU) upholds all applicable laws and policies regarding discrimination on the basis of race, color, sex (including sexual harassment and pregnancy), sexual orientation, gender identity or expression, national origin, religion, age, veteran status, political affiliation, or disability. The University prohibits specific forms of behavior that violate Title IX of the Education Amendments of 1972. Title IX of the Education Amendments of 1972 prohibits discrimination on the basis of sex in education programs and activities that receive federal funding. VSU considers sex discrimination in any form to be a serious offense. Title IX refers to all forms of sex discrimination committed against others, including but not limited to: sexual harassment, sexual assault, sexual misconduct, and sexual violence by other employees, students or third parties and gender inequity or unfair treatment based on an individual's sex/gender. The designated Title IX Coordinator for VSU is Ms.

Selenseia Holmes. To view the full policy or to report an incident visit: **https://www.valdosta.edu/administration/student-affairs/title-ix/**

Student Opinion of Instruction Statement: At the end of the term, all students will be expected to complete an online Student Opinion of Instruction survey (SOI) that will be available through SmartEvals. Students will receive an email notification through their VSU email address when the SOI is available (generally at least one week before the end of the term). SOI responses are anonymous to instructors/administrators, and they will be able to access results only after they have submitted final grades. Before final grade submission, instructors will not be able to see any responses, but they can see the percentage of students who have or have not completed their SOIs. While instructors will not be able to see student names, an automated system will send a reminder email to those who have yet to complete their SOIs. Students who withdraw or drop a course will also be sent invitations to complete the Dropped Course Survey. Complete information about the SOIs, including how to access the survey, is available on the SOI Procedures webpage.

Virtual Proctored Exams:

USING LOCKDOWN BROWSER AND A WEBCAM FOR ONLINE EXAMS

This course requires the use of LockDown Browser and a webcam for online exams. The webcam can be built into your computer or can be the type that plugs in with a USB cable. Watch this short video (http://www.respondus.com/products/lockdown-browser/student-movie.shtml) to get a basic understanding of LockDown Browser and the webcam feature. A student Quick Start Guide (http://www.respondus.com/products/monitor/guides.shtml) is also available.

Graduate Student Component:

Graduate students will perform additional activities for this course. This may include giving a lecture, performing additional dissections, and/or preparing additional powerpoint assignments.

Important Dates: Midterm – October 7; Final Exam – Wed., December 6, 8:00AM-10:00 AM

* The Instructor reserves the right to modify the contents of this syllabus with proper notification.

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 (200 points)

In laboratory, you will be preparing an exhaustive series of photos and original drawings of your observations of parasites and vectors through the microscope. Each lab unit has a series of designated drawings/photographs you are to do. 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: To be determined

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 electronically.

Due Date: Variable

Course Outcomes:

Learning Outcomes:

On satisfying the requirements of this course, students will have the knowledge and skills to:

1. Discuss the concept of parasitism and other animal associations; explain the concept of harm; understand the basic features and characteristics of hosts.
2. Tell the advantages and disadvantages of parasitic life style; discuss the economic consequences of parasitic diseases and difficulties associated with eliminating/controlling parasitic diseases.
3. Tell the major types of protozoan parasites, their adaptive strategies and damage; discuss fungal and plant parasites.
4. Articulate major helminth and arthropod parasites, their taxonomy and harms caused.
5. Discuss the major means of transmission of parasites and the factors that influence parasite transmission.
6. Explain the host defense mechanisms against parasitic infections and mechanisms of co-infections (e.g. parasite HIV co-infection).
7. Articulate the types of pathology caused by parasites, pathological mechanism, factors influencing pathology and damage to specific organs.
8. Discuss about useful parasites.
9. Explain the importance of correct parasite identification and methods of identification.
10. Articulate the major aspects of controlling parasites and treating parasitic diseases.

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 modem 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 Parasitology
Dr. J. Mitchell Lockhart

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: Gnthostomatomorpha and Spiruromorpha, A Potpourri
Nematodes: Filaroidea, 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 18
2 – October 25
3 – December 1
Final Exam: Wednesday, December 6, 8:00-10:00AM

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 – Following Lab 7

Lab Exam 2 – Following Lab 14