

**Vertebrate Histology – BIOL 4400 (CRN 81780 – Sec. A, CRN 81781 – Sec. B)**

**Fall Semester, 2014**

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

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

**Course hours:** Lecture – Monday, Wednesday, Friday - **9:00-9:50 AM** BC 2022

Laboratory – Sec. A – Monday and Wednesday – 10:00-11:50 AM BC 2070

Sec. B – Monday and Wednesday – 12:00-1:50 PM BC 2070

Lecture/Laboratory – 9:00-12:15 Tuesday/Thursday, Biology Building Room 2071

**Textbook** - Junqueira's Basic Histology Text & Atlas, Anthony L. Mescher (12<sup>th</sup> edition) (**Required**)

**Laboratory Textbook** - None, labs will be available online.

**Prerequisites:** BIOL 2230 and BIOL 2270 and 8 semester hours of upper division biology courses.

**Course Objectives:** As stated in your handbook, the study of vertebrate histology with emphasis on the four primary tissues (epithelium, connective, muscle, and nerve). Laboratory work consists primarily of detailed microscopic study and drawings of tissues from prepared slides.

**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 are allowed either in the **lecture room or laboratory**. My policy is not to give a warning, rather, if a cell-phone or beeper activates during lecture/laboratory, 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 row of the classroom. Viewing anything other than BIOL 4400 coursework on a computer during course time will result in the loss of one **LETTER GRADE** from your final grade. University guidelines dictate that students missing 20% of lecture sessions for this class are subject to receiving a grade of "F" regardless of their standing in the course per the discretion of the instructor.

**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 4 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 histologic images.

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

Exam 1, 2, 3 and 4	200 pts. each (each worth equal)
Laboratory Portfolio	300 pts.
Pathology Powerpoint	50-100 pts.
Comprehensive Final Exam	300 pts.
Total	1450-1500 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, 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 – October 2; Final Exam – Thursday, December 11, 8:00-10:00 AM

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

### **Laboratory Portfolio (300 points)**

In laboratory, you will be preparing an exhaustive series of original drawings of your observations of tissues 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 fill one page of paper 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.**

### **Pathology Powerpoint (100 points)**

For this assignment, you will do a "research powerpoint" on a pathologic topic of your choosing (for example, skin cancer, breast cancer, etc...I will provide a list). Select a topic (confirm it with me to avoid duplication) and prepare a powerpoint on your topic. Include word slides with a description of your topic and, MOST IMPORTANTLY, histologic images of both NORMAL and PATHOLOGIC tissues. If you can't find histologic/pathologic images – SWITCH TOPICS! Do not worry about citing references. 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, 30-40 should be sufficient).

**Due Date: To be determined**

## **Course Outcomes:**

### **Course:**

By the end of BIOL 4400, students who successfully complete the course should have:

1. Gained factual knowledge, to include anatomy/histology terminology, methods, and principles, about Vertebrate Histology. (DO – 2,3,5; VSUGEO – 5)
2. Learned fundamental principles, generalizations, or theories of Vertebrate Histology. (DO – 2,3,5; VSUGEO – 5)
3. Learned to apply course material (to improve thinking, problem-solving, and decisions) in Vertebrate Histology. (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 Vertebrate Histology. (DO – 2,3,5; VSUGEO – 5)
5. Acquired an interest in learning more by asking questions and seeking answers about Vertebrate Histology. (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 4400 Tentative Lecture Schedule  
FALL 2014**

This is the order which we will go through topics:

1. Histology and Its Methods of Study
2. The Cytoplasm
3. The Cell Nucleus
4. Epithelial Tissue
5. Connective Tissue
6. Adipose Tissue
7. Cartilage
8. Bone
9. Nerve Tissue and The Nervous System
10. Muscle Tissue
11. The Circulatory System
12. Blood
13. Hemopoiesis
14. The Immune System and Lymphoid Organs
15. Digestive Tract
16. Organs Associated with the Digestive Tract
17. The Respiratory System
18. Skin
19. The Urinary System
20. Endocrine Glands
21. The Male Reproductive System
22. The Female Reproductive System
23. The Eye and Ear: Special Sense Organs

Probable Exam Dates:

Exam 1 – September 15

Exam 2 – October 8

Exam 3 – November 3

Exam 4 – December 3

Final Exam – Thursday, December 11 - 8:00-10:00 AM

**BIOL 4400 Tentative Lab Schedule  
FALL 2014**

This is the order which we will go through labs

1. Cell Structure I
2. Cell Structure II
3. Epithelium and Glands
4. Connective Tissue I
5. Connective Tissue II
6. Connective Tissue III
7. Nervous Tissue
8. Muscle
9. Cardiovascular and Lymphatic Systems
10. Hematopoietic System I: Peripheral Blood
11. Hematopoietic System II: Bone Marrow
12. Immune System I
13. Immune System II
14. Oral and Nasal Cavities
15. Digestive System I
16. Digestive System II
17. Salivary Glands and Pancreas
18. Liver and Gall Bladder
19. Respiratory System
20. Integumentary System
21. Urinary System
22. Endocrine System I
23. Endocrine System II
24. Male Reproductive System I
25. Male Reproductive System II
26. Female Reproductive System I
27. Female Reproductive System II
28. Female Reproductive System III
29. The Eye
30. The Ear