

◆◆ *Syllabus BIOL 414 Animal Histology and Lab (Spring 2011)* ◆◆

**Course Information and Objectives ◆◆ BIOL 414 Animal Histology and Lab ◆◆**

Lecture-Discussion: Tues. and Thurs. 9:30–10:55 am in AH 107.

Laboratory-Lecture: Tues. and Thurs. 11:00–12:25 pm in AH 107.

(Lecture and lab are integrated. Both time slots may be used for both lecture and lab.

Lecture and Lab are co-requisites and must be taken concurrently.)

Offered Spring Semester in odd-numbered years.

Histology is a Group I Biology elective applicable to the Biology and Biomedical Science Majors.

A study of the microscopic and ultramicroscopic structure of mammalian tissues and organs, *i.e.*, microscopic anatomy. Special emphasis is placed on the relation of structure to function. This course gives the student a thorough and detailed overview of the various human tissues and organs. This is an **upper level** course designed for students who want intensive preparation in microanatomy. The course is designed for qualified juniors and seniors. Students are expected to have college level preparation in mammalian anatomy and/or physiology (see **Prerequisites** below).

The course highlights normal human histology and the functional significance of microanatomical structures. The lab and lecture portions of the course are completely integrated; both lecture and lab material will be covered during each session. The amount of time devoted to lecture or lab will vary depending on the particular topic. Lecture sessions will include brief reviews of lecture and lab material and are intended to guide students rather than to present all the required details of the course material. (This means you'll need to study the textbooks, supplement, and lab materials in addition to lecture notes.) Lecture and lab study materials will include CD, World Wide Web, digital images available on a shared directory, DVDs, and microscope slides. Laboratory sessions will include some presentations by the professor as well as independent and group work using the study materials. Successful students will learn how to locate and identify normal mammalian tissues and organs using photomicrographs, microscope slides, digital images, CD, and WWW resources. Successful students will be able to use the specific and precise terminology of the field of histology.

★ ***To gain the most from the course (and to achieve success as measured by good grades) you will want to study in the laboratory for several hours each week in addition to the scheduled class and lab sessions.***

A cooperative and open atmosphere is expected during all class and lab meetings. Lecture and laboratory materials should be studied simultaneously and some use of lab time to review lecture material is expected. The laboratory will be open for extra review during posted hours. Students are encouraged to study together but no cooperation during exams is permitted.

**Prerequisites:** Junior or Senior class standing. BIOL 111 and 112 (Principles of Biology I and II and their labs) and 4 additional hours of Biology. It is recommended that your previous biology courses include preparation in anatomy and/or physiology [for example, *at least* one of the following with lab: BIOL 212 Comparative Anatomy, BIOL 312 Vertebrate Physiology, or BIOL 217-218 Anatomy and Physiology I and II]. In addition, BIOL 211 (Embryology) is recommended and biochemistry will be helpful. **Students who have not made at least a "C" in each of the prerequisites should repeat the necessary courses before attempting further course work in Biology.** Students without the prerequisites must have permission of the professor or Department Chair to enroll.

**Professor:**

**Dr. Anna E. Ross**, Professor of Biology.

**Office:** AH 111 **Phone:** 321-3436 (Please record a message if I'm not in the office.)

**E-mail:** [aross@cbu.edu](mailto:aross@cbu.edu) (email is the best way to contact me.) <http://www.cbu.edu/~aross>

Students are encouraged to submit questions and suggestions via email.

Questions and answers that may be helpful to the class will be posted on the histology course page <http://www.cbu.edu/~aross/histol.htm>

**Office Hours:** *Mon., Wed., Thurs.; and Fri. 2:00-4:30 pm.*

Additional appointment times are available upon request (see posted schedule).

## Required Materials

**R&P** Ross, Michael H. and Wojciech Pawlina. 2010. *Histology: A Text and Atlas*. Sixth Edition. [Lippincott Williams & Wilkins](http://www.lippincott-williams-wilkins.com). ISBN: 978-0-7817-7200-6

Eroschenko, Victor P. 2007. *DiFiore's Atlas of Histology with Functional Correlations*. 11<sup>th</sup> edition ISBN 978-0-7817-7057-6 [Lippincott Williams & Wilkins](http://www.lippincott-williams-wilkins.com). (with CD) Earlier editions also acceptable: Tenth Edition. ISBN 0-7817-5021-0

Course Supplement: Ross, Anna E. 2011. *BIOL 414 Animal Histology Lecture and Laboratory Course Supplement*, 2011 edition.

Course Web page : <http://www.cbu.edu/~aross/histol.htm>

Digital images and other required resources: [\\facstaff\biology](http://www.cbu.edu/~aross/histol.htm)

**Students must provide their own disposable gloves (latex or nitrile examination gloves)**

**WWW Resources:** [Also see the Histology course web page <http://www.cbu.edu/~aross/histol.htm> ]

- ☆ Atlas of Microscopic Anatomy  
<http://www.anatomyatlases.org/MicroscopicAnatomy/MicroscopicAnatomy.shtml>
- ☆ Ed's Basic Histology Galley (Kansas City Univ) <http://www.pathguy.com/histo/000.htm>
- ☆ **Histotechnology Tutorials** (How slides are made) \*\*\* Unit 1  
<http://www-medlib.med.utah.edu/WebPath/HISTHTML/HISTO.html>
- ★ Human Histology (Dr. Bell U New England) <http://faculty.une.edu/com/abell/histo/histolab2.htm>
- ★ **JayDoc Histo Web** (Kansas) Fully annotated images. \*\*\*  
<http://www.kumc.edu/instruction/medicine/anatomy/histoweb/index.htm>
- ★ **LUMEN Histology** from Loyola. Excellent slides plus explanatory text. \*\*\* **Use this site all semester!**  
[http://www.stitch.luc.edu/lumen/MedEd/Histo/frames/histo\\_frames.html](http://www.stitch.luc.edu/lumen/MedEd/Histo/frames/histo_frames.html)  
<http://www.meddean.luc.edu/lumen/MedEd/Histo/virtualhistology.htm>
- ☆ Microscopy Primer (Java tutorials)  
<http://micro.magnet.fsu.edu/primer/virtual/virtual.html>
- **NUS Medical Histology** Sections with thumbnails (many are annotated).  
<http://www.med.nus.edu.sg/ant/histonet/HIS.html>
- ☆ Oklahoma U Histology \*\*\* (Lab notes and images keyed to RR&K text)  
<https://casweb.ou.edu/pbell/histology/Outline/contents.html>  
Practice Quizzes (images and answers)  
<https://casweb.ou.edu/pbell/histology/Tests/quizmenu.html>
- ☆ Rhodin Atlas of Histology online <http://projects.galter.northwestern.edu/rhodin/>
- ☆ Southern Illinois Univ. Histology <http://www.siumed.edu/~dking2/index.htm>
- ☆ Temple U. Histology <http://astro.temple.edu/~sodicm/labs/index.htm>
- ★ **U Fla Histology Tutorial** (Excellent Quiz and Review modes; keyed to RR&K text) \*\*\*  
<http://medinfo.ufl.edu/year1/histo/>
- ★ **U Texas Houston** Histology illustrated course notes and quizzes \*\*  
<http://www.uth.tmc.edu/pathology/histology/index.html>
- **UWMS Histology** <http://histologyatlas.wisc.edu/uw/histo.htm>
- **Virtual Slidebox** (Univ of Iowa)  
[http://www.path.uiowa.edu/virtualslidebox/nlm\\_histology/content\\_index\\_db.html](http://www.path.uiowa.edu/virtualslidebox/nlm_histology/content_index_db.html)

## ◆◆ Syllabus BIOL 414 Animal Histology and Lab (Spring 2011) ◆◆

### Student Responsibilities

You are responsible for all information presented during lecture and laboratory sessions. Lecture and laboratory attendance are required. Laboratory and class sessions will require the entire scheduled period. Do not expect to be out of class or lab before the scheduled time. Because “lecture” provides guidance for the lab work, lecture and lab work will be integrated during the 9:30 to 12:25 time period. Additional lab work outside of scheduled times is required. Attendance at lecture and lab exams is required. If you miss lecture or lab for any reason, you are expected to inform me and you are responsible for making up the missed work on your own time (you must have me verify that you have made up missed lab work). Unexcused absences will lower your grade. Excessive absences are grounds for automatic failure.

You will need to read the assigned text material and the appropriate lab material before you come to lecture or lab. You will need your textbooks, atlases, and course supplement during all lecture and lab meetings.

★ *To be successful in this course you will want to study in the lab for several hours each week in addition to the scheduled lab times.*

- No wireless devices (cell phones, pagers, PDAs or calculators), no programmable calculators, and no devices with ear plugs are allowed during exams, quizzes, labs or classes. Students are encouraged to use laptop computers during class or lab but only for directly course-related tasks.

### Exams and Grading

Grading scale: 90.0-100% = A, 80.0-89.9% = B, 70.0-79.9% = C,  
60.0-69.9% = D, below 60.0% = F.

An honor system is in effect for all lecture and lab exams. It is considered a violation of the CBU Code of Conduct to receive or give assistance during an examination. Graded exams and answer keys will be available following each exam. The last day to review your previous lab and lecture exams is the last day of class. ☆ In this course, the possession or use of old or current Moodle questions, lecture or lab examination questions or answers is considered a violation of the CBU Code of Conduct.

### The Lecture Course:

Five lecture exams plus a comprehensive final exam will be given. Each will count 100 points (a total of 600 points for the course). No exam may be dropped. *Makeup exams will only be available under extraordinary circumstances.* ★ *If you miss an exam without prior arrangement and fail to notify me within one hour of the scheduled exam time, you will not be eligible for a makeup exam and you will receive a zero for the missed exam.*

Lecture exams will cover the topics indicated on the attached schedule unless specific changes are announced in class. Each exam will cover material from lecture, the text, atlases, and the course supplement. It is expected that material studied in laboratory will be incorporated into your responses on lecture exams. Exams will consist of specific essay questions and objective questions. Exam questions may require well labeled diagrams and will always require detailed and precise responses employing the specialized terminology introduced in the course. The comprehensive final exam will consist entirely of objective questions.

### The Laboratory Course:

Five lab exams will be given; each will count 100 points (a total of 500 points for the course). No lab exam may be dropped. Lab exams will be practical and will require you to identify subcellular structures, cells, tissues, organs and their structural details from microscope slides, digital images, photomicrographs, and diagrams. ★ *ALL LAB EXAMS ARE COMPREHENSIVE*, but the most recent material will be emphasized.

★ *Students are cautioned that the lab exams become increasingly challenging as the course progresses.*

★ *It may be impossible to make up a missed lab exam. If you miss a lab exam without prior arrangement and fail to notify me within one hour of the scheduled exam time, you will not be eligible for a makeup exam and you will receive a zero for the missed lab exam.* You will also be evaluated on your effort and cooperation with other students in lab. Early in the course, it is suggested that you make annotated drawings and make these available for inspection during lab sessions. You are required to return all materials and equipment in good condition after each lab session and after open labs. You need to report any damage to microscopes, slides, etc. You will be charged for the replacement cost of broken or missing microscope slides or other materials.

◆ ◆ *Course Schedule BIOL 414 Animal Histology and Lab (Spring 2011)* ◆ ◆

| Date      | Topic   Activity                   | R&P     | Laboratory                                    |
|-----------|------------------------------------|---------|---|
| Jan 11 Tu | Histology, Cells                   | 1, 2    | Microscopes, Cheek cells (slide preparation)  |
| 13 Th     | Histology, Organelles              | 1, 2    | Microscopes; digital images, Cytology         |
| 18 Tu     | Cells, Tissues                     | 2, 3, 4 | Cell Division & Cytology (including E.M.)     |
| 20 Th     | Cells, Tissues                     | 2, 3, 4 | Epithelium                                    |
| 25 Tu     | Epithelium                         | 5       | Epithelium                                    |
| 27 Th     | Glandular Epithelium               | 5       | Epithelium                                    |
| Feb 1 Tu  | <b>LECTURE EXAM 1</b>              | (1-5)   | <b>LAB EXAM 1</b>                             |
| 3 Th      | Connective Tissue                  | 6       | Connective Tissue                             |
| 8 Tu      | Connective Tissue                  | 6, 9    | Connective Tissue                             |
| 10 Th     | Cartilage and Bone                 | 7, 8    | Cartilage and Bone                            |
| 15 Tu     | Bone, Blood                        | 8, 10   | Bone, Blood                                   |
| 17 Th     | Blood                              | 10      | Blood   |
| 22 Tu     | <b>LECTURE EXAM 2</b>              | (5-10)  | <b>LAB EXAM 2, Comprehensive</b>              |
| 24 Th     | Muscle                             | 11      | Muscle  |
| Mar 1 Tu  | Muscle, Neural Tissue              | 11, 12  |   |
| 3 Th      | Neural Tissue                      | 12      | Neural Tissue                                 |
| 7-11      | <b>SPRING BREAK</b>                |         |   |
| 15 Tu     | Spinal Cord                        | 12      | Spinal Cord                                   |
| 17 Th     | Cerebellum & Cerebrum              | 12      | Cerebellum & Cerebrum                         |
| 22 Tu     | <b>LECTURE EXAM 3</b>              | (11-12) | <b>LAB EXAM 3, Comprehensive</b>              |
| 24 Th     | Cardiovascular System              | 13      | Cardiovascular System                         |
| 29 Tu     | Lymphatic System                   | 14      | Lymphatic System                              |
| 31 Th     | Integument                         | 15      | Integument                                    |
| Apr 5 Tu  | Digestive System                   | 16, 17  | Digestive System (through stomach for Unit 4) |
| 7 Th      | Digestive System                   | 17, 18  | Digestive System                              |
| 12 Tu     | <b>LECTURE EXAM 4</b>              | (13-17) | <b>LAB EXAM 4, Comprehensive</b>              |
| 14 Th     | Digestive System                   | 17, 18  | Digestive System                              |
| 19 Tu     | Respiratory System                 | 19      | Respiratory System                            |
| 21 Th     | <b>HOLIDAY</b>                     |         |   |
| 26 Tu     | Urinary System                     | 20      | Urinary System                                |
| Apr 28 Th | <b>LECTURE EXAM 5</b>              | (17-20) | Lab Review                                    |
| May 4-10  | <b>COMPREHENSIVE LECTURE FINAL</b> |         | <b>LAB EXAM 5, Comprehensive</b>              |

 **Keep a record of your Exam Scores**

|                  |              |
|------------------|--------------|
| Lecture Exam 1 = | Lab Exam 1 = |
| Lecture Exam 2 = | Lab Exam 2 = |
| Lecture Exam 3 = | Lab Exam 3 = |
| Lecture Exam 4 = | Lab Exam 4 = |
| Lecture Exam 5 = | Lab Exam 5 = |
| Lecture Final =  | Lab Avg.     |
| Lecture Avg.     |              |