



## BIO 330: Histology Fall 2012



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Office Hours:  
Mon: 9-11 AM  
Tue: 10-11 AM  
Thu: 10-11 AM & 1-2 PM

**Lecture:** T & Th 8:30–9:20 PM (Boehm 260)

**Laboratory:** Section 011 M 2:00–4:50 PM (Boehm 240)  
Section 012 T 2:00-4:50 PM (Boehm 240)

**Required Text:** Ross, M.H. and W.P. Pawlina. 2006. Histology: a text and atlas. 5<sup>th</sup> edition. Lippincott Williams & Wilkins; Baltimore, MD.

**Additional Supplies:** The following supplies are required for select labs (see lab schedule); Dissecting kit, gloves, safety goggles, lab coat (optional).

**Course Description:** The microscopic study of cells, tissues and organ systems of the vertebrates. Laboratory will consist of microscopic study of prepared whole mounts and tissue sections.

**Course Objectives:** Upon completion of this course, the successful student should be able to:

1. Identify the cells of organ systems under the light microscope and compare them to electromicrographs.
2. Identify the basic tissues of organ systems.
3. Identify the various organs of organ systems.
4. Compare cell and tissue structure of various organ systems.
5. Describe the relationship of structure and function in organ systems.
6. Describe the techniques used in the preparation of tissues and the various methods of microscopic study.
7. Understand the applications and limitations of the various methods of preparation and types of microscopy used today.
8. Understand the use of histochemical staining methods in relation to structure and function.

### **Grading:**

|   |                   |
|---|-------------------|
| Lecture Exam 1                            | 100 points        |
| Lecture Exam 2                            | 100 points        |
| Lecture Final (semi-cumulative)           | 150 points        |
| Lecture Participation                     | 20 points         |
| <u>Lecture Quizzes (16 @ 5 pts. each)</u> | <u>80 points</u>  |
| Lecture Total                             | 450 points        |
| <br>                                      |                   |
| Lecture Total                             | 450 points        |
| <u>Lab Total</u>                          | <u>230 points</u> |
| Course Total                              | 680 points        |

Your course grade will be determined as follows:

- 93% or above (629 pts or more) = A
- 90-92% (609 to 628 pts) = A-
- 87-89% (589 to 608 pts) = B+
- 83-86% (561 to 588 pts) = B
- 80-82% (541 to 560 pts) = B-
- 77-79% (521 to 540 pts) = C+
- 70-76% (473 to 520 pts) = C
- 60-69% (405 to 472 pts) = D
- 59% or less (404 pts or less) = F

**Lecture Exams:** Exams will test your understanding of material presented in lectures, but may also include information from the assigned text. The text is an important resource for this course and it is recommended that you read this material before coming to lecture. The final exam is semi-cumulative, where 1/3 of the points are designated as cumulative and 2/3 of the points designated for new material.

**Lecture Quizzes:** Lecture quizzes will test your understanding of the current day's lecture material and will be administered via D2L. Each quiz will be posted immediately after lecture and will remain available for 24 hours. Quizzes will be open book/notes; however, each question will have a time limit, so preparation will be required. You may not receive any help from other classmates. In other words, discussing the content of the quizzes before Dr. Stone has posted the results is considered academic dishonesty. Each quiz is worth 5 points. You will be given the opportunity to take at least 19 quizzes with at least the lowest 3 grades being dropped (Total of 16 graded quizzes). **Missed quizzes cannot be made up for any reason.**

### **Policies:**

*Contacting Me:* See me during office hours or set up an appointment to discuss anything that is troubling you. You are invited to drop by my office for a friendly chat, to discuss academic difficulties, or to address any other items that may be affecting your performance in class. I want to emphasize that if you are having problems understanding the material, see me as soon as possible; do not wait until the last three weeks of the semester to seek help!

*Attendance:* Attendance in class and lab every week is mandatory. You will forfeit all points for any assignment or quiz that is associated with a class or lab that you miss for an unexcused reason. I will make every reasonable effort to help you make up work for assignments missed for excused reasons; however, you are responsible party for tracking me down and making all arrangements. Absences will be considered excused only if you can provide written documentation of the excuse. You must contact me within 24 hours of missing lab with written documentation. If not, absences will be considered unexcused even if it was for an excused reason. Exemptions may be given due to extenuating circumstances at my discretion. **Missed lecture quizzes cannot be made up for any reason.**

*Academic Honesty:* I take academic honesty very seriously and will sanction violations to the fullest extent allowable under University policy. Academic dishonesty will blemish your record for life. It is not worth it! In this course, assignments are required to be performed individually. In certain labs you may be asked to work with classmates; however, **all** work that you turn in must be done on your own, unless specifically authorized by me. If you are uncertain as to the amount of collaboration

permitted, see me. **Do not assume!!!!** For a complete review of University academic honesty policy see page 49-58 of *The Key*

<http://www.kutztown.edu/divisions/student-services/publications/pdfs/key.pdf>

*Accommodations:* If you need, or think you may need, accommodations for any disability, I encourage you to contact me privately as soon as possible. Assistance can be obtained through the Disability Services Office (215 Stratton Administration Building, 610-683-4108).

*Etiquette:* I strive to maintain a professional and productive learning environment for you and your fellow classmates. Please refrain from talking with classmates while I am addressing the class. Such behaviors are distracting and disrespectful to me and your classmates. Use of cell phones or personal electronic devices at any time is prohibited unless specifically authorized by me. **If I see you sending texts, receiving texts, or talking on your phone during class, I will reduce your overall class percentage.** Your final percentage will be lowered 2% for the first offense, 5% for the second offense, and 10% for each additional offense. You are expected to arrive to class on time and should expect the same from me.

*D2L:* Students will need to regularly log into “Desire to Learn” (D2L) for this course. I will post copies of all lecture notes and handouts on D2L. Additionally, you will take all lecture quizzes on D2L and some assignments will be turned in via dropbox. If you have never used D2L or have trouble logging on, please e-mail me or see me ASAP.

*Late Assignments:* Assignments will be docked 10% each day they are late (including weekends) unless a documented excused absence prevents you from attending class/lab the date the assignment is due.

## Tentative Lecture Schedule (Fall 2012)

| <u>Date</u>  | <u>Topic</u>  | <u>Associated Text</u> |
|--------------|---|------------------------|
| 8/28         | Introduction to Histology; Methodology                                      | Pages 1-22             |
| 8/30         | Histotechnology   | -                      |
| 9/4          | <b>No lecture - Due to <i>Labor Day Adjustment- Monday Classes Meet</i></b> |                        |
| 9/6          | The Cell  | 23-80                  |
| 9/11         | Tissue Organization   | 92-97                  |
| 9/13         | Epithelial Tissue   | 98-145                 |
| 9/18         | Epithelial Tissue contd.  | -                      |
| 9/20         | Connective Tissue Proper  | 146-181                |
| 9/25         | Connective Tissue - Cartilage   | 182-201                |
| <b>9/27</b>  | <b>Exam 1</b>   |                        |
| 10/2         | Connective Tissue - Bone  | 202-237                |
| 10/4         | Connective Tissue - Adipose   | 238-246                |
| 10/9         | Connective Tissue- Blood  | 247-279                |
| 10/11        | Muscle Tissue   | 280-317                |
| 10/16        | Nerve Tissue  | 318-352                |
| 10/18        | Nerve Tissue contd.   | -                      |
| 10/23        | Cardiovascular System   | 364-395                |
| 10/25        | Cardiovascular System contd.  | -                      |
| <b>10/30</b> | <b>Exam 2</b>   |                        |
| 11/1         | Lymphatic System  | 396-441                |
| 11/6         | Respiratory System  | 612-645                |
| 11/8         | Respiratory System contd.   | -                      |
| 11/13        | Urinary System  | 646-685                |
| 11/15        | Urinary System contd.   | -                      |
| 11/20        | Endocrine System  | 686-727                |
| 11/22        | <b><i>Thanksgiving Holiday (No Classes)</i></b>                             |                        |
| 11/27        | Digestive System  | 476-611                |
| 11/29        | Digestive System contd.   | -                      |
| 12/4         | Reproductive System (male)  | 728-771                |
| 12/6         | Reproductive System (female)  | 772-833                |
| <b>12/13</b> | <b>Final Exam (semi-cumulative, 150 pts) at 2:00 PM</b>                     |                        |

## **BIO 330: Histology Lab**

Histology lab will consist of microscopic study of prepared tissue slides. Additionally, you will gain applied knowledge of several histological techniques including tissue fixation, processing, sectioning, and staining. Finally, you will utilize these techniques to develop your own research project.

### **Grading:**

|                           |                  |
|---------------------------|------------------|
| Lab Atlas                 | 40 points        |
| Histochemistry assignment | 15 points        |
| Research Topic            | 5 points         |
| Research Proposal         | 25 points        |
| Group Presentation        | 30 points        |
| Lab Practical             | 100 points       |
| <u>Lab Participation</u>  | <u>15 points</u> |
| Lab Total                 | 230 points       |

*Lab Atlas:* A substantial component of this lab will involve observing and learning organ systems and tissues of the body. For the tissues/slides we observe in lab, you are responsible for including them in a photographic atlas that you will develop over the course of the semester. The photographic atlas will consist of a labeled photograph and a descriptive caption for the various tissues. Your instructor will provide more details the requirements for this assignment in lab.

*Lab Practical:* You will be given a lab practical to test your understanding of lab material. These exams will consist of a mixture of practical-style and conceptual questions. The practical will focus, primarily, on identification of organ structure, tissues, and cellular components.

*Research Project:* Each group of 4-5 students will be responsible for developing a research project. Details on the assignments will be given at a later date in lab. Grading for this project will be based on your development of a topic (5 pts), a formal proposal of the research project (25 pts), and an oral presentation (30 pts) of the findings of your research project. **Note: this project will require you to work in the lab outside of normal laboratory hours.**

*Group Presentation:* Your lab group will give a 15 minute presentation during the Histology symposium to disseminate the results of your research project. This is a formal symposium and you should dress professionally. Business casual is a good rule of thumb. Additional details concerning the specific requirements for this assignment and tips on how to prepare a quality presentation will be given in lab.

*Participation:* active participation in lab is critical to your success in this course. Your lab participation grade will be assigned based on your level of participation in lab. Examples of lab participation include: attending all labs, arriving on time, the quantity and quality of your contribution to group projects, staying on task during lab activities, asking questions, and contributing to the success of your peers.

### **Lab Policies:**

In addition to lecture policies please observe the following:

*Microscope & Prepared Tissue Slides:* Viewing tissue slides using light microscopy is an important component of any histology course. In the beginning of the semester each of you will be assigned a microscope and slide box. You will be responsible for maintaining their quantity and quality. Slides and microscopes are fragile and quite expensive to replace. Always treat them with respect and follow proper technique when working with the microscope. If you follow proper viewing technique you should never break a slide. Should you break a slide notify your instructor immediately so that a replacement can be found. When returning slides to the box make sure they are returned to the correct location.

*DIT Lab and Slide Checkout:* There will be a box of tissue slides available for checkout on a first-come first-serve basis during the DIT lab's open hours. These slides can be used to prepare for the practical and work on your lab atlas. These slides may not be removed from the DIT lab.

*Lab Safety:* The Biology Department's lab safety policy is attached to this syllabus. You are required to sign an agreement stating that you will abide by this policy. In this course, we will be working with several chemicals that could pose a significant health hazard if used improperly. Always wear gloves and goggles when handling any chemicals/stains and wash your hands thoroughly when finished. Additionally, you will be working with a microtome, which can cause serious bodily harm if used incorrectly. **Remember, the microtome is designed to cut effortlessly through tissue samples and it will easily do this to your tissues if you are not extremely careful!** Unless you have been cleared to use the microtome unsupervised, you are not allowed to use the microtome unless under the direct supervision of Dr. Stone. Violation of this rule will result in permanent loss of microtome privileges.

**Tentative Lab Schedule Section 011 – Monday Labs**

| Date         | Topic   | Assignment Due (points)                             |
|--------------|---|---|
| Aug 27       | Introduction to Lab; Library Research for Histology Project               |   |
| Sep 04       | Note: Due to Labor Day, <b>Lab Meets Tuesday 9/4</b><br>Epithelial Tissue | Research Topic via email by<br>5PM Sept 7th (5 pts) |
| Sep 10       | Connective Tissue Proper, Cartilage, and Bone                             |   |
| Sep 17       | Muscle & Nervous Tissue   |   |
| Sep 24       | Blood and the Cardiovascular System                                       | Project Proposal<br>(25 pts)                        |
| Oct 1        | Endocrinology and Sensory Organs  |   |
| <b>Oct 8</b> | <b><i>Columbus Day Holiday – No Lab!!!</i></b>                            |   |
| Oct 15*      | Enzyme Histochemistry   |   |
| Oct 22       | Urinary and Digestive System, Reproductive                                |   |
| Oct 29*      | Histotechnology/Research – Processing & Embedding                         |   |
| Nov 5        | Histotechnology/Research - Sectioning                                     |   |
| Nov 12*      | Histotechnology/Research – Staining                                       | Lab Atlas (40 pts)<br>Due Nov 16 <sup>th</sup> 5PM  |
| Nov 19*      | Histotechnology/Research - Analysis                                       |   |
| Nov 26       | Histology Symposium/Practical Review                                      | Presentation (30 pts)                               |
| Dec 3        | Lab Practical   | Lab Practical (100 pts)                             |

Note: Assignments are due at the beginning of lab unless stated otherwise.

\* These labs will require the following: goggles, gloves, and a dissecting kit

**Tentative Lab Schedule Section 012 – Tuesday Labs**

| Date    | Topic   | Assignment Due (points)                            |
|---------|---|--|
| Aug 28  | Introduction to Lab; Library Research for Histology Project |  |
| Sep 4   | <b>Labor Day Holiday – No Lab</b>                           | Research Topic via email by 5PM Sept 7th (5 pts)   |
| Sep 11  | Epithelial Tissue   |  |
| Sep 18  | Connective Tissue Proper, Cartilage, and Bone               |  |
| Sep 25  | Muscle & Nervous Tissue                                     | Project Proposal<br>(25 pts)                       |
| Oct 2   | Blood and the Cardiovascular System                         |  |
| Oct 9   | Endocrinology and Sensory Organs                            |  |
| Oct 16* | Enzyme Histochemistry                                       |  |
| Oct 23  | Urinary and Digestive System, Reproductive                  |  |
| Oct 30* | Histotechnology/Research – Processing & Embedding           |  |
| Nov 6   | Histotechnology/Research - Sectioning                       |  |
| Nov 13* | Histotechnology/Research – Staining                         | Lab Atlas (40 pts)<br>Due Nov 16 <sup>th</sup> 5PM |
| Nov 20* | Histotechnology/Research - Analysis                         |  |
| Nov 27  | Histology Symposium/Practical Review                        | Presentation (30 pts)                              |
| Dec 4   | Lab Practical   | Lab Practical (100 pts)                            |

Note: Assignments are due at the beginning of lab unless stated otherwise.

The DIT lab is not available on the following dates: Sept 18<sup>th</sup> & Oct 23. Please make other arrangements to photograph the tissue slides for your lab atlas.

\* These labs will require the following: goggles, gloves, and a dissecting kit