BIOLOGY (BIOL 4220.04) - HISTOLOGY
FALL 2009

Objectives and Expected Outcomes of this Course:

Histology is the science of tissues (Greek; Histos means web or tissue and logia means branch of learning). Using various techniques, histology establishes connections between microscopic structure of cells and tissues and their functions. The main objective of this course is to provide students theoretical and practical knowledge in Histology. At the end of this course, students are expected to have a solid understanding of microanatomy of various cells, tissues and organs in normal humans and abnormal (pathophysiologic) conditions. In the lab component, students will be able to perform various fixation and staining procedures and use a microscope to analyze the microstructure of tissues. In addition, a computer assisted, electron/ordinary micrographs based training to identify histology and histopathology of tissues is also included the lab component.

Course Director: Dr. Suraj Unniappan
Assistant Professor
Department of Biology
Room 221A, Lumbers Building
Phone: 416-736-2100 ext. 20999
E-mail: suraju@yorku.ca

Office Hours: Thursdays 3 - 4:00 PM
(If you want to meet me outside this office hour, please call/e-mail in advance to get an appointment.)

Grade Distribution:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Term Exam</td>
<td>25%</td>
</tr>
<tr>
<td>Lab Assignments</td>
<td>25%</td>
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<tr>
<td>Lab Exam (Final)</td>
<td>10%</td>
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<tr>
<td>Final Exam</td>
<td>40%</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>100%</td>
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Any student who is absent from the lecture or lab exam will receive a grade of zero for the test they missed.

Lectures: Tuesdays and Thursdays, 1-2:30 PM
Steadman Lecture Hall E (SLH E)
Labs: 
Lab 01: Monday 2:30 PM
Lab 02: Tuesday 2:30 PM
Lab 03: Wednesday 2:30 PM
Lab 04: Thursday 2:30 PM
Location: Room 204, Farquharson Life Sciences Building (FS 204). Duration of each lab is 3 hours. Lab attendance is mandatory. You must bring a safety glass and a lab coat to all lab sessions to you will not be allowed into the lab. Prepared slides and electron micrographs must remain in the lab.

Suggested Textbook: Histology – A Text and Atlas
Authors: Michael H. Ross, Wojciech Pawlina
Publisher: Lippincott Williams and Wilkins
Fifth Edition
(Majority of the course content will be based on this textbook, which will be on reserve in the library. A number of additional books and resources will be consulted for specific topics – relevant details will be provided in the class as the term advances.)

Important Dates (for Fall 2009 courses):
Last date to enroll in the course without instructor’s permission: September 24
Last date to enroll in the course with instructor’s permission: October 9
Last date to drop courses without receiving a grade: November 6
Fall Classes End: December 8
Fall Exams Start/End: December 10/23
More information about this can be found at: www.registrar.yorku.ca/importantdates/index.htm

IMPORTANT NOTES:
Students who feel that there are extenuating circumstances that may interfere with their ability to successfully complete the course requirements are encouraged to discuss that matter with the Course Director as soon as possible. Students with physical, learning or psychiatric disabilities who require reasonable accommodations in teaching styles or evaluation methods should discuss this with the Course Director immediately so that appropriate arrangements can be made.

All students must read and be aware of the York University policies regarding student conduct, academic honesty and plagiarism, which can be found at http://www.yorku.ca/secretariat/policies/. Students are also expected to know the lecture and lab schedule, deadlines for lab assignments, and lab and lecture exam dates.
**Tentative Lecture Schedule:**

*Note: The course director will attempt to post the lecture materials online in the course website (available in Moodle) before 12 PM prior to the Tuesday and Thursday lectures.*

<table>
<thead>
<tr>
<th>Class/Dates</th>
<th>Contents</th>
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<tbody>
<tr>
<td>September 10, 15</td>
<td>Methods in Histology: Tissues processing, Histochemistry, Microscopy</td>
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<tr>
<td>September 17, 22, 24</td>
<td>Cell, Tissues: Overview of Tissues - Epithelial Tissue, Connective tissue</td>
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<tr>
<td>September 29, October 1</td>
<td>Adipose tissue; Cartilage and Bone</td>
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<tr>
<td>October 6, 8</td>
<td>Neurons, Supporting Cells, Organization of the Central and Peripheral Nervous Systems</td>
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**OCTOBER 12-16 FALL READING WEEK – NO LECTURES OR LABS**

**October 20**  
Mid-Term Exam

**October 22, 27**  
Cardiovascular system; Heart, Vessels, Blood cells

**October 29, November 3**  
Digestive System: Salivary Glands, Stomach, Intestine, Liver, Gall Bladder, Pancreas

**November 5, 10**  
Respiratory System: Nasal Cavity, Respiratory Tract, Lungs

**November 12, 17**  
Urinary System: Kidney Structure, Ultrafiltration, Urinary Bladder, Urethra

**November 19, 24**  
Endocrine System: Pituitary, Hypothalamus, Thyroid, Adrenal Glands

**November 26, December 1**  
Male and Female Reproductive Systems: Testis, Ovary, Accessory Glands

**December 3, 8**  
Microscopic Structures of the Eye, Ear and Teeth

**Final Exam – Date to be announced by the Registrar’s office**
Reference Books:
The following books will be placed on RESERVE in the Steacie Science Library, and will serve as a good reference source for the lectures as well as labs. Borrowing privileges will be revoked if the reference materials are abused.

1. From Cells to Organs: A Histology Textbook and Atlas
2. Histology: A Text and Atlas; Michael H. Ross and Wojciech Pawlina
   Barbara Young (2000)
5. Bloom and Fawcett’s Concise Histology
   Dawn W Fawcett and Ronald P. Jersh (2002)
6. Color Textbook of Histology
   Leslie P. Gartner and James L. Hiatt
7. Di Fiore’s Atlas of Histology with Functional Correlations
   Victor P. Eroschenko (2000)
8. Theory and Practice of Histological Techniques
10. Enzyme Histochemistry
    J.D. Bancroft and N.M. Hand (1987)
15. The Rationale of Dyes in Biology and General Staining Methods; Edward Gurr (1965)
16. An Introduction to Histochemical Techniques; J.D. Bancroft (1967)
17. Staining: Practical and Theoretical; Edward Gurr (1962)
18. Principles of Biological Microtechniques: A Study of Fixation and Dyeing

Enjoy Histology! All the Best!

Suraj Unniappan – BIOL 4220 Histology 2009