COURSE OUTLINE
BIOMEDICAL HISTOLOGY (BIOM*4070)
FALL SEMESTER, 2016 0.5 Credits

Faculty: Dr. Brenda Coomber (Course Coordinator)
Room 3645 OVC; ext 54922
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Laboratory Instructor: Ms. Jodi Morrison
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Teaching Assistants:
Ms. Sarah Donato
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Ms. Anita Luu
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Lectures: Thornbrough Room 1307
Tuesday 11:30 -12:50
Thursday 11:30 -12:50

Labs: OVC Room 1691
2:30-5:20 Wednesday or Thursday

Getting help: Office hours for Dr. Coomber are 9:30-11:30 Friday mornings. You are welcome to drop in during these times, but you can also make a specific appointment. Issues and questions can also be dealt with by email.
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<thead>
<tr>
<th>Lec #</th>
<th>Date</th>
<th>Lecture</th>
<th>Laboratory W, Th</th>
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<tbody>
<tr>
<td>1</td>
<td>Sept. 8</td>
<td>Introduction &amp; Cytology</td>
<td>No Lab this week</td>
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<tr>
<td>2</td>
<td>Sept. 13</td>
<td>Tissues &amp; Epithelium</td>
<td>Lab #1 Technique &amp; Cytology</td>
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<tr>
<td>3</td>
<td>Sept. 15</td>
<td>Epithelium &amp; Glands</td>
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<tr>
<td>4</td>
<td>Sept. 20</td>
<td>Fibrous Connective Tissue Q#1</td>
<td>Lab #2 Epithelium &amp; Glands</td>
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<tr>
<td>5</td>
<td>Sept. 22</td>
<td>Adipose &amp; Blood</td>
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<tr>
<td>6</td>
<td>Sept. 27</td>
<td>Cartilage &amp; Bone</td>
<td>Lab #3 Fibrous CT, Adipose &amp; Blood</td>
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<td>7</td>
<td>Sept. 29</td>
<td>Bone Q#2</td>
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<td>8</td>
<td>Oct. 4</td>
<td>Muscle</td>
<td>Lab #4 Cells Cartilage &amp; Bone</td>
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<td>9</td>
<td>Oct. 6</td>
<td>Muscle &amp; Nerve</td>
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<td>-</td>
<td>Oct. 11</td>
<td>NO CLASS- Fall Break</td>
<td>No Lab this week</td>
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<td>10</td>
<td>Oct. 13</td>
<td>Nerve Q#3</td>
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<tr>
<td>11</td>
<td>Oct. 18</td>
<td>Cardiovascular System</td>
<td>Lab #5 Muscle &amp; Nerve</td>
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<td>12</td>
<td>Oct. 20</td>
<td>Lymphatic System</td>
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<tr>
<td>13</td>
<td>Oct. 25</td>
<td>Integument</td>
<td>Lab #6 Cardiovascular &amp; Lymphatic</td>
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<td>14</td>
<td>Oct. 27</td>
<td>Urinary System Q#4</td>
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<td>15</td>
<td>Nov. 1</td>
<td>Urinary System</td>
<td>Lab #7 Integument</td>
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<tr>
<td>16</td>
<td>Nov. 3</td>
<td>Digestive Tract</td>
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<tr>
<td>17</td>
<td>Nov. 8</td>
<td>Digestive Tract Q#5</td>
<td>Lab #8 Urinary System</td>
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<tr>
<td>18</td>
<td>Nov. 10</td>
<td>Liver</td>
<td></td>
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<td>19</td>
<td>Nov. 15</td>
<td>Liver &amp; Pancreas</td>
<td>Lab #9 Digestive Tract</td>
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<tr>
<td>20</td>
<td>Nov. 17</td>
<td>Respiratory System</td>
<td></td>
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<tr>
<td>21</td>
<td>Nov. 22</td>
<td>Respiratory System Q#6</td>
<td>Lab #10 Liver &amp; Pancreas; Respiratory System</td>
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<tr>
<td>22</td>
<td>Nov. 24</td>
<td>Special Senses</td>
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<tr>
<td>23</td>
<td>Nov. 29</td>
<td>Histology &amp; Cancer</td>
<td>Open (drop-in) review session in lab</td>
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<tr>
<td>24</td>
<td>Dec. 1</td>
<td>Catch Up and Review</td>
<td>Wednesday &amp; Thursday</td>
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This is the proposed schedule: the schedule of lectures and labs may be altered if necessary.

Required depth is exemplified by learning objectives in the lectures and self study questions in the lab manual.

Final Exam: Tuesday December 13, 7:00-9:00 pm; location TBA
Course Objectives

- To recognize at the light and electron microscope level sub-cellular structures, cell types, tissues and organs
- To extrapolate from 2-dimensional sections to 3-dimensional structure
- To appreciate the effects of tissue preparation on morphology
- To relate microscopic morphology to cell/tissue/organ function
- To relate microscopic structure to other areas of biology
- To appreciate the use of histological knowledge and techniques in medicine

Subjects Covered

- Basic tissue preparation & cytology (sub-cellular structures)
- Tissues: epithelium (lining and glandular), connective tissue (fibrous, blood, adipose, cartilage, bone), muscle & nervous tissue
- Organs and organ systems: integument, cardiovascular (arteries, veins, lymphatic vessels, basic heart wall), lymphatic system (lymph nodes, spleen, bone marrow, thymus), gastrointestinal system (esophagus, stomach, small & large intestines, liver, pancreas), respiratory system, and urinary system
- Examples of histopathology (especially cancer) and brief overview of histology of special senses
- Selected histological techniques and the kinds of information they impart

Approach

Lectures: There are 2 lectures per week (80 min. each): They will highlight concepts of tissue or organ organization and functional correlation, and integrate with other biological disciplines. The suggested readings complement the lectures and extend the information we are able to provide in lectures and lab. Use the lecture learning objectives and the lab manual as the guide to what information you need to know for exams.

Laboratories: Labs are an essential component of this course. During scheduled lab periods, we will introduce information that will help you interpret slides and provide help in identifying and interpreting structures. The slides are ‘virtual slides’ and are hosted by a server on an external site. Access is described in the lab manual. Electron micrographs and some light micrographs are also posted on the Courselink site under ‘Laboratories’. Because lab materials are digital, they are available anywhere you can access the internet. This will aid in self-study and review, but we strongly recommend that students attend the lab. There is no separation on exams between lecture and lab information. The Quizzes and Final Examination will involve identification, cell/tissue structure and organization, and functional correlates. Most students should expect to spend additional time outside of the lab practicing their skills in identification in order to do well in the course.
There is one desktop computer for every 4 students in the lab, and group work is encouraged. However, please bring personal laptop computers, tablets, or smart phones to the lab – as an aid to group work or in order to work alone as preferred.

It is your responsibility to manage your time, and it is your responsibility to get help when you need it. **Mastery of the material in first half of the course is necessary to understand the second half.** Procrastination will thus make your life more difficult.

Textbook and Resource Materials

**Suggested Texts:**

*Junqueira's Basic Histology: Text & Atlas*
A. L. Mescher, 14th edition, 2016 (or earlier editions)

*Histology: A text and atlas*
M.H. Ross and W. Pawlina. 7th ed., 2015 (or earlier editions)

**Additional Resources:**
copies of suggested textbooks, as well as cell biology and electron microscopy books, some of which are available electronically; check ARES reserve system for details

**On D2L:**
Biomedical Histology Laboratory Guide, 2016
Electron micrographs (TEM, SEM) and other demonstration micrographs
Copies of Power Point lecture presentations

**On Objective Pathology WEB site ([http://images.objectivepathology.com](http://images.objectivepathology.com))**
Library of virtual slides

**Evaluation**

Quizzes and final exam will require identification of structures, and questions about these structures, concise explanations of histological structures, and integration of information with other aspects of biology or medicine are required (answers will be from a few words to short paragraphs in length). **Both light and electron micrographs are included**

**Quizzes:**

There is no midterm examination for this course. Instead, **six** quizzes will be held throughout the semester. They will be written during scheduled lecture time, approximately every 2 weeks; each quiz will last about 20 minutes. Students will have their grade from the **best four** quizzes they attempt count for 50% of the final grade in the course (*i.e.* each **counted quiz** will be worth 12.5% of the final grade).

<table>
<thead>
<tr>
<th>Quiz #</th>
<th>Date</th>
<th>Topics Covered</th>
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<tbody>
<tr>
<td>Quiz #1</td>
<td>Sept. 20</td>
<td>Histotechnique &amp; cell biology</td>
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<tr>
<td>Quiz #2</td>
<td>Sept. 29</td>
<td>Epithelium &amp; Glands</td>
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<tr>
<td>Quiz #3</td>
<td>Oct. 13</td>
<td>Connective Tissue, Bone &amp; Cartilage</td>
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</tbody>
</table>
Quiz #4 Oct. 27 Nerve & Muscle
Quiz #5 Nov. 8 Cardiovascular & Lymphatic Systems; Integument
Quiz #6 Nov. 22 Urinary System

Final Exam: Tuesday December 13, 7:00-9:00 pm, location TBA
50% of final grade

Questions on the final exam will be comprehensive, but with emphasis on the material covered after Quiz #6 (Digestive Tract, Liver & Pancreas, Respiratory System, Special Senses & Histology & Cancer). The format will be similar to the quizzes, except students will write at desktop computers and will have the entire exam image file available for them to work through at their own speed and in their preferred order. The final examination will be 2 hours in length.

University of Guelph Policy on Missed Exams and Assignments:

If students are absent for a quiz, no action needs to be taken UNLESS the student has already missed two other quizzes, in which case written documentation of reason for absence must be provided to Dr. Coomber as soon as possible.

If the final examination is missed, application for a deferred exam must be made through the BSc program counsellor’s office as outlined in the Academic Consideration and Appeals section of the Undergraduate Calendar.

Other Information

Course Evaluation Students will be asked to complete an online questionnaire on instructors’ teaching competence. This is part of information required by the University to evaluate faculty performance for purposes of Tenure, Promotion and Selective Increases. The information is supplied to the chair of the instructor’s home department, and the evaluations will be delivered to the respective instructors only after the final grades have been submitted to the Registrar’s Office.

E-mail Communication As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

Drop Date The last date to drop one-semester courses, without academic penalty, is Friday, November 4. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar: http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Accessibility The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment.
Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Centre for Students with Disabilities as soon as possible. For more information, contact CSD at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: http://www.csd.uoguelph.ca/csd/

**Academic Misconduct** The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar: http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

**Recording of Materials** Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

**Resources** The Academic Calendars are the source of information about the University of Guelph’s procedures, policies and regulations which apply to undergraduate, graduate and diploma programs: http://www.uoguelph.ca/registrar/calendars/index.cfm?index