ANAT 6150 is a graduate course for certificate level designed to provide knowledge about the normal histological structure of cells, tissues and organs of the human body with a strong emphasis on the clinical relevance. Because there is an inseparable relationship between structure and function, emphasis is placed on structural-functional correlates at both the light and electron microscopic levels. Descriptions of alterations in normal histology through disease or injury provide an understanding of the etiology of various diseases, including cancer. Histological terms and concepts are taught for the purpose of identification and precise communication. Students will also have access to virtual histological slides tailored to the content of the lectures, such that students will become fluent in identifying structures and their functional relationship with specific organs.

LEARNING OBJECTIVES:

1) Describe the basic structure of a cell, including the function of membranes and organelles.
2) Describe how the type and histological arrangement of the cells present within tissues and organs of each major body system relate to the function of those tissues and organs.
3) Recognize how histological structure and function relate to the etiology of various disease states.

CREDIT HOURS: 4

PREREQUISITE: Introductory Biology for Science or non-Science Majors. Enrollment in the Graduate Certificate in Anatomical and Translational Sciences or permission of the Director of the Graduate Certificate.

LECTURE CONTACT TIME/HOURS: two 1-hour 15-minute lectures per week, scheduled Tuesdays and Thursdays

LABORATORY SESSIONS: Virtual laboratory sessions correlating with the weekly lecture contents will be available for students, both as a virtual slide collection and with a faculty developed online atlas and manual.

Access to the virtual slide collection

Access these slides from any computer by going to gwu.slidehosting.com and logging in with the shared student credentials:
Username: GWSMHS
Password (case sensitive): Ross

To setup your iPad app:
1. Open Aperio ePath Viewer.
2. Click the Add Site button at the bottom left side of the screen.
3. Type in gwu.slidehosting.com and press return to verify the site appears.
4. Click the + button next to the site address.
5. Type a name for the Bookmark (i.e. GWU SlideHosting).
6. Press the Save button on the right.
7. Click OK and the new Website appears at the bottom of the list.
Access to online Atlas of labeled images and notes: MicroanatomyAtlas.com

**METHOD OF ASSESSMENT:** three multiple choice and short answer written exams, each worth 25% of the final grade, and 3 practical exams (based on the virtual laboratory slides) worth 25% of the final grade.

**FACULTY:**

1) **Robert Hawley, Ph.D.**, Course Director ANAT 6150  
   Professor of Anatomy & Cell Biology  
   Ross Hall, 2300 I Street NW, Room 461B  
   Email: rghawley@gwu.edu

2) **Ahdeah Pajoohesh-Ganji, Ph.D.**, Course Co-Director ANAT 6150  
   Assistant Research Professor of Anatomy & Cell Biology  
   Ross Hall, 2300 I Street NW, Room 735C  
   Email: ahdeah@email.gwu.edu

3) **Kurt E. Johnson, Ph.D.**, Course Director ANAT 2150  
   Professor of Anatomy & Cell Biology  
   Ross Hall, 2300 I Street NW, Room 214  
   Email: kurtj@email.gwu.edu

4) **Alexandros Tzatsos M.D., Ph.D.**  
   Assistant Professor of Anatomy & Cell Biology  
   SEH, 800 22nd Street NW, Room 8850  
   Email: atzatsos@gwu.edu

5) **Nicole DeVaul, Ph.D.**, Course Co-Director ANAT 2150  
   Assistant Professor of Anatomy & Cell Biology  
   Ross Hall, 2300 I Street NW, Room 462A  
   Email: ndevaul@gwu.edu

6) **Tatiana Efimova, PhD**  
   Assistant Professor of Anatomy & Cell Biology and of Dermatology  
   SEH, 800 22nd Street NW, Room 8160  
   Email: tefimova@gwu.edu

7) **Andre L Pasqua Tavares D.D.S., Ph.D.**  
   Assistant Research Professor of Anatomy & Cell Biology  
   Ross Hall, 2300 I Street NW, Room 536  
   Email: tavaresa@gwu.edu
REQUIRED TEXTBOOK:

*Histology: A Text and Atlas* by M. Ross and W. Pawlina, 6th ed. Lippincott Williams & Wilkins. ISBN: 978-0781772006. This book presents in-depth coverage of the microanatomical, physiological, and clinical aspects of human cells, tissues and organs and is used in the medical microscopic anatomy course. It examines the relationship between basic science and microscopic anatomy and describes potential clinical disorders arising out of cell biological problems, as covered in the course. It has student consult online access to enhance student’s knowledge.

READING LIST: Appropriate Reference Articles (TBD)

CLASS POLICIES

Attendance policy: mandatory
Late work: accepted with permission, penalty may be incurred if unduly late as determined by instructor
Religious Holidays: will be accommodated if requested
[NOTE: for university policies on teaching, see http://www.gwu.edu/~academic/Teaching/main.htm ]

ACADEMIC INTEGRITY

I personally support the GW Code of Academic Integrity. It states: “Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information.” For the remainder of the code, see: http://www.gwu.edu/~ntegrity/code.html

SUPPORT FOR STUDENTS OUTSIDE THE CLASSROOM

DISABILITY SUPPORT SERVICES (DSS)
Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: http://gwired.gwu.edu/dss/

UNIVERSITY COUNSELING CENTER (UCC) 202-994-5300
The University Counseling Center (UCC) offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include:
- crisis and emergency mental health consultations
- confidential assessment, counseling services (individual and small group), and referrals
  http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices

SECURITY

In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location.
<table>
<thead>
<tr>
<th>Session and Date</th>
<th>Topics for Discussion</th>
<th>Readings &amp; Assignments Due the Day of Class</th>
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<tbody>
<tr>
<td><strong>Week 1: Tues 8/27</strong>&lt;br&gt;Thurs 8/29</td>
<td><strong>Introduction to the course</strong> - Dr. Johnson&lt;br&gt;<strong>Principles of Microscopy and Tissue Processing</strong> – Dr. Johnson&lt;br&gt;<strong>Biology of Cell Membranes</strong> – Dr. De Vaul</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td><strong>Week 2: Tues 9/3</strong>&lt;br&gt;Thurs 9/5</td>
<td><strong>Cell Organelles I</strong> - Dr. De Vaul&lt;br&gt;<strong>Cell Organelles II</strong> - Dr. De Vaul</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<tr>
<td><strong>Week 3: Tues 9/10</strong>&lt;br&gt;Thurs 9/12</td>
<td><strong>Epithelium</strong> – Dr. Efimova&lt;br&gt;<strong>Connective Tissue</strong> – Dr. Pajoohesh-Ganji</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td><strong>Week 4: Tues 9/17</strong>&lt;br&gt;Thurs 9/19</td>
<td><strong>Bone &amp; Cartilage</strong> – Dr. Johnson&lt;br&gt;<strong>Blood &amp; Bone Marrow</strong> – Dr. Tzatzos&lt;br&gt;<strong>Himmelfarb B103</strong></td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td><strong>Week 5: Tues 9/24</strong>&lt;br&gt;Thurs 9/26</td>
<td><strong>Nervous Tissue</strong> – Dr Pajoohesh-Ganji&lt;br&gt;<strong>Muscle Tissue</strong> – Dr. Hawley</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td><strong>Week 6: Tues 10/1</strong>&lt;br&gt;Thurs 10/3</td>
<td><strong>EXAM I (25%) and Practical Exam I (5%)</strong>&lt;br&gt;<strong>Lymphoid System</strong> – Dr. Johnson</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td><strong>Week 7: Tues 10/8</strong>&lt;br&gt;Thurs 10/10</td>
<td><strong>CardioVascular System</strong> – Dr. De Vaul&lt;br&gt;<strong>Upper Respiratory System/Upper G.I. System</strong> – Dr. Tavares</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td><strong>Week 8: Tues 10/15</strong>&lt;br&gt;Thurs 10/17</td>
<td><strong>Esophagus &amp; Stomach</strong> – Dr. Pajoohesh-Ganji&lt;br&gt;<strong>Small &amp; Large Intestines</strong> – Dr. Johnson</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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| Week 9: Tues 10/22 | Fall Break-No Classes  
Liver, Gall Bladder, Pancreas – Dr. Johnson | Review relevant assigned readings (textbook chapter or handout) |
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<tr>
<td>Thurs 10/24</td>
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<tr>
<td>Week 10: Tues 10/29</td>
<td>Lower Respiratory System – Dr. Johnson</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td>Thurs 10/31</td>
<td>EXAM II (25%) and Practical Exam II (10%) Himmelfarb B103</td>
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<tr>
<td>Week 11: Tues 11/5</td>
<td>Pituitary &amp; Pineal Glands – Dr. Pajoohesh-Ganji</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td>Thurs 11/7</td>
<td>Renal System – Dr. Johnson</td>
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<tr>
<td>Week 12: Tues 11/12</td>
<td>Female Reproductive System I – Dr. Johnson</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<tr>
<td>Thurs 11/14</td>
<td>Female Reproductive System II – Dr. Johnson</td>
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<tr>
<td>Week 13: Tues 11/19</td>
<td>Male Reproductive System – Dr. Johnson</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td>Thurs. 11/21</td>
<td>Adrenal, Thyroid and Parathyroid Glands – Dr. Johnson</td>
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<td>Week 14:Tues.11/26</td>
<td>Skin – Dr. Efimova</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td>Thurs. 11/28</td>
<td>Thanksgiving</td>
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<tr>
<td>Week 15: Tues. 12/3</td>
<td>Eye – Dr Pajoohesh-Ganji</td>
<td>Review relevant assigned readings (textbook chapter or handout)</td>
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<td>Thurs. 12/5</td>
<td>Ear- Dr Johnson</td>
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FINAL- EXAM III (25%) and Practical Exam III (10%) TBD