

**BIOH457 Syllabus Spring 2018**

Cadaver Dissection Course

**Course Information:**

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**General Course Information:**

This course is a practicum that provides the participant the ability to expand their anatomical knowledge base, professional growth, and public speaking skills. The participant will have the unique opportunity to dissect, within a small group, a region of a cadaver and present visible structures to their peers. The cadavers prepared by these students are used for teaching in DBS A&P offerings. Systems presented during the spring semester include the endocrine system, cardiovascular system, lymphatic system, respiratory system, digestive system, urinary system and reproductive system.

This course predominately serves students majoring in biology, pre-medical, pre-nursing, pre-physical therapy, other pre-health care professions and health and human performance.

**The two-semester sequence is divided as follows:**

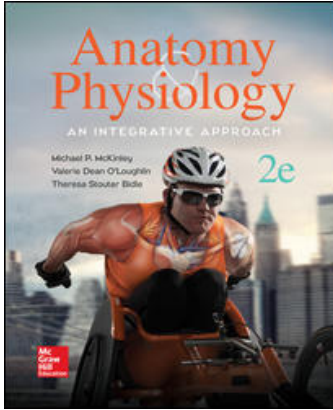
Fall Semester	Spring Semester
Body Plan & Organization	Endocrine System
Homeostasis	Cardiovascular System
Cell Biology Review/Metabolism	Lymphatic System & Immunity
Histology	Respiratory System
Integumentary System	Digestive System
Skeletal System & Articulations	Metabolism
Muscular System	Urinary System
Nervous System	Fluid/Electrolytes & Acid/Base Balance
Special Senses	Reproductive System

**Required Prerequisites:**

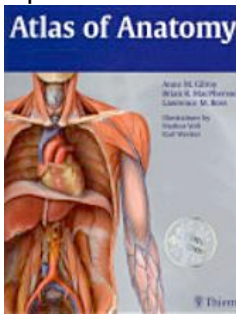
"A" or "B" in BIOH 365 and 370 or equivalent with cadaver experience. Consent of instructor.

Required Co-requisite: BIOH480 or BIOH461.

Anatomy and Physiology, an Integrative Approach, 2ed. McKinley, O'Loughlin, Bidle. McGraw Hill, 2016. ISBN 978-0-07-802428-3. McGraw Hill Connect online supplement.



Optional Course Materials:



Atlas of Anatomy by Anne M. Gilroy, Brian R. MacPherson, Lawrence M. Ross - Thieme (2008) –ISBN-978-1-60404-062-1 or the 2<sup>nd</sup> or 3rd edition of the Gilroy atlas or the electronic edition (available from [www.thieme.com](http://www.thieme.com))

Dissector for Netter's Atlas Vol 1&2. ISBN 10: [0914168207](http://www.thieme.com) / ISBN 13: [9780914168201](http://www.thieme.com)

### Computers and Course Website Information

Students are expected to be familiar with computers and the Internet. Students are responsible for their own software and computer equipment maintenance and setup as recommended by the University of Montana.

<http://umonline.umt.edu/student-support.php>

#### *Class-Specific Computer Requirements:*

- Students must download and review posted course materials and other assignments prior to laboratory sessions. Students are expected to have a 'back up plan' if personal computers become compromised.
- The University of Montana maintains several computer labs on campus: <http://www.umt.edu/it/support/computerlabs/default.php>
- Students are expected to download copies of course information from the Moodle website and to check email for class announcements.
- **For technical support for using Moodle, please contact UM IT support:**

<http://www.umt.edu/it/support/default.php>

**Course Goals:**

Upon successful completion of this two-course sequence, you will have practical knowledge of dissection techniques, a better understanding of human anatomical structures and practiced the ability to convey structure function relationships to students of various academic levels.

**Course Objectives:**

- 1) Gain an appreciation for the complementarity of anatomical form with physiological function.
  - 2) Understand how the body systems work to maintain homeostasis.
  - 3) Use critical thinking skills to predict the consequences of homeostatic imbalances on human form and function.
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**Course outcomes are based on the Human Anatomy and Physiology (HAPS)****Learning Objectives:**

- 1) Demonstrate understanding of chemical and biological principles and knowledge that serve as the foundation for understanding human anatomy and physiology.
- 2) Understand and analyze cellular processes governing development, growth and normal function of the human body.
- 3) Understand the processes involved with maintaining homeostasis and anticipate what may occur when homeostatic balance mechanisms are lost.
- 4) Demonstrate practical knowledge of human gross and microscopic anatomy using human cadavers and prepared histological slides.
- 5) Identify structures in the body and analyze their relationship with other structures.
- 6) Describe development, regeneration and normal function of body systems
- 7) Understand the cellular and physiological mechanisms that drive tissue formation and function.
- 8) Employ the scientific process for understanding principles of anatomy and physiology.
- 9) Analyze A&P observations and data and determine the potential physiological consequences.
- 10) Appropriately plan the dissection approach using a multitude of resources.
- 11) Master blunt and sharp dissection techniques on a preserved cadaver.
- 12) Expose and identify key structures of human anatomy.
- 13) Work as a team to reach important course milestones.

**Course Information:**

Teaching methods: Practicum. Students will plan dissections, perform sharp and blunt dissection while preserving key anatomical structures, and properly care for the cadavers to ensure their use as a teaching tool for other human anatomy and physiology courses.

**Student Responsibilities:**

- 1) Students are expected to complete the required reading and pre-laboratory assignments prior to class meeting times.
- 2) Students are expected to log on to the course Moodle site regularly to download course materials and read updated course announcements.
- 3) Students are expected to monitor their email and online platforms for important course announcements.

- 4) Regular attendance in lectures and laboratory is strongly recommended for successful completion of the course.
- 5) If absence from lecture or laboratory is necessary due to illness, it is your responsibility to obtain notes from another student.
- 6) Students are expected to be respectful to each other, the cadavers and teaching staff and Dr. Minns. Students who fail to do so will be disciplined as described in the student conduct code.

### **Course Policies**

Dr. Minns and the Laboratory Instructors follow academic policies as stated in the 2017-2018 UM Catalog. Students are responsible for being familiar with these policies.

<http://www.umt.edu/catalog/>

These policies include but are not limited to:

- Student Conduct ([http://life.umt.edu/vpsa/student\\_conduct.php](http://life.umt.edu/vpsa/student_conduct.php))
- Class attendance
- Credit/No Credit Grading
- Registrar deadlines
- Incomplete Grading Policy
- Audit: not permitted in this course

#### **Plagiarism**

- Plagiarism is the representing of another's work as one's own. It is a particularly intolerable offense in the academic community and is strictly forbidden. Students who plagiarize may fail the course and may be remanded to Academic Court for possible suspension or expulsion. (See Student Conduct Code section of this catalog.)
- Students must always be very careful to acknowledge any kind of borrowing that is included in their work. This means not only borrowed wording but also ideas. Acknowledgment of whatever is not one's own original work is the proper and honest use of sources. Failure to acknowledge whatever is not one's own original work is plagiarism.

### ***Students with Disabilities:***

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommason Center 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Students with disabilities who would like reasonable accommodations must provide documentation to both Dr. Minns and the lab instructor the first week of class so that appropriate arrangements can be made. In the event that students decide after the semester begins that they would like to disclose their disability and request accommodations, students must provide documentation at least 10 days prior to the upcoming assessment so that instructors may prepare appropriately. It is the responsibility of students to make sure they understand the types of modifications available to them in both the lecture and laboratory portions of the course prior to assessments.

**Disruptive behavior**

Students who are being disruptive in lecture by talking, texting or playing computer games will be asked to leave the classroom. Such behaviors impact the learning of other students in the classroom and will not be tolerated. Re-admittance to class is at the discretion of the instructor.

**Evaluation Methods:**

Your course grade will be determined by your performance in the lecture as well as the lab, according to the following evaluation methods:

**Grading System:**

Graded Activity	% of Final grade
Dissection Approach plan(s)	20
Cadaver Care	20
Peer Reviews	20
Active Participation in designated group meetings/dissection logs	20
Dissection/Pathology Presentation	20
Total	100%

Final Grades will be based upon a total of 100 points.

Grades will be calculated based upon the following system; grades will be rounded. (i.e. if a student earns 89.44%, their grade will round to 89 or a B; if a student earns 89.45% their grade will be rounded to 90% or an A):	
Grade	Percent of Total Points
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	59% and Below

**Dissection Approach:**

Students are expected to use a variety of resources, including the McKinley A&P text, the Gilroy atlas and the Netter’s Dissector and group discussion to prepare the approach for dissection. Groups are expected to discuss dissection boundaries with other nearby groups and consider them in the dissection approach. For example, the latissimus dorsi (origin dorsal group, insertion UE group, determine the dissection boundary for each group), pectorals major (origin ventral cavities, insertion UE, where is the dissection boundary, or will ventral group follow entire muscle), what is the dissection boundary for anterior and dorsal neck dissection, etc. These boundaries need to be agreed to in advance and incorporated in the dissection approach plan.

**Cadaver Care:**

Students are expected to keep the cadaver’s moist through the use of wetting solution. Wetting solution must be made and used regularly. There will be a sign up sheet in the lab where students record their use of re-stocking of wetting solution.

**Peer Reviews**

Approximately the 4<sup>th</sup> week of the semester and at the end of the semester, students will submit confidential peer reviews of their group members. This will allow Dr. Minns and the lab instructors to record and monitor the effectiveness of group work. Peer review will be based on:

- 1) Attendance and participation during group meeting times
- 2) On time posting and completeness of dissection logs on moodle
- 3) On time and accurate dissection of structures
- 4) Pro-active communication with team members

**Dissection Presentation:**

Dates for dissections are included in the important dates section located at the end of this syllabus. Students are expected to have fully completed prosection preparation (this includes any 'clean up' of structures required by your group leader. During the dissection presentation, all structures need to be accurately identified and communicated in writing and in person to your group leader, group members and the teaching assistant responsible to preparing that week's lesson plan.

Students are expected to communicate all irregular findings to group leaders and lesson plan writers in written form. "Tricky" structures, such as the brachial plexus must be drawn out. Communicate with your group leader to determine which (if any) structures must be drawn out. All structure logs and drawings are due on the Wednesday Cadaver Dissection Presentation meeting.

**Dissection Groups:**

- Lower Extremity and foot (Team Leader: Danielle Mechfield)
  - Foot dissection plan (due 2/5)
  - Clean up vessels (due 2/26)
  - Foot dissection and pathology presentations (due 4/23)
- Upper Extremity and hand (Team Leader: Kari Zins)
  - Hand dissection plan (due 2/5)
  - Clean up vessels (due 2/12)
  - Hand dissection and pathology presentations (due 4/23)
- Neck and Ventral Group (Team leader: Ciara Gorman)
  - Neck vasculature dissection plan (due 1/29)
  - Neck dissection (due 2/12)
  - Clean up digestive system vessels (as applicable) (due 3/19)
  - Neck dissection and pathology presentation (due 4/23)

**Outreach for Lower Division BIOH class (form and function); 2-3 peer leaders per cadaver visit time (sign ups will be in the lab prep room):**

April 2: 11am-1pm

April 3: 8am-10am

April 4: 2-4pm

April 6: 10am-noon

April 9: 11am-1pm

April 10: 8am-10am

April 11: 2pm-4pm

April 13: 10am-noon

### **Additional Teaching Staff**

#### ***Dissection Leaders:***

- Danielle Mechfield: [danielle.mechfield@umconnect.umt.edu](mailto:danielle.mechfield@umconnect.umt.edu)
- Kari Zins: [Kari.Zins@umconnect.umt.edu](mailto:Kari.Zins@umconnect.umt.edu)
- Ciara Gorman: [ciara.gorman@mso.umt.edu](mailto:ciara.gorman@mso.umt.edu)

#### ***Access to the Laboratory Outside of Regularly Scheduled Class Hours***

Students are expected to complete dissections when the labs are not in use for other undergraduate teaching. There is a calendar on the course Moodle page, that students/lab instructors and Dr. Minns use in order to schedule activities in the lab. Dissectors must sign up in advance and check out the designated lab key. Groups of two or more dissectors must be in the lab during dissection for safety reasons. Please locate the safety features in the lab and make sure the lab door is closed and locked during dissections.

#### **Laboratory Specimen and Cadaver Information and Policies.**

Much of your education in anatomy will result from a selfless donation of thoughtful individuals who voluntarily chose to donate their body to the Montana Body Donation Program that supports WWAMI education programs. *WWAMI (Washington, Wyoming, Alaska, Montana and Idaho) is a cooperative regional medical education program of the University of Washington School of Medicine that provides places for twenty Montana students per year in its entering medical student class. These twenty students take their first year of medical school at Montana State University and complete their studies at the University of Washington in Seattle and at community clinical training sites throughout the Northwest.*

#### ***Respect for the Cadavers:***

*These donated cadavers are gifts and must be treated with the dignity and respect they deserve. It is inappropriate to make disrespectful comments within and outside of the laboratory. You will observe professional conduct while in the lab and outside the lab. Naming of the cadavers, unnecessary horseplay, posing of the cadavers, etc WILL NOT BE TOLERATED. These cadavers are the result of gifts from fellow Montanans and their families who believed strongly in the benefit of health science education.*

<http://www.montana.edu/wwwwami/bodydonate.html>

Rules for Cadaver Use in the Anatomy and Physiology Labs:

- 1) The cadavers used in this lab were obtained from the Montana Body Donation Program at Montana State University. Cadavers are donated to MSU according to state regulations. Persons donating their body receive no financial compensation; this is truly their ultimate gift. Hence it is imperative that proper respect be paid to the cadaver at all times.
- 2) Only students enrolled in the University of Montana- main campus BIOH classes and teaching staff are allowed into the cadaver lab at any time. No minor children or other family members are to be brought to the open lab times. If you see someone in the lab who you believe is unauthorized, notify laboratory personnel and/or ask him/her to leave the lab.
- 3) Body parts, tissue, etc must not be removed from the lab.

- 4) No cameras, camera phones or electronics with photo or video capability are allowed in the lab. Photography is prohibited.
- 5) Please be careful, the cadaver dissections will be used and material reviewed in other lab sections by other students. Keep the dissections moist and well covered when not working on that portion of the cadaver. Keep doors to lab closed and locked to keep security intact; students should police the lab.

#### Laboratory Safety in the Anatomy and Physiology Labs

- 1) In case of an emergency, dial extension 4000 to report serious injuries. Phones are located throughout the Health Sciences Building. The Health Sciences main office is in room 104.
- 2) First Aid supplies are available in the supply room for HS 101 (the anatomy lab), HS 104 (the main office) and HS 403.
- 3) You are required to wear disposable gloves (nitrile or neoprene, latex gloves are not acceptable) at all times while working with the cadaver dissections. Cadavers are embalmed with a fluid containing propylene glycol, ethyl alcohol, phenol and formaldehyde. Physical contact of your skin and clothing should be avoided.
- 4) Wear old clothes and a long-sleeved lab coat while working with the cadaver. Lab coats should not be worn outside the lab.
- 5) No open-toes shoes or sandals are allowed in the lab. Wear shoes that cover your entire foot.
- 6) Contact lens wearers should be aware that chemical fumes can pass into gas permeable and soft lenses. These fumes irritate the cornea. Protective glasses (prescription or safety glasses) are recommended to protect against chemical splashes. Know the location of the eyewash station before you begin.
- 7) If you are pregnant, or believe you may be pregnant, you may NOT participate in the laboratories until you provide Dr. Minns with written documentation from your obstetrician that verifies an understanding of the chemicals to which you and your fetus are being exposed while in the presence of the cadavers.
- 8) No foods, drinks, gum or the application of makeup are allowed in the lab.
- 9) Respirators can be purchased for use in the lab, if desired.
- 10) Wash hands prior to leaving the lab.



**Important Dates and Assigned Readings (this may be amended by Dr. Minns during the Semester)**

<b>Meeting Dates</b>	<b>Topics</b>
<b>1/29/2018</b>	Review of Cadaver Care Sign-ups for Cadaver lab visits by lower division BIOH classes. Dissection plan for neck group due
<b>2/5/2018</b>	Dissection plans due for: Foot and hand groups
<b>2/12/2018</b>	Upper extremity vessels cleaned- due Neck Dissection due
<b>2/26/2018</b>	Lower extremity vessels cleaned- due
<b>3/5/2018</b>	Dr. Minns leads discussion of the pathology studies/resources/assignment structure
<b>3/19/2018</b>	Digestive system vessels clean up due (if applicable)
<b>4/2/2018- 4/12/2018</b>	Assist with lower division human biology laboratory visits -sign up in the lab
<b>4/23/2018</b>	Final Dissection and Pathology presentations due (mandatory class meeting for all dissectors)

**Laboratory Specific Dates and Learning Outcomes**

<b>Topic</b>	<b>Learning Outcomes</b>
<b>Lab Orientation – Protocols and Procedures Introduction to Anatomical Terms, Gross and Surface Anatomy Cellular anatomy and physiology</b>	HAPS Modules A,B, C: Describe the scope of studies in anatomy and physiology and be able to use and understand descriptive anatomical and directional terminology. Identify cellular structures and explain their respective functions.
<b>The Endocrine System</b>	HAPS Mod J: Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the endocrine system and explain the functional roles of their respective hormones in communication, control, and integration.
<b>Blood Physiology demo: Blood typing, Formed element</b>	HAPS Mod K: Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the cardiovascular system and explain their

<b>identification, homeostatic imbalances of the blood</b>	functional roles in transport and hemodynamics.
<b>Heart Anatomy</b>	HAPS Mod K: Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the cardiovascular system and explain their functional roles in transport and hemodynamics.
<b>Blood Vessels Vessels of the Head, Neck and Upper Extremity</b>	HAPS Mod K: Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the cardiovascular system and explain their functional roles in transport and hemodynamics.
<b>Blood Vessels Vessels of the Abdomen and Lower Extremity</b>	HAPS Mod K: Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the cardiovascular system and explain their functional roles in transport and hemodynamics.
<b>Lymphatics and Immune System</b>	HAPS Mod L: Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the lymphatic system and explain their functional roles in fluid dynamics and immunity.
<b>Anatomy of the Respiratory System</b>	HAPS Mod M: Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the respiratory system and explain their functional roles in breathing/ventilation and in the processes of external and internal respiration.
<b>Digestive System</b>	<p>HAPS Mod N: Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the digestive system and explain their functional roles in digestion, absorption, excretion and elimination.</p> <p>HAPS Mod O: Students who have completed this section of the course should be able to explain the functional relationship among cellular, tissue and organ level metabolism, the role nutrition plays in metabolism, and the mechanisms by which metabolic rate is regulated in the body.</p>
<b>Urinary System Physiology demo: Urinalysis testing and interpretation</b>	<p>HAPS Mod P: Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the urinary system and explain their functional roles.</p> <p>HAPS Mod Q: Students who have completed this section of the course should be able to identify and describe the physiology of the homeostatic mechanisms that control fluid/electrolyte and acid/base balance.</p>
<b>Reproductive System – Male and Female</b>	HAPS Mod R: Students who have completed this section of the course should be able to identify and describe the major gross and microscopic anatomical components of the reproductive system and explain their functional roles in reproduction and inheritance.

**Important Laboratory Dates:**

Laboratory	Rotations	Lab Meeting Presentation Date	Week of student labs	TA assigned
<b>Lab 1: Endocrine System</b>				
Rotation 1:	Cadaver/Torso Model Endocrine organs	19-Jan	1/23-1/25	
Rotation 2:	Histology 1: Thyroid, parathyroid, pancreas	19-Jan	1/23-1/25	
Rotation 3:	Histology 2: Pituitary and adrenal glands	19-Jan	1/23-1/25	
<b>Lab 2: Blood</b>				
Rotation 1:	Blood Typing exercises	26-Jan	1/30-2/1	
Rotation 2:	Homeostatic imbalances of blood	26-Jan	1/30-2/1	
Rotation 3:	Histology and Differential blood count	26-Jan	1/30-2/1	
<b>Lab 3: Heart Anatomy</b>				
Rotation 1:	Cadaver heart	2-Feb	2/6-2/8	
Rotation 2:	Pig heart dissection	2-Feb	2/6-2/8	
Rotation 3:	Heart models	2-Feb	2/6-2/8	
<b>Lab 4: Heart Physiology</b>				
Rotation 1:	Ascultation station, BP and pulse points	9-Feb	2/13-2/15	
Rotation 2:	Cardiac Cycle explanation	9-Feb	2/13-2/15	
Rotation 3:	Powerlab ECG/ECG	9-Feb	2/13-2/15	
<b>Lab 5: Blood vessels of Head, Neck and UE</b>				
Rotation 1:	Male Cadaver: vessels of neck and UE	Wednesday 2/14 7am	2/20-2/22	
Rotation 2:	Vessel Histology and Models	Wednesday 2/14 7am	2/20-2/22	
Rotation 3:	Models/Circle of Willis/how to draw vessels	Wednesday 2/14 7am	2/20-2/22	
Lab Practical 1: Labs 1-5	extra open labs on 2/24 and 2/25		2/27-3/1	
<b>Lab 6: Lymphatics and immune system</b>				
Rotation 1:	Lymphatics model and cadaver	2-Mar	3/6-3/8	
Rotation 2:	Histology (lymph node)	2-Mar	3/6-3/8	
Rotation 3:	Histology (spleen and thymus)	2-Mar	3/6-3/8	
<b>Lab 7: Anatomy of the respiratory system</b>				
Rotation 1:	male cadaver	9-Mar	3/13-3/15	
Rotation 2:	histology	9-Mar	3/13-3/15	
Rotation 3:	models	9-Mar	3/13-3/15	
<b>Lab 8: Physiology of the respiratory system</b>				
Rotation 1:	Spirometry Exercise- coordinate with Prof. BretTobalske Respiratory Interactive Case Study Review	16-Mar	3/20/22	
<b>Lab 9: Digestive System</b>				
Rotation 1:	Cadaver: digestive organs/function	23-Mar	4/3-4/6	
Rotation 2:	Alimentary Canal Histology and Models	23-Mar	4/3-4/6	
Rotation 3:	Accessory Organs Histology and Models	23-Mar	4/3-4/6	
<b>Lab 10: Blood vessels of the thorax/abdomen, and lower extremity</b>				
Rotation1:	male cadaver	6-Apr	4/10-4/12	
Rotation 2:	Models	6-Apr	4/10-4/12	
<b>Lab 11: Urinary System</b>				
Rotation 1:	Kidney Models and cadavers	13-Apr	17-Apr	
Rotation 2:	histology	13-Apr	17-Apr	
Rotation 3:	urinalysis	13-Apr	17-Apr	
<b>Lab 12: Reproductive System</b>				
Rotation 1:	Cadaver/ male model	20-Apr	4/24-4/26	
Rotation 2:	Female models	20-Apr	4/24-4/26	
Rotation 3:	Histology	20-Apr	4/24-4/26	
*Final Lab Practical exam (labs 6-12) 5/1-5/3	extra open labs 4/28 and 4/29			

**Pathology Presentation Rubric**

<b>Cadaver Dissection Pathology Presentation Rubric</b>			
<p>Select a homeostatic imbalance that results in anatomic changes in humans. Describe the normal anatomy by identifying appropriate structures on the cadaver. Describe the disease process and the pathology associated with the disease (indicating changes in the pertinent structures identified during the normal anatomy portion). Students may use 2-3 powerpoint slides, but most of the presentation should involve the cadaver. Students must write a 1 page summary including 4 peer-reviewed or professional medical association publications.</p>			
	Available Points	Points Earned	Comments
<p><b>Introduction</b>                      Name of disease and clinical manifestations                      Description of etiology, prevalence and risk factors associated with developing disease.</p>	4		
<p><b>Normal Anatomy</b>                      Effectively describes normal anatomy using the cadaver.</p>	4		
<p><b>Pathology</b>                      Describes the disease process that leads to anatomical pathology. Comparisons should be made to 'typical' anatomy.</p>	4		
<p><b>Referencing</b>                      Must include 4 credible peer-reviewed and/or professional medical organization journal articles. Must include in-text citations and full length references at the end of the paper.</p>	4		
<p><b>Presentation</b>                      The presentation must be professional and last 5-10 minutes. Students should be prepared to answer questions.</p>	2		
<p><b>Professionalism</b></p>	2		
<p style="text-align: center;"><b>Total</b></p>	<b>20</b>		