

**LANCASTER GENERAL COLLEGE FOR NURSING AND SCIENCES HEALTH  
SYLLABUS**

- I. Title: BIO 195 Cross-Sectional Anatomy
- II. Course Description: This course studies basic structures viewed in sectional anatomy. The student is given a basis for understanding cross-sectional anatomy when viewing CAT scan and MRI images.
- III. Prerequisite: Anatomy and Physiology I and II
- IV. Placement: Spring semester
- V. Time Allotment: Theory 15 hours
- VI. Faculty: Robin Harclerode, M.Ed, RT(R)- course coordinator  
Office: LGCNHS Phone: 544-4865 ext. 44865  
Pager: 305-1465
- VII. Credits: One (1)
- VIII. Evaluation:
- | <u>Instrument</u> | <u>Weight</u> | <u>Time/Date</u>               |
|-------------------|---------------|--------------------------------|
| Unit Exams        | 100%          | Week 5, 8, 12, final exam week |
- \*A grade of "C" (2.0) is required to pass the theory portion of the course.**
- IX. Textbooks: Madden, Michael E., 2001, Introduction to Sectional Anatomy Workbook, Philadelphia, PA, Lippincott, Williams and Wilkins.
- X. Course Objectives:
- By the conclusion of the course the student will:
1. Evaluate human structures on cross sectional images;
  2. Recognize pathologic conditions which are demonstrated on cross sectional images.
  3. Analyze cross-sectional images to identify normal and abnormal anatomic presentations.
- XI. School Policies: Students are held accountable for all policies in the Student Handbook and any revisions made to those policies during the academic year.
- XII. Class: A. Importance of Attending Class

Education comprises more than just private reading and passing of exams. Students should recognize that active and informed participation in class is essential to the development of their intellectual abilities and scholarly growth. Students must also recognize the importance, for both the present and the future, of achieving an academic

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record that reflects their intellectual ability. Such records are seldom achieved without regular attendance and participation in class activities. Attendance will be taken.

B. Student Responsibility for Missed Material

Students are responsible for all material presented and announcements made in class, regardless of attendance. It is the student's responsibility to obtain materials and assignments if absent.

C. Unit Examinations

Examinations should only be missed in extenuating circumstances. A student who misses an examination will be required to make up the examination on the next day of lecture. Contact the Course Coordinator, (Mr. Harclerode) prior to the next lecture day to make arrangements to take the exam.

A student who misses an examination, regardless of the reason, will have ten percent (10%) deducted from the grade achieved on the exam. Example: The exam is worth sixty (60) points, the student takes the exam and achieves a grade of 52/60. The score of 52 is then decreased by ten percent (10%) or five (5) points, thus the grade on the exam will be 47/60. An alternate examination may be given for the make-up examination.

D. Class Behavior

Once class has started, the instructor has the prerogative not to admit students into lecture. Students will be dismissed from class for any inappropriate behavior.

XIII. Other: Academic Dishonesty and Plagiarism

Academic dishonesty violates the spirit and purpose of an academic community, and is therefore subject to disciplinary action. Academic dishonesty includes cheating on examinations and unauthorized duplicated submission of work.

Plagiarism is an act of academic dishonesty. Any work submitted that is not your own is an act of plagiarism. In preparing assignments, you must acknowledge in writing, any use of outside sources or any assistance you received in preparing an assignment.

If an instructor believes that a student has committed an act of academic dishonesty or has plagiarized material, the instructor will award a failing grade for that assignment to the student. If the occurrence is during an examination, the student will receive a zero for that portion of their grade and must leave the room.

XIV. References: Madden, Michael E., 2001, Introduction to Sectional Anatomy, Philadelphia, PA, Lippincott, Williams and Wilkins. ISBN 0-7817-2105-9

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XV. Content

| CONTENT   | HOURS | STUDENT ACTIVITY   | COURSE OBJECTIVE |
|---|-------|--|------------------|
| <p><b>Cross Sectional Anatomy</b></p> <p>I. Body planes, cavities and regional terminology</p> <p>A. Body planes</p> <p>B. Directional terms</p> <p>II. Head</p> <p>A. Osseous components (cranium)</p> <ol style="list-style-type: none"> <li>1. Frontal</li> <li>2. Parietal</li> <li>3. Occipital</li> <li>4. Temporal</li> <li>5. Sphenoid</li> <li>6. Ethmoid</li> </ol> <p>B. Osseous components (face)</p> <ol style="list-style-type: none"> <li>1. Maxilla</li> <li>2. Nasal bones</li> <li>3. Zygomatic</li> <li>4. Lacrimal</li> <li>5. Mandible</li> <li>6. Volmer</li> <li>7. Inferior nasal conchae</li> <li>8. Palantine</li> </ol> <p>C. Osseous components (sinuses)</p> <ol style="list-style-type: none"> <li>1. Frontal</li> <li>2. Ethmoidal</li> <li>3. Sphenoidal</li> <li>4. Maxillary</li> </ol> | 1     | <b>Required reading:</b> None  | 1, 2             |
| <p><b>Cross Sectional Anatomy</b></p> <p>D. Regions of the brain</p> <ol style="list-style-type: none"> <li>1. Cerebrum <ol style="list-style-type: none"> <li>a. corpus callosum</li> <li>b. longitudinal fissure</li> <li>c. frontal lobe</li> <li>d. parietal lobe</li> </ol> </li> <li>2. diencephalon <ol style="list-style-type: none"> <li>a. epithalamus</li> <li>b. thalamus</li> <li>c. hypothalamus</li> </ol> </li> </ol>   | 1     | <p><b>Required Reading:</b> Madden, Sectional Anatomy Review, Chapter 4.</p> <p><b>Complete in class:</b> Madden, Applications, Chapter 4, Figure 4-1 through 4-36 as directed by course instructor.</p> | 1, 2             |

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| CONTENT   | HOURS | STUDENT ACTIVITY   | COURSE OBJECTIVE |
|---|-------|--|------------------|
| <ul style="list-style-type: none"> <li>3. brain stem               <ul style="list-style-type: none"> <li>a. mid brain</li> <li>b. pons</li> <li>c. medulla oblongata</li> </ul> </li> <li>4. cerebellum               <ul style="list-style-type: none"> <li>a. vermis (cerebellar hemispheres)</li> <li>b. location</li> </ul> </li> </ul>  |       |  |                  |
| <p><b>Cross Sectional Anatomy</b></p> <ul style="list-style-type: none"> <li>E. Ventricles               <ul style="list-style-type: none"> <li>1. Lateral ventricle</li> <li>2. Septum pellucidum</li> <li>3. Interventricular foramen</li> <li>4. Third ventricle                   <ul style="list-style-type: none"> <li>e. walls (thalamus)</li> <li>f. cerebral aqueduct (Aqueduct of Sylvius)</li> </ul> </li> <li>5. fourth ventricle (location)</li> <li>6. choroid plexus (function)</li> </ul> </li> <li>F. Arterial Blood Supply               <ul style="list-style-type: none"> <li>1. Internal carotid artery                   <ul style="list-style-type: none"> <li>a. anterior cerebral artery</li> <li>b. anterior communicating artery</li> <li>c. middle cerebral artery</li> <li>d. posterior communicating artery</li> </ul> </li> <li>2. Vertebral arteries                   <ul style="list-style-type: none"> <li>a. basilar arteries</li> <li>b. posterior cerebral arteries</li> </ul> </li> <li>3. Circle of Willis</li> </ul> </li> <li>G. Pathology related to the head               <ul style="list-style-type: none"> <li>1. Concussion</li> <li>2. Contusion</li> <li>3. Hydrocephalus</li> <li>4. Fractures</li> <li>5. Hemorrhage</li> </ul> </li> </ul> | 1     | <p><b>Required Reading:</b> Madden, Chapter 4.</p> <p><b>Complete in class:</b> Madden, Applications, Chapter 4, Figure 4-1 through 4-36 as directed by course instructor.</p> | 1, 2             |

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|--|-------|---|------------------|
| <ul style="list-style-type: none"> <li>6. CVA</li> <li>7. Aneurysm</li> <li>8. Glioma</li> <li>9. Pituitary Adenoma</li> <li>10. Metastatic tumors</li> </ul>  |       |   |                  |
| <p><b>Cross Sectional Anatomy</b></p> <p>III. The Neck</p> <p>A. Osseous Components</p> <ul style="list-style-type: none"> <li>1. General Structures of Vertebrae <ul style="list-style-type: none"> <li>a. Vertebral body</li> <li>b. Pedicles</li> <li>c. Lamina</li> <li>d. Vertebral foramen</li> <li>e. Transverse process</li> <li>f. Spinous process</li> </ul> </li> <li>2. Features of cervical vertebrae <ul style="list-style-type: none"> <li>a. Transverse foramina</li> <li>b. bifid tip</li> <li>c. atlas</li> <li>d. axis</li> <li>e. odontoid process</li> </ul> </li> <li>3. Intervertebral discs <ul style="list-style-type: none"> <li>a. Anulus fibrosus</li> <li>b. nucleus pulposus</li> <li>c. Herniated disk</li> </ul> </li> </ul> <p>B. Viscera of the neck</p> <ul style="list-style-type: none"> <li>1. Pharynx</li> <li>2. Esophagus</li> <li>3. Larynx</li> <li>4. Trachea</li> <li>5. Thyroid</li> </ul> <p>C. Vascular Components</p> <ul style="list-style-type: none"> <li>1. Internal jugular veins</li> <li>2. Common carotid artery</li> <li>3. Brachiocephalic artery</li> <li>4. Internal carotid artery</li> <li>5. External carotid artery</li> <li>6. Vertebral arteries</li> </ul> | 1     | <p><b>Required Reading:</b> Madden, Sectional Anatomy Review, Chapter 5</p> <p><b>Complete in class:</b> Madden, Applications, Chapter 5, Figure 5-1 through 5-20 as directed by course instructor.</p> | 1, 2             |
| <p><b>Cross Sectional Anatomy</b></p> <p><b>TEST - Head and Neck</b></p>   | 1     |   | 1, 2             |
| <p><b>Cross Sectional Anatomy</b></p> <p>IV. Thorax</p>  | 1     | <p><b>Required reading:</b> Madden, Sectional Anatomy Review, Chapter 1, Figure 1-1 through</p>   |                  |

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|---|-------|--|------------------|
| <ul style="list-style-type: none"> <li>A. Osseous components               <ul style="list-style-type: none"> <li>1. Sternum</li> <li>2. Ribs</li> <li>3. Thoracic Vertebral</li> </ul> </li> <li>B. Muscles               <ul style="list-style-type: none"> <li>1. thoracic wall (intercostals)</li> <li>2. diaphragm</li> </ul> </li> <li>C. Pleural cavities               <ul style="list-style-type: none"> <li>1. Left and right pleural cavities</li> <li>2. Visceral pleura</li> <li>3. Parietal pleura</li> </ul> </li> <li>D. Lungs               <ul style="list-style-type: none"> <li>1. Hilus</li> <li>2. Oblique fissure</li> <li>3. Horizontal fissure</li> <li>4. Lobes</li> </ul> </li> <li>E. Mediastinum               <ul style="list-style-type: none"> <li>1. middle mediastinum</li> <li>2. heart and vessels</li> <li>3. chambers and valves</li> </ul> </li> <li>F. Great vessels               <ul style="list-style-type: none"> <li>1. pulmonary trunk</li> <li>2. right pulmonary artery (PA)</li> <li>3. left pulmonary artery</li> <li>4. aorta</li> <li>5. SVC and IVC</li> </ul> </li> </ul> |       | 1-33 as assigned by course instructor.   |                  |
| <p><b>Cross Sectional Anatomy</b></p> <ul style="list-style-type: none"> <li>G. Thymus</li> <li>H. Trachea</li> <li>I. Esophagus</li> <li>J. Thoracic duct</li> <li>K. Azygos vein</li> </ul>   | 1     | <b>Complete in Class:</b> Madden, Sectional Anatomy Review, Chapter 1, Figure 1-1 through 1-33 as assigned by course instructor. | 1, 2             |
| <p><b>Cross Sectional Anatomy</b></p> <p><b>TEST - Chest</b></p> <ul style="list-style-type: none"> <li>V. Abdomen               <ul style="list-style-type: none"> <li>A. Vertical planes                   <ul style="list-style-type: none"> <li>1. Midsagittal plane</li> <li>2. Median plane</li> <li>3. Sagittal plane</li> </ul> </li> </ul> </li> </ul>   | 1     | <p><b>TEST - Chest</b></p> <p><b>Required Reading:</b> Madden, Sectional Anatomy Review, Chapter 5.</p>                          | 1, 2             |

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|---|-------|--|------------------|
| <ul style="list-style-type: none"> <li>B. Horizontal planes               <ul style="list-style-type: none"> <li>1. Transpyloric plane</li> <li>2. Pyloric region of the stomach, kidneys and gall bladder</li> <li>3. Transumbilical plane</li> </ul> </li> <li>C. Quadrants and regions               <ul style="list-style-type: none"> <li>1. Abdominal regions (hypochoondriac, lumbar, iliac, inguinal, epigastric, umbilical and hypogastric.</li> </ul> </li> <li>D. Lumbar vertebrae and spinal cord</li> <li>E. Diaphragm (appearance)</li> <li>F. Hemidiaphragms</li> <li>G. Crura or crus</li> <li>H. Hiatus               <ul style="list-style-type: none"> <li>1. caval hiatus</li> <li>2. esophageal hiatus</li> <li>3. aortic hiatus</li> </ul> </li> <li>I. Abdominal wall muscles</li> <li>J. Psoas muscles</li> <li>K. Abdominal aorta (location, course and branches)               <ul style="list-style-type: none"> <li>1. Celiac artery</li> <li>2. SMA</li> <li>3. Left gastric, hepatic and splenic arteries.</li> </ul> </li> </ul> |       |  |                  |
| <p><b>Cross Sectional Anatomy</b></p> <ul style="list-style-type: none"> <li>L. Inferior vena cava (origin and position relative to the aorta)</li> <li>M. Renal veins (level and function)</li> <li>N. Hepatic Veins (level and function)</li> <li>O. Hepatic Portal System               <ul style="list-style-type: none"> <li>1. Hepatic portal vein</li> <li>2. Inf. Mesenteric vein</li> <li>3. Sup. Mesenteric vein</li> <li>4. Splenic vein</li> </ul> </li> <li>P. Peritoneum</li> <li>Q. Retroperitoneum and retroperitoneal organs</li> </ul>  | 1     | <p><b>Required Reading:</b> Madden, Sectional Anatomy Review, Chapter 5.</p> | 1, 2             |

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|--|-------|---|------------------|
| R. Liver<br>S. Esophagus<br>T. Cardiac orifice, cardiac notch<br>U. Stomach <ol style="list-style-type: none"> <li>1. Curvatures</li> <li>2. pyloric region</li> <li>3. angular notch</li> <li>4. peritoneal relationship</li> </ol> V. duodenum<br>W. Jejunum<br>X. Ileum<br>Y. Colon (track and segments)  |       |   |                  |
| <b>Cross Sectional Anatomy</b><br><br>Z. Spleen<br>AA. Pancreas<br>BB. Kidneys<br>CC. Ureters<br>DD. Adrenal gland   | 1     | <b>Complete:</b> Madden, Applications, Chapter 5, Figure(s) 5-1, 5-3, 5-4, 5-6, 5-8, 5-10, 5-16, 5-20, 5-26, 5-30   | 1, 2             |
| <b>Cross Sectional Anatomy</b><br><br>Abdomen – sagittal images  | 1     | <b>Complete:</b> Madden, Applications, Chapter 5, Figure(s) 5-33, 5-38, 5-41, 5-42, 5-43, 5-44  | 1, 2             |
| <b>Cross Sectional Anatomy</b><br><br><b>TEST – Abdomen</b>  | 1     |   | 1, 2             |
| <b>Cross Sectional Anatomy</b><br><br>VI. Pelvis <ol style="list-style-type: none"> <li>A. Pelvic cavity</li> <li>B. Sacrum</li> <li>C. Sacral promontory</li> <li>D. Coccyx</li> <li>E. Os coxae               <ol style="list-style-type: none"> <li>1. Ilium</li> <li>2. Pubis</li> <li>3. Ischium</li> </ol> </li> <li>F. GI organs in the pelvis</li> <li>G. Urinary organs               <ol style="list-style-type: none"> <li>1. ureter(s)</li> <li>2. bladder</li> <li>3. trigone</li> </ol> </li> <li>H. female reproductive organs               <ol style="list-style-type: none"> <li>1. ovaries</li> </ol> </li> </ol> | 1     | <b>Required Reading:</b> Madden, Sectional Anatomy Review, Chapter 6<br><b>Complete:</b> Madden, Applications, Chapter 6, Figure(s) 6-3, 6-4, 6-8, 6-16, 6-18, 6-36, 6-40, 6-42, 6-44, 6-45 | 1, 2             |

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|---|-------|---|------------------|
| <ul style="list-style-type: none"> <li>2. uterine tubes</li> <li>3. uterus</li> <li>4. vagina</li> <li>I. male reproductive organs               <ul style="list-style-type: none"> <li>1. testes</li> <li>2. prostate</li> </ul> </li> <li>J. iliac arteries</li> <li>K. ascending and descending colon</li> <li>L. cecum</li> <li>M. psoas muscles</li> <li>N. ureters</li> </ul> |       |   |                  |
| <p><b>Cross Sectional Anatomy</b></p> <p>VII. Vertebrae</p> <ul style="list-style-type: none"> <li>A. General anatomy of all vertebrae</li> <li>B. Anatomical differences between vertebrae</li> <li>C. Intervertebral disk structures</li> <li>D. Spinal cord, conus medullaris and cauda equina</li> <li>E. Subarachnoid and epidural spaces</li> </ul>                           | 1     | <p><b>Required Reading:</b> Madden, Sectional Anatomy Review, Chapter 7,</p> <p><b>Complete:</b> Madden, Applications, Chapter 6, Figure(s) 6-3, 6-4, 6-8, 6-16, 6-18, 6-36, 6-40, 6-42, 6-44, 6-45, <u>AND</u> Chapter 7, Figure(s) 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 7-7.</p> | 1, 2             |
| <p><b>Cross Sectional Anatomy</b></p> <p>VIII. Extremities and Joints</p> <ul style="list-style-type: none"> <li>A. osseous structures</li> <li>B. nerves</li> <li>C. arteries and veins</li> <li>D. muscles</li> <li>E. tendons</li> <li>F. ligaments</li> </ul>   | 1     | <p><b>Required Reading:</b> Madden, Sectional Anatomy Review, Chapter 8,</p> <p><b>Complete:</b> Madden, Applications, Chapter 8, Figure(s) 8-11.</p>   | 1, 2             |
| <p><b>TEST - Pelvis</b></p>   |       |   | 1, 2             |