DESCRIPTION
This course provides a University level background and training in the fundamentals of anatomy and physiology and covers all the major body systems relevant to CAMPEP training requirements for graduate students, including image representation, cadaveric representation and body systems integrating both structure and function. This course concentrates on exposing students to real-world understandings of human physiology and anatomy as it applies to typical diagnostic and therapeutic clinical physics applications. This course was designed to be aligned with and cover all the CAMPEP requirements for training in human physiology and anatomy for the PhD-MCiSc program.

CONTACT HOURS: 4 meeting sessions/lectures, self-directed course.

PREREQUISITES
Undergraduate courses in Engineering and Physics consistent with the CAMPEP program entry requirements. Approved enrollment in CAMPEP PhD-MCiSc degree in Medical Biophysics at Western University. Approved enrollment in ARC Bootcamp in fall term following successful completion of this course.

ANTIREQUISITES
Undergraduate courses in Physiology and Anatomy at Western or any accredited University

COURSE CONTENT
The following topics will be covered in the following order and timeframe. There will be a meeting session at specific periods and after completion of a body system for the instructor and students to sit face to face together to review previous content and undertake an oral presentation and quiz comprised of a problem or case dedicated to the content.

Textbooks:
GA = Gray’s Anatomy for Students, 3rd edition; Drake.
HP = Human Physiology, an Integrated Approach, 6th edition; Silverthorn.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Reading</th>
<th>Evaluation</th>
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<tbody>
<tr>
<td>Anatomy &amp; Physiology Nomenclature</td>
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<tr>
<td>• Important anatomical terms</td>
<td>GA: p. 2-4</td>
<td>Throughout the course</td>
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<tr>
<td>• Overview of body systems</td>
<td>GA: p. 12-50</td>
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<tr>
<td>Head and Neck</td>
<td></td>
<td>Culminating Activity A: Identify important structures, their functions, and dose restraints, in the head/neck region. Identify abnormalities.</td>
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<tr>
<td>Regional anatomy</td>
<td>GA: p. 855-1114</td>
<td>A2: label parts of the brain/meninges</td>
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<tr>
<td>CNS Physiology</td>
<td>HP: Chapter 9</td>
<td>A3: label specialized structures of the neck</td>
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<tr>
<td>Visual System Physiology</td>
<td>HP: p. 357-367</td>
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<tr>
<td>Back</td>
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<tr>
<td>Component parts</td>
<td>GA: p. 56-60</td>
<td>A4: label thoracic vertebrae, and bones and muscles of the upper back</td>
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<td>Regional anatomy</td>
<td>GA: p. 64-110</td>
<td>A5: identify the structures of the lung and ribs</td>
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<td>Thorax</td>
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<td>A6: label the major components of the heart and the circulatory system in the chest</td>
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<tr>
<td>Component parts</td>
<td>GA: p. 124-128</td>
<td>Culminating Activity B: Identify important structures, their functions, and dose restraints, in the upper back and chest region. Identify abnormalities</td>
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<tr>
<td>Regional anatomy</td>
<td>GA: p. 139-230</td>
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<td>Circulatory System Physiology</td>
<td>HP: Chapter 14</td>
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<td>Respiratory System Physiology</td>
<td>HP: p. 570-575</td>
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<td>Abdomen</td>
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<tr>
<td>Component parts</td>
<td>GA: p. 259-263</td>
<td>A7: label lumbar vertebra and major components of the digestive system</td>
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<tr>
<td>Regional anatomy</td>
<td>GA: p. 277-401</td>
<td>A8: label sacral vertebra and major components of the urinary system</td>
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<td>Digestive System Physiology</td>
<td>HP: Chapter 21</td>
<td>A9: label the major components of pelvis and reproductive system in males and females</td>
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<td>Urinary System Physiology</td>
<td>HP: Chapter 19</td>
<td>Culminating Activity C: Identify important structures, their functions, and dose restraints, in the lower back, abdomen and pelvic regions in addition to identifying abnormalities.</td>
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<td>Pelvis</td>
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<td>Component parts</td>
<td>GA: p. 426-432</td>
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<tr>
<td>Regional anatomy</td>
<td>GA: p. 441-520</td>
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<td>Reproductive System Physiology</td>
<td>HP: Chapter 26</td>
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<tr>
<td>Limbs, etc.</td>
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<td>Upper limb overview</td>
<td>GA: p. 685-701</td>
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<tr>
<td>Lower limb overview</td>
<td>GA: p. 535-550</td>
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<tr>
<td>Muscle Physiology</td>
<td>HP: Chapter 12</td>
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<tr>
<td>Immune System Physiology</td>
<td>HP: Chapter 24</td>
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Regional anatomy should include a basic knowledge the following, as relevant to the site:

- Bones, joints, and cavities
- Muscles and ligaments
- Nerves
- Blood and lymphatic vessels
- Organs
- Skin

**Evaluation**

This course will be graded as a “pass” or “fail” on the transcript. To pass this course, students must:

1. Review and digest the suggested readings, listed above.
2. Complete 9 brief take-home assignments with the objective of identifying basic regional anatomy on simple diagrams. These will be handed out when each new section is assigned; students will self-assess this work to verify they are keeping up with the course content.
3. Complete 3-4 culminating activities to demonstrate understanding between basic structure and function of each major system of the human body, and to identify abnormalities. These will be discussions, with the instructor, at the end of each month and graded on a pass/fail basis. In accordance with the policy of the University, the
grade assigned to oral work presented in English shall take into account syntax, diction, grammar and use of appropriate arguments to support claims based on evidence. In addition, in the professional life of a medical physicist, the manner in which oral communications are presented is extremely important. CAMPEP trainees must develop these skills as an integral part of this course and program. To encourage the student to do so, the grades assigned to oral work will take into account all aspects of presentation including conciseness, organization and the preparation and use of tables and figures.

4. Attend and complete to the satisfaction of the instructors the Anatomy and Radiology Contouring Bootcamp workshop at the end of the fall term.

**Tentative Schedule:**
Assignment 1 (A1) – handed out May 1  
Assignment 2 (A2)  
Assignment 3 (A3)  
Culminating Activity A – May 31

Assignment 4 (A4) – handed out June 1  
Assignment 5 (A5)  
Assignment 6 (A6)  
Culminating Activity B – June 30

Assignment 7 (A7) – handed out July 1  
Assignment 8 (A8)  
Assignment 9 (A9)  
Culminating Activity C – July 30

Aug 10 – informal review of upper and lower limbs, muscular physiology  
Aug 20 – informal review of lymphatic system physiology

Nov – Anatomy and Radiology Contouring Bootcamp

These are designed to fulfill the CAMPEP Anatomy and Physiology requirements as posted in the Appended CAMPEP credential requirements as follows:

**8.5 Anatomy and physiology**
8.5.1 Anatomy nomenclature  
8.5.2 Pathology nomenclature  
8.5.3 Skin  
8.5.4 Skeleton/joints  
8.5.5 Muscles and ligaments  
8.5.6 Brain/CNS  
8.5.7 Autonomic nervous system  
8.5.8 Visual system  
8.5.9 Thorax  
8.5.10 Abdomen  
8.5.11 Pelvis  
8.5.12 Respiratory system  
8.5.13 Digestive system  
8.5.14 Urinary system
8.5.15 Reproductive system
8.5.16 Circulatory system
8.5.17 Lymph system
REQUIRED TEXTBOOKS
Gray's Anatomy for Students, 3rd Edition With STUDENT CONSULT Online Access
By Richard Drake, PhD, FAA, A. Wayne Vogl, PhD, FAA and Adam W. M. Mitchell, MB, BS, FRCS, FRCR

Richard Drake, PhD, FAA, Director of Anatomy, Professor of Surgery, Cleveland Clinic Lerner College of Medicine, Case Western Reserve University, Cleveland, Ohio; A. Wayne Vogl, PhD, FAA, Professor of Anatomy & Cell Biology, Department of Cellular and Physiological Sciences, Faculty of Medicine, University of British Columbia, Vancouver, British Columbia, Canada and Adam W. M. Mitchell, MB, BS, FRCS, FRCR, Consultant Radiologist, Chelsea and Westminster Hospital, Honorary Senior Lecturer Imperial College, London, United Kingdom

by Dee Unglaub Silverthorn (Author) Hardcover
There is a newer edition of this item:

NICE TO HAVE TEXTBOOKS
Gray's Anatomy: The Anatomical Basis of Clinical Practice, Expert Consult - Online and Print, 40e Hardcover – Oct 23 2008 by Susan Standring (Author)

SPECIFIC LEARNING OBJECTIVES
1. To expose the student to anatomy and physiology concepts at the 2-4-year University level and to provide the student with practical experience identifying the major body systems and articulate how they work.
2. To familiarize the student with the human body systems and how these are represented in cadaveric images.
3. To examine scientific and medical abnormalities of the major human physiological and anatomical systems (function and structure) and their relationships. Real-world examples drawn from these areas will be discussed in two hour sessions with the instructor, as a part of the assessment of the learning outcomes, students will be required to implement aspects of these examples in cases provided online.

LEARNING OUTCOMES
• Deep understanding of human anatomy and physiology at the level of systems
• Understand and articulate structure-function (anatomy-physiology) of major human systems including Brain, heart, lungs, circulatory, respiratory, lymphatic, digestive, musculo-skeleton.
• Familiarity and ability to train others by explaining how human body systems are represented in cadaveric and medical imaging schema.
• Comfortable with jargon, language and syntax that is used clinical in the description of medical abnormalities of the major human physiological and anatomical systems (function and structure) and their relationships.
• Be readily able to provide real-world examples and cases where deep understanding anatomy and physiology can be used to change diagnoses or treatment plans.

ACADEMIC OFFENCES
Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a scholastic offence, at the following Web site:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf

Students that are in emotional/mental distress should refer to Mental Health@Western, http://www.uwo.ca/uwocom/mentalhealth/, for a complete list of options about how to obtain help.

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