**HS 371 Human Anatomy**
School of Health, Exercise Science, and Athletics
University of Wisconsin – Stevens Point
**Spring of 2017**

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|---|---|---|---|---|
| **Lecture:** | Monday, Wednesday & Thursday 9:00-9:50 | | | Room 146 HEC |
| **Labs:** | Section 1 | Monday | 10:00-11:50 | Room 116 HEC |
| | Section 2 | Wednesday | 10:00-11:50 | Room 116 HEC |
| | Section 3 | Thursday | 10:00-11:50 | Room 116 HEC |
| | Section 4 | Thursday | 2:00- 3:50 | Room 116 HEC |

**Instructor:** Rory Suomi, PhD, LPTA (# 1197-19)
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**Office hours:** Monday & Wednesday from 12:00 – 1:00 pm,
Thursday from 1:00 to 2:00 pm, or by appointment.

**Course description:**(4 credits) This course is designed to help the student gain a functional understanding of the integumentary, skeletal, muscular, cardiorespiratory, & nervous systems of the human body.

**Course materials:**
**Textbook**: Marieb, Elaine, Mallatt, Jon & Wilhelm, Pat. Human Anatomy. 7th ed. (2014)
San Francisco, CA: Pearson Benjamin Cummings.
**Web resource**: Study partner for the textbook is at www.anatomyandphysiology.com
(not required; this will be discussed in class)

**Lecture objectives:** **Listed by chapter at the end of the syllabus.**
**Course expectations:**
Students will be present at all examinations, lab quizzes & practicums. Make-up exams and quizzes will only be granted for excused absences. Please notify instructor in advance if you know you already have a conflict with one of the scheduled exams or quizzes. Make-ups must be done within 1 week of the scheduled exam. Laboratory equipment will be treated with respect and only used for learning purposes. If any damage occurs to the lab equipment due to mistreatment, the student may be responsible for the expense to replace it.

**Attendance** is taken, after **6 absences**; **4 points** will be deducted from your attendance points for each absence. After 12 absences 0 points will be earned. Labs count as double classes & you **must have prior permission** from the instructor to switch days.
**Note**: There is an **alternative attendance policy option** (contract) which will be explained during first 3 class meetings.

| **Student evaluation:** | **% of grade** | **Points** |
|---|---|---|
| Four examinations (100, 120, 140, 140) (last exam will be during finals week) | 47.6 % | 500 points |
| 7 laboratory quizzes (20 points) | 13.3 % | 140 points |
| Lab Practicums (2 x 60 points) | 11.4 % | 120 points |
| Laboratory projects (9 x 25 points) | 21.4 % | 225 points |
| Attendance | 6.3 % | 65 points |
| **Total** | | **1050 points** |

**Grading scale:** The final letter grade will be awarded as follows (represents minimum points for grade):

| | | |
|---|---|---|
| **A:** 92-100% (≥ 966 points) | **B-:** 80-81% ( 840- 860.5) | **D+:** 67-69% ( 704- 734.5) |
| **A-:** 90-91% ( 945- 965.5) | **C+:** 77-79% ( 809- 839.5) | **D:** 60-66% ( 630- 703.5) |
| **B+:** 87-89% ( 914- 944.5) | **C:** 72-76% ( 756- 808.5) | **F :** <60% or ( < 630)) |
| **B:** 82-86% ( 861- 913.5) | **C-:** 70-71% ( 735- 755.5) | |

***Tentative Lecture Schedule Lectures meet in Room 146 HEC***

| **Date** | **Lecture topic** | **Text Readings**:** |
|---|---|---|
| 01/23 | Course overview/expectations. Levels of organ/and AT | ch..1 |
| 01/25 | Levels of organization and anatomical terminology (AT) | ch..1 |
| 01/26 | Levels of organization and anatomical terminology (AT) | ch..1 |
| 01/30 | Connective tissue and histology | ch. 4 |
| 02/01 | Connective tissue and histology | ch. 4 |
| 02/02 | Connective tissue – structure and function | ch. 4 |
| 02/06 | Integumentary system | ch. 5 |
| 02/08 | Integumentary system | ch. 5 |
| 02/09 | Integumentary system | ch. 5 |
| 02/13 | Skeletal system – bone formation and structure | ch. 6 |
| 02/15 | Review/ catch-up & Axial skeleton | ch. 7 |
| 02/16 | **Exam I (ch. 1, 4, 5) In classroom 146 HEC: 9:00am** | |
| 02/20 | Review exam and axial skeleton | ch. 7 |
| 02/22 | Axial skeleton | ch.7 |
| 02/23 | Axial Skeleton | ch.7 |
| 02/27 | Appendicular Skeleton | ch.7 |
| 03/01 | Appendicular skeleton | ch.8 |
| 03/02 | Appendicular Skeleton | ch.8 |
| 03/06 | Appendicular skeleton | ch.8 |
| 03/08 | Appendicular skeleton | ch.8 |
| 03/09 | Joints | ch. 9 |
| 03/13 | Joints | ch. 9 |
| 03/15 | Joints | ch. 9 |
| **03/15** | **Exam II (ch.6, 7, 8) 6:-8:00pm SCI A-121** | |
| 03/16 | skeleton practicum | |
| 03/27 | Review exam II & Joints | ch. 9 |
| 03/29 | Muscle tissue | ch. 10 |
| 03/30 | Muscle tissue | ch. 10 |
| 04/03 | Muscles | ch. 11 |
| 04/05 | Muscles | ch. 11 |
| 04/06 | Muscles | ch. 11 |
| 04/10 | Muscles | ch. 11 |
| 04/12 | Muscles | ch. 11 |
| 04/13 | Heart | ch. 19 |
| 04/17 | Heart | ch. 19 |
| 04/19 | Heart | ch 19 |
| **04/19** | **Exam III (ch.9, 10 & 11) 6:-8:00pm SCI A-121** | |
| 04/20 | Heart | ch. 19 |
| 04/24 | Review exam & Heart | ch 19 |
| 04/26 | Introduction to CNS | ch. 12 |
| 04/27 | CNS | ch 12 |
| 05/01 | CNS | ch.13 |
| 05/03 | CNS | ch. 13 |
| 05/04 | CNS | ch. 13 |
| 05/08 | CNS | ch. 13 |
| 05/10 | CNS | ch. 13 |
| 05/11 | CNS | ch. 13 |

***Final exam (ch's 12,13,19) Monday, May 15th, 12:30 to 2:30 pm***

***Tentative Laboratory Schedule*** ***Meet in*** **Room 116 HEC**

| Week | Week of: | Laboratory topic |
|---|---|---|
| 1 | January 23d | **No Lab** |
| 2 | January 30th | **Lab 1**. Orientation to the human body |
| 3 | February 6th | **Lab 2** Tissue & Integumentary system |
| 4 | February 13th | **No lab: but will have lecture during lab time. (ch 6)** |
| 5 | February 20th | **Lab 3**. Skeletal bone tissue & axial skeleton |
| 6 | February 27th | **Lab 4** Appendicular skeleton |
| 7 | March 6th | **No lab but lab lecture (TBD)** |
| 8 | March 13th | **Skeletal Practicum** |
| | March 20th | **Spring Break** |
| 09 | March 27th | **Lab 5** Joints |
| 10 | April 3d | **Lab 6** Muscle tissue & muscles |
| 11 | April 10th | **Lab 7** Muscles |
| 12 | April 17th | **Muscle Practicum** |
| 13 | April 24th | **Lab 8** Heart |
| 14 | May 1st | **No Lab: but will have lecture during lab time (ch 12)** |
| 15 | May 8th | **Lab 9.** CNS |

** **There may be additional readings and handouts given in class. If you miss class, you are responsible for getting a copy from a classmate**.

## Course Objectives

### Chapter one: Orientation to the human body

1)___ Students will be able to define anatomy & physiology and describe the subdivisions of anatomy.

2)___ Students will be able to name the levels of structural organization in the body and explain their relationships

3)___ Students will be able to list the organ systems of the body and briefly state their functions.

4)___ Students will be able to define the anatomical position

5)___ Students will be able to use anatomical terminology to describe body directions, regions & planes.

6)___ Students locate the major body cavities, their sub-divisions & the major organs contained within

7)___ Students will be able to identify medical imaging techniques used to visualize internal structures.

### Chapter four: Tissues

1)___ Students will be able to define tissue and list the four main types of tissue in the body.

2)___ Students will be able to list the several functional and structural characteristics of epithelial tissue.

3)___ Students will be able to describe apical, lateral and basal surface features of epithelia cells.

4)___ Students will be able to define & explain differences of exocrine and endocrine glands.

5)___ Students will be able to describe several functional and structural characteristics of connective tissue.

6)___ Students will be able to describe the types of connective tissue and their locations.

7)___ Students will be to discuss the structure and function of mucous, serous & cutaneous membranes

8)___ Students will be able to identify the location of the three types of muscle tissue

9)___ Students will be able to describe the inflammatory and repair processes by which tissues recover from injury.

**Chapter five: Integumentary system**

1)___ Students will be able to name the tissue types that compose the epidermis, dermis and hypodermis.

2)___ Students will be able to name & describe the functions of the major layers of the epidermis & dermis.

3)___ Students will be able to describe the factors that contribute to skin color.

4)___ Students will be able to list the major parts of a hair and a hair follicle.

5)___ Students will be able to compare the structure and function of oil and sweat glands.

6)___ Students will be able to identify the structure of nails.

7)___ Students will be able to explain why serious burns are life-threatening and how burns are treated.

8)___ Students will be able to differentiate between first, second and third degree burns.

9)___ Students will summarize the characteristics and warning signs of skin cancers, especially melanoma.

10___ Students will be able to explain the changes that occur in the skin from birth to old age.

**Chapter six: Bones and skeletal tissues.**

1)___ Students will be able to locate the 3 major cartilage types of the adult human body, and describe the functional properties of cartilage tissue.

2)___ Students will be able to compare structure, functions & locations of the 3 types of cartilage tissue

3)___ Students will be able to explain why bones can be considered organs.

4)___ Students will be able to describe the main functions of the bony skeleton.

5)___ Students will be able to describe the gross anatomy of a typical long bone and typical flat bone.

6)___ Students will be able to discuss the chemical composition of bone tissue and the functions of It's organic and inorganic parts.

7)___ Students will be able to explain endochondral ossification and describe the location of the primary and secondary ossification sites.

8)___ Students will be able to discuss how bone tissue is remodeled within the skeleton.

9)___ Students will be able to explain the steps in the healing of bone fractures.

10___ Students will be able to list some symptoms for specific disorders of bone.

11___ Students will be able to describe bone architecture and bone mass change with age.

## Chapter seven: The axial skeleton

1)___ Students will be able to define the axial skeleton and contrast it with the appendicular skeleton.

2)___ Students will be able to describe the various types of bony markings.

3)___ Students will be able to name and identify the bones and important bony markings of the skull.

4)___ Students will be able to discuss the location & function of the nasal cavity & paranasal sinuses.

5)___ Students will be able to describe the general structure and identify the major components of the vertebral column.

6)___ Students will be able to discuss the structure of a typical vertebra, and briefly describe some of the special features of cervical, thoracic and lumbar vertebrae.

7)___ Students will be able to describe major components of the rib cage and the sternum.

8)___ Students will be able to differentiate true ribs from false and floating ribs.

9)___ Students will be able to describe the 3 major types of abnormal curvatures of the spinal column & explain spinal stenosis.

10___ Students will be able to describe how the axial skeleton changes with age.

## Chapter eight: The appendicular skeleton

1)___ Students will be able to name the basic parts of the appendicular skeleton.

2)___ Students will be able to identify bones/bony markings that comprise the pectoral girdle and explain their functions.

3)___ Students will be able to describe the bones of the arm, forearm, wrist and hand.

4)___ Students will be able to name the bones contributing to the hip bone.

5)___ Students will be able to compare and contrast the male and female pelvis.

6)___ Students will be able to identify the bones of the lower limb and their important markings.

7)___ Name the three supporting arches of the foot and explain their importance.

8)___ Students will be able to describe various disorders of the appendicular skeleton.

9)___ Students will be able to describe how limb length changes, relative to the length of the head and trunk, as we grow.

## Chapter nine: Joints

1)___ Students will be able to define joint, and classify joints by **structure** and by **function**.

2)___ Students will be able to describe the general structure of fibrous joints and provide 3 examples.

3)___ Students will be able to describe cartilaginous joints and provide examples of the two main types.

4)___ Students will be able to describe the structural characteristics shared by all synovial joints.

5)___ Students will be able to explain how synovial joints function & what factors influence stability.

6)___ Students will be able to name and describe the common types of body movements.

7)___ Students will be able to list the six classes of synovial joints based on shape.

8)___ Students will be able to describe the key features of shoulder, elbow, hip, knee and ankle joints and the types of movement they allow.

9)___ Students will be able to name the most common joint injuries & discuss the problems associated with each.

10)__ Students will be able to name and describe the main types of arthritis.

11)__ Students will be able to explain how the function of joints change with aging.

**Chapter 10 : Muscle tissue**

1)___ Students will be able to list 4 functional properties that distinguish muscle tissue from other tissues.

2)___ Students will be able to compare and contrast skeletal, cardiac and smooth muscle tissue.

3)___ Students will be able to name the layers of connective tissue that occur in and around skeletal muscle.

4)__ Students will be able to describe the bundle within bundle organizational structure of skeletal muscle

5)__ Students will be able to compare and contrast the three skeletal muscle fiber types.

6)___ Students will be able to describe the capacity of regeneration of muscle tissue in comparison to other types of tissue.

7)__ Students will be able to explain symptoms and causes of muscular dystrophy, myofascial pain syndrome and fibromyalgia.

8)__ Students will be able to explain the changes that occur in skeletal muscle with age.

**Chapter 11: Muscles of the body.**

1)___ Students will be able to explain the three types of lever systems in which muscles participate, and indicate the arrangement of elements (effort, fulcrum & load) in each.

2)___ Students using the lever systems arrangement will be able to calculate torque and changes of torque by manipulating force and load arm lengths.

3)___ Students will be able to define and explain mechanical advantage (disadvantage) and will be able calculate mechanical advantage and measures of torque on simple lever models.

4)__ Students will be able to describe the functions of prime movers (agonist), antagonists, synergists & fixators.

5)__ Students will be able to list the criteria used in naming muscles.

6)__ Students will be able to name and identify the major muscles listed in Tables 11.1 through Tables 11.16. and be able to state the general location and action(s) of each.

## Chapter 19: The Heart

1)___ Students will be able to describe the orientation & location of the heart in the thorax.

2)___ Students will be able to describe the layers of the pericardium and tissue layers of the heart wall.

3)___ Students will be able to list select structural features of each heart chamber.

4)___ Students will be able to describe the path of a drop of blood through the 4 heart chambers and the systemic and pulmonary circuits.

5)___ Students will be able to name the heart valves and describe their locations and functions.

6)___ Students will be able to describe the structure and function of intercalated discs.

7)___ Students will be able to name the components of the conducting system of the heart and describe the conduction pathway.

8)___ Students will be able to identify the major coronary arteries and cardiac veins of the heart

9)___ Students will be able to describe causes and symptoms of coronary artery disease, heart failure, and atrial and ventricular fibrillation.

10)___ Students will be able to list some effects of aging on the heart.

## Chapter 12: Fundamentals of the Nervous System

1)___ Students will be able to list the main functions of the nervous system

2)___ Students will be able to explain the structural and functional divisions of the nervous system

3)___ Students will be able to define neuron, its structural components and their functional roles.

4)___ Students will be able to classify neurons **structurally** and **functionally**.

5)___ Students will be able to list the six types of supporting cells in nervous tissue and distinguish them by function.

6)___ Students will be able to define reflex and its basic components as well as list the components of a reflex arc consisting of a sensory neuron, interneuron and motor neuron and show how they relate to the basic organization of the nervous system.

7)___ Students will be able to distinguish the role of gray matter from white matter in the CNS.

8)___ Students will be able to describe how multiple sclerosis relates to myelin & axon function.

## Chapter 13: Central Nervous System

1) Students will be able to identify the 4 major parts of the adult brain.

2)___ Students will be able to name the major lobes, fissures and functional areas of the cerebral cortex.

3)___ Students will be able to name the three classes of fiber tracts in white matter of the cerebrum.

4)___ Students will be able to describe the structure and functions of the diencephalon.

5)___ Students will be able to identify the three basic subdivisions of the brain stem and their function.

6)___ Students will be able to describe the structure and functions of the cerebellum

7)___ Students will be able to describe the function of the basal ganglia and functional brain systems.

8)___ Students will be able to explain how the meninges, cerebrospinal fluid and the blood-brain barrier protect the CNS.

9)___ Students will be able to explain the formation of cerebrospinal fluid and describe its pattern of circulation.

10___ Students will be able to describe the gross structure of the spinal cord, and arrangement of gray and white matter.

11___ Students will be able to list the neuron types in ascending and descending neuronal pathways to and from the brain.

12___ Students will be able to describe signs/symptoms of concussions, brain contusions, strokes, Alzheimer's disease.

13___ Students will be able to explain the effects of severe injuries to the spinal cord.

14___ Students will be able to describe specific congenital disorders.