

Gross Anatomy I Syllabus

Spring 2012

Course Number and Name: AN-1746 Gross Anatomy and Embryology I
Course Hours: 150 Hours (Lecture 4 hours, Lab 6 hours)
Course Credits: 7

Contact Information:

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Course Materials:

Required Readings / Texts and or Articles:

Text:

Title: Clinically Oriented Anatomy
Author: Ketih L. Moore et al.
Edition: 6th Ed.
Publisher: Lippincott Williams & Wilkins
Date of publication: 2010

Title: The Developing Human: Clinically Oriented Embryology
Author: Ketih L. Moore & T.V.N. Persaud
Edition: 8th Ed.
Publisher: Saunders
Date of publication: 2003

Suggested Readings / Texts:

Text:

Title: The Atlas of Anatomy
Author: Frank H. Netter, M.D.
Edition: 4th Ed.
Publisher: Saunders
Date of publication: June 2006

Course Description: Gross anatomy of the human body emphasizing the back, walls of the thorax and abdomen and the upper and lower extremities. The laboratory portion of the course covers cadaver dissection. Correlations will be made to various clinical presentations using a computer case-based program and instructor presentation of cases. The cases will emphasize clinical presentations related to Gross Anatomy I with contributions from other courses in trimester one when appropriate. Additionally, this course will cover development of the musculoskeletal system and embryogenesis of the human body. This course will also emphasize congenital birth defects that the chiropractor may be presented with in a clinical setting.

CCE / TCC Competencies:

Human anatomy I is designed to bridge the basic science principles of human anatomy to the essential chiropractic tools of:

- physical exam
- neuromuscular skills
- diagnoses of disease
- chiropractic adjustment or manipulation.

Therefore, the student must master each anatomical system being cognizant of its clinical applications.

Learning Outcomes:

1. Integrate knowledge of gross anatomy with different clinical presentations.
2. Demonstrate the relevance of anatomy to clinical application.
3. Acquire requisite anatomy knowledge as a foundation for clinical reasoning.
4. Describe the development of the human zygote.
5. Describe the formation of the musculoskeletal system.
6. Describe the congenital anomalies of the musculoskeletal system.

Learning Objectives:

In order for the student to achieve the above learning outcomes the student will need to:

1. Describe the origin, insertion, function, innervation, & blood supply of each muscle of the axial and appendicular skeleton.
2. List the bones of the appendicular and axial skeleton with a focus on the bony landmarks and their ligamentous and muscular attachments.
3. Identify the rami, trunks, divisions, cords, and branches of the nerve plexi.
4. Identify which structures make up the walls of the inguinal canal.
5. Identify and describe the layers of the superficial and deep back, and the abdomen.
6. Identify the origin, insertion, nerve supply, blood supply, and action of each muscle of the appendicular and axial skeleton.
7. Define and describe the first week of development including: gametogenesis, spermatogenesis, oogenesis, meiosis, fertilization, blastogenesis.
8. Define and describe the second week of development including: implantation and embryonic development.
9. Define and describe the third week of development including: gastrulation, neurulation, and somites.
10. Define and describe the fourth – eighth week of development including: germ layer derivatives and teratogens.
11. Describe the congenital anomalies in the musculoskeletal system
12. Identify the consequences of each anomaly on the patient.

Teaching Philosophy:

“Repetition is the key, the key is repetition”. This statement was forever expressed by Dr. O’Callahan at LSUHSC in Shreveport, LA. The longer I teach the more convinced I see of the truth of his repetitive statement. During my class I will briefly teach you the process of learning. It will be covered in more detail in your neuroanatomy course. However, to go from short term, to intermediate, and finally long term memory the mind must “hold” information in a cognizant state for an extended period of time. This is why there is so much overlap between classes. Due to the physiology of learning I incorporate a “progressive” teaching style where every system is added to the next. In short, students in Gross Human Anatomy II will be continually tested on concepts from Gross Human Anatomy I. We will begin with the superficial back, then walls of the thorax and superficial back, then walls of the abdomen, walls of the thorax and superficial back, then upper & lower extremities, walls of the abdomen, walls of the thorax and superficial back. Then in the next semester these topics will once again be added to those specifically taught in that section.

Therefore, it is essential for the students to continually review previous anatomical systems in order to retain their knowledge. In addition, it is helpful if students will read the lectures before class. In that way, the student is not seeing the information for the first time. This will save the student a great deal of time studying and reviewing. By the end of Gross Human Anatomy I & II the student will be able to go into their other courses with confidence to learn physical exam, neuromuscular skills, diagnoses of disease, and chiropractic adjustment or manipulation.

Student Responsibilities:

The student has the responsibility of attending to their own learning and taking responsibility for their grade. The student should show up to class on time prepared to learn. While in the lab the student will wear either scrubs, or a long lab coat at all times. This includes late night study sessions and weekends. Students are to dress as to cover their bodies remembering that we are on a campus of academic excellence. Last, but not least, treat all your fellow classmates with respect. Your professor is here to help you.

General Lab & Lecture Guidelines:

No cameras in the lab.

Turn off your cell phone in lab & lecture.

Do not text during lecture or lab.

Do not “Facebook” or social network during class.

If you have a personal emergency you are free to get up and quietly walk out of lecture or lab without the professor’s permission, and without disturbing others.

No visitors in lab without permission from Dr. Routh.

Personal computers in class are highly encouraged, and lectures may be recorded.

No food or drink in lab.

Course Content and Outline: The following is a weekly guide to the topics covered throughout the semester. It also shows when the exams will be given. Keep in mind that all tests are cumulative.

Week 1:

Superficial Back I & II: This lecture includes the origins and insertions, the action, and nerve and blood supply of superficial muscles of the back, the location of the triangle of auscultation and lumbar triangle and their significance, the location of the quadrangular space, triangular space, and triangular interval and know their contents, the identification of the arteries that supply muscles of the back and their origins, and the nerves that supply muscles of the back and their spinal nerve components.

Clinical Problems of the Back: This lecture includes the components of a vertebra, the understanding how stenosis occurs and how its corrected, how a laminectomy is performed and why, how vertebrae are fused, the consequences of vertebral body dislocations and fractures, the effects of herniated intervertebral discs and how they are repaired, how intervertebral discs are replaced, and finally the effects of spinal cord injury.

Week 2:

Shoulder I & II: This lecture classifies the acromioclavicular joint and describes its components, ligamentation, innervation, associated muscles and movements and describe changes that occur with shoulder separation or clavicle fracture. It also classifies the glenohumeral (shoulder) joint and describe its components, ligamentation, and innervation. This lecture describes the anatomical association of the scapula and humerus. This material illustrates the muscles of the rotator cuff and their blood and nerve supply. It shows the changes that occur following a shoulder dislocation or fractures of the proximal part of the humerus, and finally this lecture describes the blood and nerve supply to the muscles of the shoulder.

Deep Back I: This lecture identifies the back muscles and describe their actions and nerve and blood supply. It also describes the thoracolumbar fascia. This material identifies the erector spinae muscles, their actions, and nerve and blood supply, identifies the intermediate muscles of the back, their actions, and nerve and blood supply, and finally it identifies the borders, contents and muscles of the suboccipital triangle and their nerve and blood supply.

Week 3:

Deep Back II

Back = Bones/Ligaments I & II: This lecture describes the components of vertebrae and distinguishes between vertebrae at different levels. It also describes the vertebral column and developmental anomalies that can occur. This lecture helps interpret x-rays of the vertebral column, describes the curvature of the vertebral column, illustrates the movements of the vertebral column and its joints, presents the components of an intervertebral disc, and finally it describes the vertebral ligaments and their importance.

Week 4:

Pectoral/Axilla: This lecture identifies the important features of ribs and clavicle. It lists the fractures of the clavicle and the structural changes that result. This material classifies the sternoclavicular joint as to type of synovial joint, movements permitted and ligamentation, describes the anatomical location of the breasts on the thoracic wall, describes blood supply, venous drainage, lymphatic drainage and retromammary space and suspensory ligaments of breasts. This material lists the muscles of the pectoral region and give their nerve supply, attachments and actions, describes the boundaries of the deltopectoral triangle and list those structures passing through this region, describes the clavipectoral fascia as to its extent, attachments and the structures piercing it, describes the boundaries of the axilla, list its contents, identifies the 3 parts of the axillary artery and relations and branches of each, names the 2 veins that join to form the axillary vein, its relationship to the axillary artery, and the point at which it changes its name. This material also describes the lymphatic drainage in the axilla and names the 6 groups of nodes involved and

the areas that they drain. Finally this lecture describes the brachial plexus, showing roots, trunks, divisions, cords and terminal branches.

Pre-Exam Review

Week 5:

Exam

Post-Exam Review

Arm/Elbow I: This lecture identifies the bony landmarks on the humerus, names the cutaneous nerves and superficial veins and lymphatics of the arm, describes the arterial supply to the arm, compares the attachments, functions, nerve and blood supply of the muscles of the anterior and posterior compartments of the arm, identifies the muscles, nerves, vessels, bone and fascial septa on a cross-section of the arm, lists the boundaries and contents of the cubital fossa, describes the clinical significance of the median cubital vein and its relationship to the bicipital aponeurosis, the brachial artery and median nerve, classifies the elbow joint and name the components of this joint, the movements possible and the muscles responsible, and names the major vessels of the arterial anastomosis at the elbow.

Week 6:

Arm/Elbow II, Forearm: This lecture identifies the bony landmarks on the radius and the ulna. Describes the arterial supply to the forearm. Compares the attachments, functions, nerve and blood supply of the muscles of the anterior, lateral and posterior compartments of the forearm. Describes the cutaneous nerves and superficial veins and lymphatics of the forearm. Identifies the muscles, nerves, vessels, bones, interosseous membrane and fascial septa on a cross-section of the forearm. Describes the retinacula, the compartments they create and the pattern for the synovial sheaths. Describes the boundaries, contents of the anatomical snuff box. Finally, this lecture describes the superior and inferior radioulnar joints as to type of joint, ligamentation, movements permitted and the muscles involved in those movements.

Wrist/Hand I & II: This lecture lists the components and movements permitted at the wrist joint. It lists the muscles involved in these movements and classify the joint. It identifies bony landmarks of carpal, metacarpal and phalangeal bones. This material describes the intercarpal, carpometacarpal, intermetacarpal and interphalangeal joints as to components, type of joint and movements permitted. It also describes the unique features of the carpometacarpal joint of the thumb and the movements of the thumb. This material describes the muscles of the hand and their nerve supply, the pattern of attachment for the tendons of the flexor and extensor muscles, the components of the dorsal extensor expansion, and finally the movements of the second through the fifth digits and the hand.

Week 7:

Clinical Problems Lower Extremities: This lecture includes the complications of a hip fracture, artery diseases of lower extremity, venous disorders of lower extremity, nervous diseases and complications of nerve damage, muscle disorders of lower extremity, knee injury (terrible triad) and complications, and ankle and foot injuries.

Gluteal Region I & II: This lecture includes the principal topographic landmarks, superficial innervation, superficial venous and lymphatic drainages, fasciae and bones of the gluteal region. It also distinguishes the muscles of the gluteal region, their nerve supply and actions, and blood supply, and finally it classifies the hip joint, describe its structure, ligaments, movements and blood supply.

Week 8:

Thigh I & II: This lecture describes the general anatomic arrangement of the thigh, its superficial nerve supply, superficial venous and lymphatic drainages, fasciae and bones. Distinguishes the muscles of the anterior, posterior and medial thigh, their innervations and actions and blood supplies. Delineates the boundaries and contents of the femoral triangle and adductor triangle, and describes the complications of fractures of the proximal femur.

Leg/Knee I: This lecture describes the general anatomical arrangement and components of the leg, describes the anatomical boundaries and principal contents of the popliteal fossa, describes the structure of the knee joint and describe its movements, describes the leg muscles constituting the four anatomic compartments of the leg, their nerve supply and principal actions, and finally delineates the blood supply of the leg and its superficial and deep venous drainage.

Week 9:

Leg/Knee II

Ankle/Foot I & II: This lecture identifies the major anatomical features of the tarsal, metatarsal and phalangeal bones. It sketches the cutaneous innervation and dermatome distribution of the leg and foot. It includes classification of the subtalar and transverse tarsal joints, describe their structure and ligamentation and the permissible movements. It includes a list of the muscles involved in the movements of the subtalar and transverse tarsal joints and their innervation. Also included is a description of the layers of the plantar foot from superficial to deep and the dorsum of the foot, identification of the nervous supply to the foot, list of the branches of the anterior and posterior tibial arteries and their distribution in the foot and branches of the dorsalis pedis artery. This lecture describes the venous blood flow in the foot. List the components of the medial and lateral longitudinal and the transverse arches of the foot. Describes the ligaments and tendons involved in support of the three arches of the foot. Finally it describes the anatomical basis for the clinical implications of ankle injuries including inversion and eversion and patellar tendon and Achilles tendon reflexes.

Week 10:

Pre-Exam Review

Exam

Post-Exam Review

Week 11:

Thoracic Wall I & II: This lecture includes the boundaries of the thoracic wall, layers of the thoracic wall, bony thorax, discussion of ribs, intercostal spaces, VAN, and lymphatics.

Anterior Abdominal Wall I: This lecture describes the boundaries of the abdomen, the major landmarks of abdomen, the abdominal planes, regions, and quadrants, the layers of the abdominal wall, the muscles of the abdomen, their actions, and nerve supply, the components of the rectus sheath, the blood supply, venous drainage, nerve supply, and lymphatic drainage of abdominal wall, the components of the inguinal canal, the different types of hernias, the intraperitoneal and retroperitoneal organs, the spaces and recesses of the peritoneal cavity and the peritoneal ligaments, and finally the contents of the median, medial, and lateral umbilical fold.

Week 12:

Anterior Abdominal Wall II:

Posterior Abdominal Wall I & II: This lecture describes the bony parts of the posterior abdominal wall, the muscles of the posterior abdominal wall and describe their action, the fascial lining of the posterior abdominal wall, the vascular system in the abdomen and their major branches or tributaries, the lymphatics of the posterior abdominal wall and be able to identify the cisterna chyli, the formation of the lumbar plexus and identify its branches as they course to principal muscle groups, the abdominal part of the sympathetic trunk, the composition of the aortic plexuses, and finally the blood supply to and drainage from the suprarenal glands.

Week 13: *Pre-Exam Review Week*

Week 14-15: *Final Exam*

Teaching Methodology:

Lecture: comprised of power point presentations with references to clinical conditions to explain relevance. Clinical cases (either Design-A-Case {DAC} or some other form of case presentation). I-clickers will also be used for formative assessment.

Method of Assessment:

Students knowledge of the subject matter will be assessed by:

- Multiple choice
- Essay or short answer
- Extended matching questions

The final grade is assessed simply by dividing the total number of correct answers, throughout the course/semester, by the total number of questions during the semester. The professor reserves the right to give as many test and quizzes as is deemed necessary for the students learning. The lab and lecture questions will be tallied together as equal points, the same value, since one is no more important than the other, and are in fact both equally important. A percentage of the total correct questions will then be calculated and a grade distributed based on the TCC Grading Scale (see above).

General Lab & Lecture Exam Guidelines:

There is NO talking in exams, or you will be removed from the exam.

All exams & quizzes are the property of Dr. Routh and are NOT to be copied or reproduced in any way.

Most exams & quizzes, lecture & lab, will be answered on a Scantron Card. Students are to have a Scantron Card with them at all times in order to be prepared for an unannounced quiz.

If you step on the school seal, then you will be asked to leave the lab.

Lab attire is either scrubs and/or lab coat and pants with closed toe shoes

Grade Method and Scale:

TCC Grading Scale

A = 90 - 100

B = 80 - 89

C = 70 - 79

F = below 70

POLICY INFORMATION:

Attendance Policy:

Regular and punctual attendance of all scheduled classes and laboratories is expected. A student is subject to academic penalty if absences exceed 10%. Absences exceeding 20% subject a student to dismissal from a course. Three incidences of tardiness may constitute an absence. If justifiable cause can be shown for the absenteeism, the student may be permitted to make up missed assignments and maintain enrollment in the class.

Three tardies are allowed per semester. After three tardies, you are not allowed to come into class that day, including on quiz and test days.

Missed Examinations:

Students must notify faculty before missing any examination. If an examination is missed for good and sufficient reason **and** the student has notified the faculty member in advance, a make-up examination may be given subject to a fee of **\$40.00**. The fee for the make-up examination is a minimum of \$75.00 if a standardized patient is required for the exam. Additional required standardized patient hours may increase this \$75.00 minimum fee. All intra-term examination must be made up prior to final examinations. Missed final examinations must be made up within the first week of the next semester. A student may be allowed a maximum of two missed examination dates for good and sufficient reason per trimester. These two missed examination dates are for all enrolled courses in a trimester, not for each individual course. Any request for additional make-up examinations will require documentation substantiating the absence and must be approved by the Dean of Academic Affairs.

Dr. Routh reserves the right to make adjustments to the syllabus at any time.