Course Prerequisites

- DPT 625

Course Materials (Same Texts as used in DPT 726)

Required Lecture Text

Required Laboratory Text

Materials used in DPT 725 will also be used for this course.

Purpose/Course Overview
This course will include the applied anatomy of the axial portion of the human body with an emphasis on biomechanics, and the clinically relevant disorders of this region. Lecture topics will also include the biomechanics of the spinal column including the head and neck, the specific regional anatomy of the thorax and related viscera, and abdominopelvic region and related viscera. Lecture and laboratory topic with cadavers will include axial surface anatomy; musculoskeletal structures of the head, neck, thorax, and abdominopelvic regions of the body, and related regional blood vessels, lymphatic drainage, and peripheral nerve innervations; the anatomy of the brain and spinal cord, thoracic and abdominopelvic organs; The course will also include palpation, motion testing, special tests for spinal disorders with anatomical and mechanical basis, with the intention of providing the student with a three dimensional understanding of the area under study.

Teaching Methods and Learning Experiences
The format of this course will be primarily laboratory, lecture, and the use of specific computer software relevant to clinical anatomy. Laboratory experiences will include cadaver dissection, review of prosections, and the development of psychomotor clinical skills including regional and segmental spinal motion testing, joint and soft tissue mobilization, and the anatomical rationale for mobilization and manipulation setups relevant to the area under study. Lectures and laboratory experiences will be augmented by required textbook and journal readings.

Student Learning Outcomes

Upon successful completion of the course in Clinical Anatomy II, the student shall be able to:
1. Describe the surface anatomy, and the related deep anatomical structures of the axial division of the human body.
2. Describe the differences and similarities between the regions of the axial skeleton and the influence that unique anatomical features have on function.
3. Describe common abnormalities and clinically important disorders of the axial musculoskeletal division of the body.
4. Interpret the anatomical relationships of the heart, myocardial circulation and mechanics, and the influence of diseased state on cardiac tissues.
5. Describe the clinical signs and symptoms distinguishing visceral pain from disorders of the musculoskeletal system.
6. Describe the anatomical relationships of the abdominal viscera, and utilize surface anatomy landmarks to approximate positional and spatial relationships of the viscera.
7. Apply current scientific theories regarding muscle fascial - dynamics of the axial skeleton to the analysis of function and dysfunction.
8. Relate the biomechanics of each region of the spine and those factors contributing to stability and mobility.
9. Describe the appropriate origins, insertions, and actions of all the major muscles of the axial division.
10. Identify the muscles and joints involved when performing common movements and functional tasks
11. Identify the appropriate peripheral nerves, plexus, cord, etc. innervating the muscles, bones, and joints of the axial division.
12. Identify the arterial distribution and lymphatic drainage of the axial division.
13. Identify the main axial muscles, ligaments, arteries and other anatomical structures of the human body, with the use of a cadaveric specimen.
14. Explain current scientific theories and evidence regarding the potential of axial skeleton structures to be a direct source of pain or dysfunction, as well as a region in which pain can be referred from neurovascular and visceral structures.
15. Develop the skills of spine palpation; segmental and regional motion testing, spinal mobilization/ manipulation setup and application of applied velocities and amplitudes of motion, and neuromuscular assessment of trunk musculature performance including strength, power, endurance, and functional abilities.
16. Identify the location and develop the ability to demonstrate the location of the individual abdominal viscera through direct palpation or approximate location on the living subject.
17. Identify the key anatomical structures and functions of the organs associated with the digestive system, hepatic portal system, and renal system.

Course Outline

I. Introduction to components of the axial division of the human body.
   A. Axial division surface anatomy
   B. Principles of mechanical pain vs referred pain
   C. The specialized connective tissues of the vertebral column
   D. General regional anatomy of the vertebral column and related spinal cord

II. Anatomy and Biomechanics of the Axial Skeleton
   A. Concept of anterior and posterior pillars of the vertebral column
   B. Components of the anterior column
      1. vertebral body
      2. cartilaginous endplate
      3. intervertebral disc
   C. Components of posterior column
      1. neural arch
      2. joint structure and mechanics of individual regions
      3. spinal canal

III. The Intervertebral Disc
   A. Components
   B. Function
   C. Pathophysiological implications
   D. Nerve root disorders as related to the intervertebral disc

IV. The Craniocervical and Upper Thoracic Regions of the Vertebral Column
   A. Structure and biomechanics of the upper cervical spine, cervical spine, and thoracic spine
      1. regional cervical and thoracic spine mobilization and manipulation setup
      2. analysis of segmental motion and implications for examination and assessment
      3. scoliosis pathophysiology as related to spine and thoracic cavity
   B. Syndromes of the cervical spine based upon anatomical changes of the specialized connective tissues
      1. spinal canal variation and pathologies
      2. nerve root disorders of the cervical spine
   C. Visceral structures of the neck
      1. esophagus and trachea
      2. vascular and neural structures of the neck

V. The Lower Thoracic and Lumbopelvic Region of the Spine
   A. Structure and biomechanics of lumbar spine and sacroiliac joint
      1. regional lumbar spine mobilization and manipulation setup
      2. Analysis of segmental motion and implications for examination and assessment
   B. The musculature of the lumbopelvic region
      1. thoracolumbar fascia and muscle relationships
      2. erector spinae
      3. multifidus
      4. quadratus lumborum
5. The Abdominal Muscle Mechanism- structure and function in vertebral movement

VI. The Thoracic Cavity
   A. Structures associated with the various regions of the mediastinum
      1. heart and great vessels
      2. vasculature of the heart
      3. chambers of the heart
      4. pericardial cavity
      5. vascular and visceral structures of the mediastinum
   B. Structures associated with the pleural cavities
      1. visceral and parietal pleura
      2. lobes of the lung
      3. trachea and bronchi anatomy
   C. Anatomy and biomechanics of the articulations associated with the ribs

VII. The Abdominal Cavity
   1. Peritoneum and peritoneal cavity
   2. Location and function of
      a. greater omentum
      b. liver and gall bladder
      c. stomach
      d. small intestine
      e. large intestine
      f. spleen
      g. pancreas
      h. kidney
      i. ureter and bladder
      j. uterus and ovaries
   3. Positional relationship of viscera to surface anatomy
   4. Abdominal Wall - Muscle function and hernias
   5. Pelvis and Perineum
      a. pelvic floor muscles

VIII. The Cranium
   A. The Skull – craniofacial divisions & anatomy
   B. Facial muscles
      1. Origin, insertion, & action
      2. Vasculature and Innervation
   C. Atlanto-occipital articulations
      1. Joint Kinematics
      2. Nerve root disorders
   D. Temporomandibular joint anatomy and mechanics
      1. Joint Kinematics
      2. Relationship to cervical spine and Posture
      3. Clinical Conditions
   E. Neural anatomy
      1. The Brain & Cranial Nerves
         a. Cranial Nerves & Innervation
         b. Special Senses (vision / Hearing / Equilibrium)
         c. Brain injury and stroke
      2. Spinal Cord Anatomy
         a. Regional differences
         b. Reflex arcs
         c. Spinal nerves
         d. Spinal cord injury
Grading Criteria
Clinical Anatomy is divided into three units. As a result, the lecture will have three quizzes, three midterm examinations, and one cumulative exam (worth about 75% of the course grade). The laboratory will have six weekly cadaver presentation (2 per unit), two weekly body cadaver presentations, and three lab practical exams (worth about 25% of the course grade). The three quizzes will include material discussed in lecture, and will be taken in the lecture hall. The three midterms will include lecture, reading, and lab material, and will be taken in the lecture hall. The three lab practical exams and cadaver/whole body presentations will be on lab material, and will be taken in lab. The final comprehensive written examination will be given during finals week, and will be taken in the lecture hall. Grades will be determined based on the following percentages of total points earned for the course: 70-79% C; 80-89% B; 90-100% A. The minimum requirements for a passing grade are 70% of total possible points.

Possible Lecture Points
- QUIZZES (3 X 15 points each) = 45 points
- MIDTERM Examinations (3 X 100) = 300 points
- FINAL Examination (cumulative) = 100 points

TOTAL LECTURE POINTS = 445 points

Possible Laboratory Points
- LAB PRACTICAL Examinations (3 x 30) = 90 points
- Whole Body Presentation (2 x 15) = 30 points
- Weekly Cadaver Presentation (6 x 5) = 30 points

TOTAL LAB POINTS = 150 points

OVERALL TOTAL = 595 points

Class Policies
1. All lecture and laboratory sessions will start promptly at the designated time. The student is responsible for all lecture and laboratory material presented regardless of attendance.
2. As a courtesy to fellow students and the instructors, if delayed in getting to class on time please enter through rear door and find seat in the back of the classroom. Once in class, plan on staying until a formal break is announced – leaving the classroom during a lecture is disruptive to both the professor and fellow students.
3. All reading assignments will be completed prior to both lecture and laboratory.
4. If you miss a cadaver laboratory session, for a reason other than sickness or family emergency, participation points will be deducted.
5. Quizzes and Examinations must be taken on the day specified in the course schedule. No make-up examinations will be given.
6. Plagiarism or any other form of cheating will result in a grade of Failure (F) (for class, or just exam?). Class activities, in which students may work together to complete assignments, will be specifically announced.
7. The Faculty is committed to treating you in a professional manner as well as making this course a meaningful experience for you. If you need any help or further explanation of presented material, please see the Faculty as soon as possible!

General Regulations in the Human Anatomy Laboratory
Dissection of the human body is a privilege, which has been granted to the physical therapy student as part of his/her professional training. The privilege of dissection demands a corresponding sense of responsibility in all students who have access to the laboratory. Failure to observe these rules, either during scheduled or unscheduled hours may result in barring the student from further use of the laboratory and laboratory materials or expulsion from the Physical Therapy Program.
1. Visitors are not allowed in the dissecting room at any time. Permission to enter the dissecting room must be given by a Physical Therapy Faculty member.
2. Anatomical materials must never be removed from the laboratory.
3. Each team of students is responsible for the condition of the cadaver and must take all precautions to prevent its deterioration. It is essential that the cadavers be moistened frequently, particularly prior to leaving the dissecting room at the end of each lab session. The cadavers must be wrapped and covered in order to prevent desiccation. Only use the paper toweling that is provided in the Laboratory for cleanup of dissected material.
4. Smoking, eating, or drinking in the laboratory is not permitted. Radios or cameras should not be brought into the laboratory at any time.
5. A conscientious effort should be made to maintain the laboratory in the neatest possible order at all times. Dissected materials or any item that has contacted the cadavers must be disposed of in the red waste receptacles marked
6. All trash should be placed in the appropriate beige trash receptacle. Do not place trash in biohazard materials receptacles!
7. The doors to the Anatomy Laboratory must remain closed at all times.
8. Laboratory coats and latex gloves used at the dissecting table CANNOT be worn outside the dissecting room. All personal items, such as coats and backpacks, should be stored in assigned lockers in the Laboratory.
9. Each cadaver has an identifying number, and the numbered tag must be kept with the cadaver at all times.
10. Under no circumstances are photos or videos of cadavers, models, charts, or any other laboratory material allowed. Taking, distributing, or receiving photos of the lab equipment, including models, charts, cadavers, or other specimen is considered CHEATING for this course.
11. To enforce rule #9, no cell phones, personal computers or portable storage devices are allowed out in the labs. Please store your electronic devices in your assigned locker.

Safety Procedures in the Dissection Laboratory
1. The MSDS chemical list folder, "What to do in an emergency" form, and First-Aid kit are all located in the lab. Your lab instructor will point them out at the start of the semester, and you are encouraged to ready over these documents. All injuries must be reported to the lab instructor immediately.
2. Please be sure to use the hemostat to change scalpel blades. This helps prevent the blade from slipping in the fingers, which could cause lacerations.
3. Dispose of broken glass or old scalpel blades in the red Sharps plastic container. Do not leave used blades on the table or put them in the trash bin.
4. Precautions must be taken to prevent injuries caused by needles, scalpels, and other sharp instruments. Strong communication between fellow dissecting team members is essential to avoid injuries. In general, avoid using a needle or sharp probe for dissecting, and use scalpels sparingly. Blunt dissection (using hands) is the preferred method of dissection.
5. All long hair must be pulled back to avoid contact with cadaver tissue or embalming fluid.
6. The cadavers are embalmed with various preserving fluids, including formaldehyde and phenol. These preserving fluids can irritate the mucous membranes and can be absorbed through skin contact. The following precautions should be observed:
   - Wear appropriate gloves, pants, lab coats and shoes to prevent excessive skin contact.
   - Closed toe shoes must be worn in the lab. Sandals are not allowed. You may wish to bring some old shoes for dissection days.
   - Wear appropriate eye-protection goggles for all contact with exposed cadavers. (see Lab Materials)
   - It is strongly suggested that you avoid wearing soft contact lenses in the laboratory since the lenses can absorb and hold formaldehyde, thus irritating the eyes and damaging the contact lens.
   - Appropriate respirator masks (with approved cartridges) must be used for all contact with exposed cadavers. (see Lab Materials)
   - Use only specifically marked wetting solutions to moisten the cadaver.
   - In case of accidental chemical or tissue contamination of the eye or body, there is an "Eye-Wash" and "Body Wash" located near the entrance to the lab. Students should be aided in flushing their eye or body for 15 minutes with water. For all injuries, students are encouraged to seek medical attention.
   - Wash hands thoroughly every time you leave the lab, and at the end of each lab.
7. After each dissection, clean your dissecting area thoroughly, wet & cover your cadaver, and latch the metal hood over the cadaver. At no time should you leave dissecting equipment on the cadaver, or inside the cadaver bag.
8. Each student is responsible for cleaning their own dissecting tools or trays, or the department-owned dissecting tools or trays that may have been used that day.
9. All Students must sign a "Student Safety Acknowledgement" form, stating that they have read and understand the entire lab safety and cadaver care rules list, and that they agree to abide by those stated rules. Students who have a major or repeated violation of the lab rules / anatomical gift policy may be given an “F” in the course.

The Body Donor Program
The human cadaver material that you will be studying was donated to various Universities through the body donor program. This program is essential to a meaningful study of gross human anatomy. In a very real sense your enrollment in this course gives you a role in the body donor program. The way you speak of your experience in the gross human anatomy lab leaves a powerful impression on those that hear you. We would like you to be aware of the importance of the body donor program and its importance to anatomical education. Furthermore, be fully cognizant of your words and actions related to this course.

Professional Behavior Statement
Entrance into the program of study in physical therapy at San Diego State University signifies a commitment to a doctoring profession, which entails a consistent demonstration of specific knowledge, skills and attitudes. Professional behaviors are a
defining element of a doctoring profession. Thus, integration of professional behaviors is a key aspect of the professional socialization process, which begins in the educational program. The following professional behaviors (adopted from objectives 1-6 of the APTA Clinical Performance Instrument) are expected of all doctoral physical therapy learners:

- Practice in a safe manner that minimizes risk to the patient, self, and others;
- Demonstrate professional behavior in all situations;
- Practice in a manner consistent with established legal and ethical practice standards;
- Communicate in ways that are congruent with situational needs;
- Adapt delivery of physical therapy services with consideration for patient’s differences, values, preferences, and needs;
- Participates in self-assessment to improve clinical and professional performance.

Statement on Cheating and Plagiarism
Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one’s grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term ‘cheating’ not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one’s own work. Cheating includes (but is not limited to):

- Receiving any specific information about a specific exam or quiz prior to you taking it.
- Giving specific information about a specific exam or quiz prior to someone else taking it.
- Using any unauthorized information during an exam.
- Plagiarism - Submitting, as your own, a paper that was authored by another person.
- Changing answers after an exam.
- Taking, or receiving, PHOTOS of the lab equipment, including models, charts, cadavers, or other specimens.
- Not returning the entire "Exam Packet" at the end of the exam, or after the student has viewed the graded exam.

Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the University. For more information on the University’s policy regarding cheating and plagiarism, refer to the General Catalogue or the Graduate Bulletin section 41304.

Accommodations
The University is committed to providing reasonable academic accommodation to students with disabilities, or missed class due to religious holiday.

Students who will be missing a day due to a religious holiday must contact me within the first two weeks of school (check the Clinical Anatomy schedule now). Missed day due to religious holiday is considered an excused absence from class. Any make-up work must be turned in prior to the missed day.

The Student Disability Services Office provides university academic support services and specialized assistance to students with disabilities. Individuals with physical, perceptual, or learning disabilities as addressed by the Americans with Disabilities Act should contact Student Disability Services office for information regarding accommodations at (619) 594-6473 (http://www.sa.sdsu.edu/dss/dss_home.html). Moreover, you should notify me at least one week prior to the first exam so that reasonable efforts can be made to accommodate you.

This syllabus and schedule are subject to change in the event of extenuating circumstances.