

**The University of Texas at El Paso
College of Health Sciences
Doctor of Physical Therapy Program**

DRSC 6495

Anatomy for Rehab Sciences

Fall 2022

COURSE SYLLABUS

Credit Hours: 4

Contact Hours: Total: 120 hrs - Lecture: 30 hours; Lab: 90 hours

Schedule:

Lecture: Tue & Thu 1:00 pm – 1:50 pm (Campbell 213)

Lab 1: Tue 8:00 am -11:00 am and Thu 02:00 pm - 05:00 pm
OR

Lab 2: Tue 2:00 pm - 05:00 pm and Thu 08:00 am - 11:00 am

Lecture Instructor:

Faculty: Dr. Bala Kathirvelu, MBBS, PhD

Phone #: 747 7260

E-mail: bkathirvelu@utep.edu

Office hours: By email request and during dissection lab time

Dissection Lab Instructors:

Dr. Bala Kathirvelu, MBBS, PhD (Primary)

Dr. Daniel Conde, PhD ; Email: daconde@utep.edu

Course Description: A study of the structure and function of the skeletal, muscular, and central and peripheral nervous systems of the human body. The course focuses on human anatomy through didactic methods and cadaver dissection of the trunk, extremities, head, neck, and internal organs.

Course Prerequisites for DPT Students: The UTEP DPT Program curriculum is a lock-step curriculum. Therefore, students must pass all courses in the prior semester of the DPT Program in order to enroll in courses in the subsequent semester. Faculty may consider exceptions for PT 6116 PT Capstone Project I and PT 6117 PT Capstone Project II.

Course Objectives: At the end of this course, the learner will be able to:

1. Identify the classifications, anatomical components, and function of the joints of the limbs and vertebral column and muscles (including origins, insertions, and innervation) throughout the body. (7A Anatomy) [Comprehension]

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2. Identify bony landmarks, ligaments, muscles, peripheral nerves, tendons, bony origins and insertions, intra-articular structures, and fibrocartilage (menisci, labrum, intervertebral disc) on an image, illustration and/or a cadaver. (7A Anatomy) [Application]
3. Recognize the structure and function of organ-level structures covering the thorax and abdominal wall. (7A Anatomy) [Comprehension]
4. Identify the key functional anatomy cardiovascular, respiratory, gastrointestinal, urinary and reproductive system structures on an image, illustration and/or a cadaver. (7A Anatomy) [Application]
5. Identify the distribution and function of cranial and spinal nerves with regard to individual target organs, muscles, applicable functional muscle groups, and dermatomes. (7A Anatomy) [Comprehension]
6. Identify cranial and spinal nerves on an image, illustration and/or a cadaver. (7A Anatomy) [Comprehension]
7. Apply select anatomical knowledge (for example ACL identity and integrity) to hypothetical clinical situations (7A Anatomy) [Application]
8. Identify proper terminology for planes of movement, directions of muscle action, and the relative position between adjacent structures (for example medial-lateral, or distal-proximal). (7A Anatomy) [Comprehension]

Required Textbooks and Other Learning Resources:

Moore KL, Agur AM. *Essential Clinical Anatomy, 6th ed.* New York: Lippincott, Williams & Wilkins; 2020. (or current edition)

Grant's Dissector. 16th ed. Philadelphia: Lippincott, Williams & Wilkins; 2017. (or current edition)

Required Atlas: (ONE of the following)

Netter FH. *Atlas of Human Anatomy. 7th ed.*(or current edition) Philadelphia: Icon (Preferred)

OR

Rohen JW, Yokochi C, Lütjen-Drecoll, E. *Color Atlas of Anatomy, 7th ed.* (or current edition) Lippincott Williams & Wilkins; 2011.

Recommended Textbooks and Other Learning Resources:

Hansen JT. *Netter's Anatomy Flash Cards, 5th ed.* (or current) Icon Learning Systems; 2018.

Methods of Instruction: Lecture, Textbook reading, and blackboard slides and handouts, laboratory demonstration and dissection.

Methods of Evaluation: Student competence and attainment of course objectives are assessed using a variety of methods. These methods and their contribution to the final grade are listed in the table below.

Exam and Lab Practical I : 25% of final grade (Theory 12.5% + Lab 12.5%)
Exam and Lab Practical II : 20% of final grade (Theory 10% + Lab 10%)
Exam and Lab Practical III : 25% of final grade (Theory 12.5% + Lab 12.5%)
Exam and Lab Practical IV : 20% of final grade (Theory 10% + Lab 10%)
Quizzes: : 10% of final grade

Grading Scale: The following letter grade scale is used for the UTEP Doctor of Physical Therapy Program:

| <u>Letter Grade Scale</u> | <u>Numerical Grade Scale</u> |
|---------------------------|------------------------------|
| A | 90-100 |
| B | 80-89 |
| C | 70-79 |
| F | Below 70 |

Exams:

There will be a written/ online examination and a laboratory examination at the end of each of the four modules. The laboratory exam requires you to identify structures pinned or tagged on cadavers, medical images, and bones.

Quizzes:

Quizzes may be given in the lecture, in lab, or online. They are designed to keep you current and to get you used to the types of questions that you may be asked on Written Exams and Lab Exams. They may or may not be announced.

In the event a student becomes ill and cannot be present for an examination or quiz, a doctor's excuse must be presented. Once approved, arrangements can be made to reschedule the examination.

The course is designed to encourage you to pace your learning properly- instead of waiting until the end of the module before beginning to study in earnest- a tactic that can seriously imperil a student's chances of successfully completing the course. The

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laboratory portion of each exam will cover all dissections which should have been completed by the time it is administered.

Students are on the honor system for examinations; however, irregularities on tests (i.e. cheating) observed by faculty, teaching assistants, and/or students will be immediately brought to the attention of the program directors. **Students are not allowed to have any smartdevice during any exams.**

Grades will be posted on Blackboard in a timely fashion. Completed exams may be reviewed after an email request.

Course Content: Refer to topic outline for specific content. In general, the course is outlined into four modules, as follows:

Module I: Upper extremity & back

Module II: Abdomen & Thorax

Module III: Lower extremity & Pelvis

Module IV: Head and neck

In the lecture, major anatomical topics are covered, but students are additionally responsible for assigned readings in the textbook. Occasionally, handouts and other study materials will be distributed in the lecture or via Blackboard.

In the laboratory, the students are organized in groups of approximately 4-6 and perform a whole-body dissection following instructions found in Grant's dissector. During dissections, students are assisted by the instructor and lab assistant. Students are responsible for all dissected structures, not only from their own dissections but also in cadavers dissected by others and all bones of the human skeleton including their major topography.

Resources Available for Student Success:

Confidential Resources:

- **Center for Accommodations and Support Services (CASS):** If you have or suspect a disability and need accommodations, you should contact the Center for Accommodations and Support Services (CASS) at 747-5148. You can also e-mail the office at cass@utep.edu or go by their office in Union Building East, room 106 (next to the UTEP post-office). For additional information, visit the CASS website at <http://sa.utep.edu/cass>.
- **The UTEP Student Health Center:** Union East Suite 100; 915.747.5624; www.utep.edu/chs/shc
- **The UTEP Counseling and Psychological Services:** 202 Union West, 915.747.5302; www.utep.edu/student-affairs/counsel

Additional Resources:

- Division of Student Affairs. 915.747.5076, www.utep.edu/student-affairs

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- DPT Library Research Guide: <http://libguides.utep.edu/pt>
- Writing Center: 915.747.5112. <https://uwc.utep.edu>
- Computer Labs: Independent Learning Center (ILC), 1st floor Campbell Building
- Military Student Success Center: 915.747.5342, www.utep.edu/student-affairs/mssc
- Student Wellness Program. 915.747.6738, www.utep.edu/chs/wellness

University Policies: All students are responsible for following UTEP policies and procedures found in the Handbook of Operating Procedures at www.utep.edu/vpba/hoop

Program Policies: All students are responsible for following all policies and procedures documented in the current DPT Student Handbook. Course policies found in the DPT Student Handbook apply to all courses in the DPT curriculum. The current DPT Student Handbook may be found on the DPT Student Resources site on Blackboard.

https://www.utep.edu/chs/pt/Files/docs/Student%20Handbook%202025_02.pdf

Academic Integrity: The UTEP DPT Program has a “zero-tolerance policy” for scholastic dishonesty. All students must demonstrate academic integrity at all times. The current DPT Student Handbook outlines specific definitions, expectations, details, and consequences related to academic integrity and scholastic dishonesty. Additional information related to academic integrity is available through the UTEP Division of Student Affairs at www.utep.edu/student-affairs/osccr/student-conduct/academic-integrity.html

Course-Specific Policies:

1. **Attendance Policy - Absences:** Refer to current DPT Student Handbook “Attendance and Classroom Behavior” for the DPT Program policy. Additional course-specific policy is as follows:
 - As a student enrolled in a professional program, it is also expected that every student will be seated and attentive as soon as class begins. Tardiness is unprofessional and impacts your fellow peers by interrupting the classroom dynamics.
 - An attendance sheet will be circulated at the end of some lecture randomly for your signature.
 - If you miss a class, you must contact your instructor via email: bkathirvelu@utep.edu within 24 hours of the missed class.
 - If you miss a class, you are responsible for the material that was covered in lecture, and any announcements that were made in class that you missed.
 - There will be no make-up exams unless arrangements are made prior to the scheduled date, or in the case of an unforeseen emergency situation.

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- Missed exams will be entered as a zero grade unless the student has made prior arrangements with the instructor.
 - The instructor will endeavor to arrange a convenient make-up date for both of our schedules.
 - Make-up quizzes and exams will cover the same content, but the format of the test may be different.
 - It will not be the policy of this instructor to routinely allow students to take advantage of missing quizzes and exams with the expectation that they will be able to make up the work later.
 - I consider extraordinary circumstances worthy of an excused absence to include: military duty, jury duty, documented hospitalization, documented illness, funerals, and/or religious observations.
2. **Attendance Policy - Tardiness & Early Departures:** Refer to current DPT Student Handbook “Attendance and Classroom Behavior” for DPT Program policy.
https://www.utep.edu/chs/pt/ Files/docs/Student%20Handbook%202025_02.pdf
3. **Electronic Devices:** Refer to current DPT Student Handbook “Electronic Devices” for DPT Program policy. Additional course-specific policy is as follows:
- **All cell phones must be turned off, or placed on vibrate**, before the beginning of class. Cell phones can be disruptive and a distraction during valuable lecture time which can negatively impact all the students in the class.
 - Cell phones may not be used to photograph quizzes or exams. Exams are returned to the student for inspection, but they must be turned in before you leave class. They are filed and kept by the instructor until after graduation
4. **Professional Behavior Policy:** See DPT Student Handbook “Attendance and Classroom Behavior”, “Professional Behaviors” and “Unprofessional Behavior:” for general program policy.
https://www.utep.edu/chs/pt/ Files/docs/Student%20Handbook%202025_02.pdf
5. **Late or Missed Assignments and Assessments Policy:** See current DPT Student Handbook “Written Examination Policy”.
- Your evaluation will be based on your performance on exams and quizzes conducted in the class
 - Quizzes will consist of questions given at the beginning of class covering the material from the previous class(es) as an online quiz.
 - In-class quizzes will be given at the start of class (first 10-15 minutes).
 - If you are late to class you will only have the remaining time (of the test time) to complete the quiz.
 - If you miss the quiz entirely you will receive a zero.

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- In the case of an excused absence from class, the student and instructor will coordinate a make-up time convenient to both our schedules AND within a short window of time.
- An unexcused absence resulting in a missed exam will result in a grade of zero on that exam and no make-up will be given.

6. Skills Check Policy: NA

7. Practical Exam Policy:

- Refer to the DPT Student Handbook “Practical Exam Policy” for details.
https://www.utep.edu/chs/pt/Files/docs/Student%20Handbook%202025_02.pdf

Course Content and Schedule: (Note: Students will be notified of changes via Blackboard or email. Additional details may be available in supporting course documents provided by the course instructor).

Special Note: The Lectures follow your textbook but will be the highlights of the material. You will need to memorize much material, and study groups are helpful. Chapter readings before the lecture will be helpful to familiarize yourself with the material and any unfamiliar terms. I will be emphasizing the material that is most important.

- The PowerPoint slides presented in the lecture will be available on Blackboard.
- As a pre-professional enrolled in a professional graduate degree program, it is expected that every student shows respect to each other, in the same way that we would show our respect to patients, clients, and peers and other professionals in our field or in any interdisciplinary field with whom we interact.
- Employ and practice your soft skills in this course: showing commitment, time management, positive attitude, motivation, flexibility, persistence and perseverance, empathy, punctuality, strong work ethic, self-awareness, staying calm in a difficult situation, and accepting responsibility, to list a few.
- This course contains a large quantity of material that must be committed to memory. Students should endeavor to study to keep current with the schedule of topics.
- It is a very helpful tool to study in small groups and quiz each other on the material.
- The quizzes and examinations are created to measure your knowledge of the important topics presented during the lecture or assigned as reading in the textbook.
- Experiment with your personal learning style.
- Please contact me with any concerns, questions, and requests as soon as possible so that I may address it/them immediately.

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Lecture:

Major anatomical topics are covered, but students are additionally responsible for assigned readings in the textbook. Occasionally, handouts and other study materials will be distributed in the lecture or via Blackboard.

Laboratory:

In the laboratory, the students are organized in groups of approximately 5 and perform a whole body dissection following instructions found in Grant's dissector. During dissections, students are assisted by the instructor and lab assistant. Students are responsible for all dissected structures, not only from their own dissections but also in cadavers dissected by others and all bones of the human skeleton including their major topography.

Laboratory Requirements, Rules, and Regulations:

Laboratory attendance is **MANDATORY** and must be completed along with the lectures to pass the course.

The laboratory is NOT open to anyone except DPT and MOT students that are enrolled in the course. No family members or friends are allowed in the lab; failure to abide by this rule will lead to failure and dismissal from the course.

Laboratory attire:

Scrubs are not required but are recommended; old clothes in good condition (no holes, etc) are equally as acceptable. Closed-toe shoes must be worn in the dissection laboratory at all times. Gloves (*provided*) are required for all dissections. Aprons (*provided*) should be worn. Eye protection (*provided*) is required. Masks are required and are available in the lab to avoid volatile chemical exposure and bone dust generated during cutting the bones.

Dissection Instruments (required and provided):

- Mayo-pattern dissection scissors 5 ½"
- Sharp/Sharp scissors 4 ½"
- Scalpel handle, Bard-Parker #3
- Scalpel blades, Bard-Parker #10
- Humber Probe
- Flexible Probe
- Forceps Sharp, 5 ½"
- Kelly Hemostat 5 ½"

Bone Boxes (provided):

Each group will be assigned a numbered bone box, with the bones of one half of a human skeleton, for the study of osteology during the laboratory portion of this course. As a group, you will be responsible for the appropriate use, maintenance and safe

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return after usage. The bones boxes cannot be taken outside the lab except with permission from your instructor.

Bone boxes are to be stored in the cabinets provided. Cabinet keys will be issued to the group. If the bone box is returned with broken or missing pieces a repair/replacement cost will be determined and divided equally among the group members.

Sample replacement costs (these are estimated – students will be responsible for the actual replacement costs):

| | | | |
|----------|-------|--------------|--------|
| Skull | \$800 | Pelvis | \$150 |
| Clavicle | \$30 | Complete Box | \$2300 |

Hazardous Chemicals:

The hazardous or potentially hazardous chemicals to which you are exposed in the gross anatomy laboratory are the components of the embalming fluid and the wetting solution. A list of these components follows. The MSDS sheets are available to you pursuant to 29 CFR, 1910.1200, the OSHA Hazard Communication Standard and are housed in the gross anatomy laboratory.

1. Embalming Fluid- The fluid contains formaldehyde, glutaraldehyde, glycerine, phenol, alcohol, and water. Formaldehyde is a suspected carcinogen and respiratory irritant. In addition, skin irritation may occur with prolonged exposure.
2. Phenol- This chemical is used on occasions for fungicidal purposes and is a respiratory toxin and skin irritant.
3. Mold-X- This detergent is used for fungicidal purposes and the active ingredients are formaldehyde and methanol. Formaldehyde is a suspected carcinogen and respiratory irritant.
4. Ethanol- The fluid in the bottom of the dissecting tables is 50% ethanol in water. The sheet edge is in contact with this fluid and will 'wick' up and help keep the cadaver moist.

A Note about Chemicals:

Some of the chemicals used to "fix" the cadavers are teratogenic. Please consult with your doctor if you are pregnant as these chemicals could cause birth defects. We will require an informed consent from you, the baby's father, and your doctor if you choose to take DRSC 6495 while pregnant due to the possible danger to your unborn child. If not pregnant, please take measures to remain that way throughout the Fall semester.

Student Considerations:

The purpose of this section is to inform you of the hazardous chemicals and conditions that you may be exposed in the gross anatomy laboratory. Exposure is defined as personal contact with the hazardous or potentially hazardous chemicals at levels with an average eight hour time weighted average, set for by the American Conference of Governmental Industrial Hygienist or OSHA's Permissible Exposure Limit (PEL) when

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used in a manner consistent with usual laboratory procedures. This includes inhalation of the ambient laboratory air and skin contact as the anatomical specimens are handled.

Skin: Protective clothing such as long sleeves and pants or hospital scrubs is strongly recommended. The use of latex or non-latex gloves is required for long term handling of the cadaver structures and gloves will be provided during lab time.

A student who has or develops skin sensitivity to the anatomical specimens should also wear long-sleeved garments at all times. In addition, the student should notify the instructor and their physician so that appropriate procedures can be implemented. Students exhibiting contact sensitivity should consult a physician regarding type of gloves, garments, or other items that may cause irritability.

Eyes: Accidental fluid splashed into the eyes should be flushed immediately using the eyewash station located in the laboratory, under the FIRST-AID cabinet, and a physician consulted. Questions concerning the effects of any of the above chemicals on eye tissues while wearing contact lenses or on the lenses themselves should be directed to your ophthalmologist and/or optometrist.

Respiratory: Individual students may have or develop sensitivity to any of the chemicals used in the laboratory, in particular formaldehyde or phenol. In order to obtain a respiratory protective device (respirator), a student must have a respiratory evaluation by a physician, after which s/he is fitted and trained in its proper care by their physician. A particle filter mask provides no protection for formaldehyde or phenol sensitivity.

Pregnancy:

Students who are or who learn they are pregnant or who are nursing newborn infants while using gross anatomy laboratories should consult their obstetrician immediately regarding recommended precautions.

Rules and Regulations

1. These cadavers were obtained for anatomical study. These cadavers were unselfish and concerned individuals that had the foresight to contribute to the education of students. ***The anatomical specimens studied must be handled with respect and dignity at all times.***
2. Cameras in the lab will be used by Dr. Bala. Otherwise, **no cameras, pictures or video of the cadavers are allowed, including on camera phones.**
3. No cadaver tissue is to be taken outside of the laboratory at any time.
4. Eating or drinking is not permitted in the laboratory. Bottles, mugs and any containers should be left outside the laboratory
5. If there is a suspicion that a donor may be a relative or acquaintance of a student, the student should contact Dr. Bala.
6. The cadavers are identified by numbers and those numbers correspond to their dissection table/tanks. Therefore, anatomical specimens should never be removed from their corresponding tank and waste products should be deposited in the corresponding RED bin. These bins are only for body parts and are not general trash cans.
7. Used paper towels and used gloves are to be deposited in the appropriate **“chemical waste”** containers and not left in the tanks. (Tanks should be cleaned at the end of each laboratory session.)
8. Garments worn in the laboratory must include long pants. Shoes worn in the lab must adequately protect the top of the foot and be closed at the toes. All persons handling cadavers are **required** to wear gloves, masks and protective eyewear.
9. No radios, MP3 players, or electronic devices (including cell phones) are allowed in the lab at any time. Get permission from Dr. Bala if you want to use any device for opening digital books or note taking device.
10. Any injuries incurred in the laboratory should be reported immediately to Dr. Bala /Dr. Conde/ a lab asst. To ensure a proper record of these events, an incident and injury form must be completed at the time of injury.
 - A. Minor cuts and abrasions from cutting instruments or bone edges should be washed thoroughly with antibacterial soap and hot water (Found in the FIRST-AID cabinet). Contact a member of the laboratory staff or Dr. Bala for antiseptic and dressing materials.

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- B. In case of a serious emergency call 911 (serious wounds should be treated by a physician immediately.)
11. Only students enrolled in this class are allowed in the cadaver lab.
 12. At the beginning of the course, students are only allowed in the cadaver lab when Dr. Bala or a lab assistant is present. Later, after you are familiar with the equipment, you will be allowed to enter the lab without Dr. Bala or a lab assistant for study only. You are not allowed to dissect if Dr. Bala or a lab assistant is not present. You must be accompanied by at least one other enrolled student- **do not enter the lab alone.**

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| Tentative Topic outline: Please review the topics prior to the class. The more prepared you are before lab, the easier your dissections will be to identify the structures. | | | | Anatomy for Health Sciences Fall 2022, Lecture & Lab Course Schedule | |
|---|----------------------|-------------|--|---|-------------------------------|
| | D a y | Date | Topic | Grants Dissector | Moore Text |
| Upper extremity & Back | Tue | 23-Aug | Introduction, & UL osteology | Meet the cadaver | Refer to corresponding topics |
| | Thu | 25-Aug | Pectoral & Axilla | Upper limb and scapular region (Refer to corresponding topics) | |
| | Tue | 30-Aug | Arm & Cubital Fossa | | |
| | Thu | 1-Sep | Forearm (Flexors) | | |
| | Tue | 6-Sep | Forearm (Extensors) and Hand | | |
| | Thu | 8-Sep | Post shoulder & Axilla | | |
| | Tue | 13-Sep | Back & UE continued | | |
| | Thu | 15-Sep | Back & Joints | | |
| | Tue | 20-Sep | UE Review | | |
| | Thu | 22-Sep | EXAM 1 (Upper Extremity) | | |
| Thorax, Abd | Tue | 27-Sep | Abd wall & Viscera, Inguinal region | Thorax & Abdomen (Refer to corresponding topics) | Refer to corresponding topics |
| | Thu | 29-Sep | Spine/ Post. abdominal wall / Diaphragm | | |
| | Tue | 4-Oct | Thoracic wall and Mediastinum | | |
| | Thu | 6-Oct | Thoracic Viscera | | |
| | Tue | 11-Oct | Thorax & Abd Review | | |
| | Thu | 13-Oct | EXAM 2 (Thorax and Abd) | Theory& Pract 2 | |
| Lower extremity & Pelvis | Tue | 18-Oct | Pelvis & Pelvic viscera | LE & Pelvis (Refer to corresponding topics) | Refer to corresponding topics |
| | Thu | 20-Oct | Anterior/ Medial Hip & Thigh | | |
| | Tue | 25-Oct | Hip, Gluteal region and posterior thigh | | |
| | Thu | 27-Oct | Leg & Ankle | | |
| | Tue | 1-Nov | Foot & Lower Extremity joint | | |
| | Thu | 3-Nov | LE joints/ Perineum & Urogenital region | | |
| | Tue | 8-Nov | LE continued & Review | | |
| | Thu | 10-Nov | EXAM 3 (Lower extremity & Pelvis) | Theory& Pract 3 | |
| Head & Neck | Tue | 15-Nov | Face & Neck | Head & Neck (Refer to corresponding topics) | Refer to corresponding topics |
| | Thu | 17-Nov | Deep face, TMJ, Orbit & Ear | | |
| | Tue | 22-Nov | Deep Face, TMJ, Neck, Orbit & Ear | | |
| | Tue | 29-Nov | Skull & Cranial Nerves | | |
| | Thu | 1-Dec | Brain | | |
| | Tue | 6-Dec | EXAM 4 (Head & Neck) | Theory&Pract 4 | |
| Topics and dates Subject to Change as Needed | | | | | |