

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

PT6407

Title of Course: Medical Kinesiology & Motion Analysis

2025

COURSE SYLLABUS

Credit Hours: Four (4)

Contact Hours: Total: 90 hours (45 hours lecture, 45 hours lab)
Lecture: 3 hours/week; Lab: 3 hours/week

Schedule: Lectures:

Mondays 10:30a - 12:00p

Thursdays 8:30 - 10:00a

Labs:

Lab A on Mondays 1:00p - 4p

Lab B on Wednesdays 1:30p – 4:30p

Location: All lectures and labs in Mesa 120

Instructors:

Samuel Singleton, PT, DPT, OCS, SCS
Office location: Rehabilitation Science Complex Rm 115
Phone #: 443-474-6773
E-mail: stsingleton@utep.edu
Office hours: By appointment only

Kosaku Aoyagi, PT, MSc, PhD
Office location: Rehabilitation Science Complex Rm 115
Office 915-747-8215, Cell 312-257-7638
E-mail: kaoyagi@utep.edu

Priyanka Rana, PT, PhD
Office location: Rehabilitation Science Complex Rm 115
Phone #: 352-870-2260
E-mail: prana@utep.edu
Office hours: By appointment only

Isabel Valdez, DPT
Phone #: 915-203-1862
E-mail: icvaldez2@miners.utep.edu

Course Description: Medical Kinesiology and Motion Analysis (3-3). The kinematics and kinetics of the human body, postural control, and the basics of gait analysis are comprehensively studied. Biomechanical principles that control human movement are applied to motion analysis.

Course Objectives: *Upon completion of this course, the student should be able to:*

1. Identify the kinesiologic and biomechanics principles that create and govern human movement. (7A Kinesiology; 7A Biomechanics) [Application]
2. Apply osteokinematic and arthrokinematic principles that govern movement at each diarthrodial joint in open and closed chain function. (7A Kinesiology) [Application]
3. Apply biomechanical rules to calculate muscle and joint reaction forces, and direct efficient external loads and forces. (7A Kinesiology; 7A Biomechanics) [Application]
4. Analyze force vectors related to anatomical origins and insertions to determine individual, agonistic and antagonistic muscle contribution to functional human movement, including gait. (7A Kinesiology; 7D19i) [Application]
5. Identify motion restraints, both dynamic and static, that help control human movement at all joints, including gait. (7A Kinesiology; 7D19i) [Application]
6. Identify anatomical characteristics and anatomical structures including bony prominence, origin, insertion, muscle, and ligament, which influence human movement. (7A Anatomy) [Comprehension]
7. Match all joints in the human body with joint type, lever, degrees of freedom and axes of rotation. (7A Kinesiology) [Comprehension]
8. Identify potential joint and soft tissue consequences to altered posture related to static activities and positions. (7A Kinesiology; 7D19r) [Application]
9. Demonstrate osteokinematic and arthrokinematic rules, joint gliding force vectors, and tissue restraint loading related to arthrodiaral joints using human subjects or joint models. (7A Kinesiology; 7D19k; 7D27f) [Application]
10. Access, critically analyze, and summarize scientific literature related to kinesiological concepts and joint systems. (7C1) [Evaluation]

UTEP DPT Curricular Threads:

Cultural / Linguistic Engagement and Competence:

Students will practice using Spanish Language in select portions of at least 3 laboratory sessions. These sessions will be led by fluent Spanish speakers in the cohort.

Clinical Reasoning:

Apply kinesiological knowledge and principles to functional movement patterns in exams and skills checks. Analyze movement patterns at multiple joint systems to discern where tissue stress or limitation may be present in exams and skills checks.

Interprofessional Collaborative Practice:

None

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.

Methods of Instruction: *Lecture/PowerPoint and Recordings, Text Reading, Group work and discussion, Video analysis, Peer motion analysis, Reading and Reporting of the Literature, Psychomotor Learning and Practice*

Methods of Evaluation: *Evaluation of learning will consist of exams, quizzes, lab skills check. Note: Written Examinations WILL Include Lab Content/Material*

<i>Exam 1:</i>	<i>15%</i>
<i>Exam 2:</i>	<i>25%</i>
<i>Final Exam:</i>	<i>30%</i>
<i>Quizzes (2):</i>	<i>10%</i>
<i>Lab Skills Checks:</i>	<i>20%</i>

UTEP PHYSICAL THERAPY PROGRAM GRADING SCALE

The following letter grade scale is used for the UTEP Physical Therapy Program:

Letter Grade Scale	Numerical Grade Scale
A	90-100
B	80-89
C	75-79
F	Below 75

Required Texts: Required: Neumann DA. *Kinesiology of the Musculoskeletal System: Foundations for Rehabilitation*. 3rd ed. Mosby (Elsevier): 2016.

Resources Available for Student Success:

Confidential Resources:

Center for Accommodations and Support Services (CASS): If you have or suspect a disability and need accommodation, 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

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 DPT 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.

Academic Integrity: The UTEP DPT Program has a “zero tolerance policy” for scholastic dishonesty. DPT students must always demonstrate academic integrity. 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: See DPT Program Handbook for all policies on exams, electronic device use, dress code, attendance, and scholastic dishonesty. We encourage you to periodically review all handbook policies, but considering past experiences, we particularly direct you to review the policies on cheating, accumulated knowledge, professional behaviors/generic abilities, attendance, and the disclaimer that the syllabus is subject to change.

Attendance/Tardiness:

Attendance is expected; however, life happens. Therefore, **ONE excused absence of a single class*** is permitted for *any* reason. For your first absence to be excused, you must meet the expectations described further down. HOWEVER (with very rare exception [eg, documented serious illness or emergency] that will be considered on a case-by-case basis) there will be NO accommodation offered for missed class time. Specifically, there is NO opportunity to make up in-class quizzes, either in advance of or after the scheduled class, or provide individual tutoring for missed content. Additionally late work caused by your absence will not be accepted. You should make prior arrangements with a classmate to find out what you missed, turn in any work, and/or pick up any handouts. **(*NOTE: Single class is defined as 2 or 3 hours, including labs).**

In order to be excused for your first missed class, you must do the following:

Email me at stsingleton@utep.edu or call my cell phone, 443-474-6773 at least 2 hours in advance if you will not be attending class. It is acceptable to leave a cell phone text **if** you cannot reach me. I do expect that you will attempt a voice call first before leaving a text message. I do not require you to give me a reason for your absence, but I expect a notice in advance. A message from one of your classmates is not acceptable.

If you miss a second (or more) class for any reason, it will be considered unexcused unless it is due to documented illness or emergency. In these cases, you should email me and then arrange a meeting with me upon your return to school to discuss why you missed the class. Documentation will be required for any additional absence (eg, doctor's note documenting illness or treatment). I will notify you after our meeting and review your documentation whether the absence will be considered excused or unexcused.

Missing 50% or more of a class will be considered an absence. Nevertheless, every class and lab count toward your learning! If you are only going to be able to attend 1 hour of a 3-hour lab, please do so, even though you will still receive an absence. For each incident of an unexcused absence, 5% will be deducted from your final semester grade.

Late or Missed Assignments and Assessments Policy: See current DPT Student Handbook "Written Examination Policy". Additional course-specific policy is as follows:

- No opportunities will be provided for missed examinations unless it is for an excused reason (eg, documented medical emergency).
- All written assignments are due at the date and time indicated. Assignments submitted after the deadline but on the due date will result in a 25% deduction due to the late submission. Assignments submitted after the due date will result in ZERO credit.

Skills Check Policy: See information from the UTEP DPT Student Handbook

Course and Program Policy:

Each student is responsible for reviewing and understanding all policies and procedures documented in the most current DPT Student Handbook for his/her cohort. Course

policies found in the DPT Student Handbook apply to all courses in the DPT curriculum. The current DPT Student Handbook for each cohort may be found on the DPT Student Resources site on Blackboard. The course policies include very important information about: Written/Computer-based examinations, practical examinations, attendance and participation, professional behavior, academic integrity, accumulated knowledge, and use of electronic devices.

Special Accommodations (ADA):

“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. For additional information, visit the CASS website at <http://sa.utep.edu/cass/>

Quizzes

Throughout the semester, there will be 2 quizzes. The quizzes will be 10-15 questions each. Each quiz will be over the content covered in prior lectures/labs and will not be comprehensive, meaning content covered for quiz 1 will not be on quiz 2. Quiz questions will be based upon readings, lectures/labs, and materials provided on the blackboard course. Questions may involve clinical scenarios to develop clinical reasoning skills and application of knowledge from prior courses along with the current course's content.

Course Content: *Please Refer to Topic Outline Below:*

**Med Kinesiology PT 5407 Schedule and Due Dates
Spring Semester 2025: UTEP DPT**

Tentative Topics for Classroom Learning

Date	Time	Topic	Reading Assignment (Readings may be added/or changed at the discretion of the instructor)	Course Objective: Please see Syllabus
Week 1: January 21- 24	<u>Lecture:</u> Jan 21st: 8:00-9:30am Jan 23 rd 8:30-10am <u>Lab:</u> A & B Jan 22nd 1:30 - 4:30 pm	<u>Lecture</u> Mod 1: Background Getting Started and Joint Systems Mod 2: Joint Systems Cont. [RANA] <u>Lab:</u> Joint Systems [RANA/SINGLETON/AOYAGI]	Neumann Chapter 1-2	1,2
Week 2: January 27-31	<u>Lecture:</u> Jan 27 th 10:30-12pm	<u>Lecture:</u> Module 3 & 4: Biomechanics Part 1 and 2	Neumann Chapter 3-4	1,3,4

	<p>Jan 30th: 8:30-10:00am <u>Lab:</u> B: Jan 27th 1-4:00pm A: Jan 29th 1:30-4:30pm</p>	<p>Module 5: Muscular Systems Assignment due on 1/31 on Bb [RANA] <u>Lab:</u> Muscular System, Mastication and Ventilation, Biomechanics Review [RANA/VALDEZ]</p>		
<p>Week 3: February 3-7</p>	<p><u>Lecture:</u> Feb 3rd 10:30-12pm Feb 6th: 8:30-10:00am <u>Lab:</u> B: Feb 3rd 1-4:00pm A: Feb 5th 1:30-4:30pm</p>	<p><u>Lecture:</u> Mod 6: Ventilation/Mastication Module 28: Kinesiology of Running Quiz 1: Modules 1-6 (Thursday Feb 6th) [RANA] <u>Lab:</u> Ventilation/Mastication Module 28: Kinesiology of Running [RANA/VALDEZ]</p>	<p>Neumann Chapter 11,16</p>	<p>2,4,5,6,7,8,9</p>
<p>Week 4: February 10-14</p>	<p><u>Lecture:</u> Feb 10th 10:30-12pm Feb 13th: 8:30-10am <u>Lab:</u> A&B Feb 10th 1-4pm</p>	<p><u>Lecture:</u> Module 7: Hip 1 Module 8: Hip 2 [RANA] <u>Lab:</u> Hip Exam 1: Modules 1-6 (Thursday Feb 13th) [RANA/SINGLETON/AOYAGI]</p>	<p>Neumann Chapter 12</p>	<p>2,4,5,6,7,8</p>
<p>Week 5: February 17-21</p>	<p><u>Lecture:</u> Feb 17th 10:30-12pm Feb 20th: 8:30-10:00am <u>Lab:</u> B: Feb 17th 1-4:00pm A: Feb 19th 1:30-4:30pm</p>	<p><u>Lecture:</u> Module 9: Knee 1 Module 10: Knee 2 [SINGLETON] <u>Lab:</u> Knee [SINGLETON/VALDEZ]</p>	<p>Neumann Chapter 13</p>	<p>2,4,5,6,7,8</p>
<p>Week 6: February 24-28</p>	<p><u>Lecture:</u> Feb 24th 10:30-12pm Feb 27th: 8:30-10:00am <u>Lab:</u> B: Feb 24th 1-4:00pm A: Feb 26th 1:30-4:30pm</p>	<p><u>Lecture:</u> Module 11: Foot Ankle 1 Module 12: Foot Ankle 2 [SINGLETON] <u>Lab:</u> Foot and Ankle [VALDEZ/SINGLETON]</p>	<p>Neumann Chapter 14</p>	<p>2,4,5,6,7,8</p>

Week 7: March 3-7	<u>Lecture:</u> Mar 3 rd 10:30-12pm Mar 6 th : 8:30-10:00am <u>Lab:</u> B: Mar 3 rd 1-4:00pm A: Mar 5 th 1:30-4:30pm	<u>Lecture:</u> Mod 13: Normal Gait: Osteokinematics Mod 14: Normal Gait: Muscle Action and Rancho [SINGLETON] <u>Lab:</u> Gait Analysis Observation and Rancho Los Amigos [AOYAGI/VALDEZ]	Neumann Chapter 15-16	2,4,5,6,7,8
Week 8: March 10-14	<u>Lecture:</u> Mar 10 th 10:30-12pm Mar 13 th : 8:30-10:00am <u>Lab:</u> B: Mar 10 th 1-4:00pm A: Mar 12 th 1:30-4:30pm	<u>Lecture:</u> Mod 15: Lumbar 1 Mod 16: Lumbar 2 Quiz 2: Modules 7-15 & 28 (Thursday March 13th) [SINGLETON] <u>Lab:</u> Lumbar [VALDEZ/SINGLETON]	Neumann Chapter 9-10	2,4,5,6,7,8
March 17-21		Spring Break: No Classes		
Week 9: March 24-28	<u>Lecture:</u> Mar 24 th 10:30-12pm Mar 27 th : 8:30-10:00am <u>Lab:</u> Lab A&B Mar 24th 1-4:00pm Skills Check Mar 26th 1-5pm	<u>Lecture:</u> Module 17: Sacroiliac Joint [SINGLETON] <u>Lab :</u> Lab A&B Monday - Sacroiliac Joint Practice for skills check Wednesday - Skills Check (LE, Normal Gait, Respiration and Mastication) [RANA/SINGLETON/AOYAGI]	Neumann Chapters 9, 10	2,4,5,6,7,8
Week 10: March 31- April 4	<u>Lecture:</u> Mar 31 st 10:30-12pm April 3 rd : 8:30-10:00am <u>Lab:</u> B: Mar 31 st 1-4:00pm A: April 2 nd 1:30-4:30pm	<u>Lecture:</u> Module 18: CT Spine 1 Module 19: CT Spine 2 [SINGLETON] <u>Lab:</u> CT Spine Exam 2: Modules 7-16 & 28 (Thursday April 3rd) [VALDEZ/AOYAGI]	Neumann Chapter 9-10	2,4,5,6,7,8
Week 11: April 7-11	<u>Lecture:</u> April 7 th 10:30-12pm	<u>Lecture:</u> Module 20: Shoulder 1 Module 21: Shoulder 2	Neumann Chapter 5	2,4,5,6,7

	<p>April 10th: 8:30-10:00am</p> <p><u>Lab:</u></p> <p>B: April 7th 1-4:00pm</p> <p>A: April 9th 1:30-4:30pm</p>	<p>[SINGLETON]</p> <p><u>Lab:</u></p> <p>Shoulder</p> <p>[AOYAGI/VALDEZ]</p>		
<p>Week 12:</p> <p>April 14-18</p>	<p><u>Lecture:</u></p> <p>April 14th 10:30-12pm</p> <p>April 17th: 8:30-10:00am</p> <p><u>Lab:</u></p> <p>B: April 14th 1-4:00pm</p> <p>A: April 16th 1:30-4:30pm</p>	<p><u>Lecture:</u></p> <p>Module 22: Elbow/Forearm 1</p> <p>Module 23: Elbow/Forearm 2</p> <p>[SINGLETON]</p> <p><u>Lab:</u></p> <p>Elbow and Forearm</p> <p>[SINGLETON/VALDEZ]</p>	<p>Neumann</p> <p>Chapter 6</p>	<p>2,4,5,6,7,8</p>
<p>Week 13:</p> <p>April 21-25</p>	<p><u>Lecture:</u></p> <p>April 21st 10:30-12pm</p> <p>April 24th: 8:30-10:00am</p> <p><u>Lab:</u></p> <p>B: April 21st 1-4:00pm</p> <p>A: April 23rd 1:30-4:30pm</p>	<p><u>Lecture:</u></p> <p>Module 24: Wrist</p> <p>Module 25: Hand</p> <p>[SINGLETON]</p> <p><u>Lab:</u></p> <p>Wrist and Hand</p> <p>[VALDEZ/SINGLETON]</p>	<p>Neumann</p> <p>Chapter 7</p> <p>Neumann</p> <p>Chapter 8</p>	<p>2,4,5,6,8</p>
<p>Week 14:</p> <p>April 28- May 2</p>	<p><u>Lecture:</u></p> <p>April 28th 10:30-12pm</p> <p>May 1st: 8:30-10:00am</p> <p><u>Lab & Lecture:</u></p> <p>A&B : April 30th 1:30-6:00pm</p>	<p><u>Lecture:</u></p> <p>Mod 26: Abnormal Gait</p> <p>Mod 27: Abnormal Gait</p> <p>[AOYAGI]</p> <p><u>Lab:</u></p> <p>Abnormal Gait (Wednesday April 30th)</p> <p>[TORRANI/AOYAGI/SINGLETON/RANA]</p>	<p>Handouts/Video</p>	<p>2,4,5,6,7,8</p>
<p>Week 15:</p> <p>May 5-9</p>	<p><u>Lecture:</u></p> <p>May 5th 10:30-12pm</p> <p>May 8th: 8:30-10:00am</p> <p><u>Lab:</u></p> <p>A&B: May 5th 1-4:00pm</p> <p>May 7th 1--5pm – Final Skills Check</p>	<p><u>Lecture:</u></p> <p>Review: Exams and Quizzes Review: Come with Questions</p> <p>[SINGLETON]</p> <p>Lab A&B Monday - Practice for skills check</p> <p>Wednesday - Skills Check B: UE, Abnormal Gait COMPREHENSIVE</p>		

Finals Week	9-11	FINAL Examination: Date TBD	UE/Nervous System, Kinesiology of Running COMPREHENSIVE	
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