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

PT6407 Title of Course: Medical Kinesiology & Motion Analysis 2024

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: Wednesday and Thursday 8:30 – 10:00a
Lab on Mondays: Lab B 9a-12p; Lab A 1p-4p
Location: All lectures and labs in Mesa 126

Instructors:

Levi Johnson PT, DPT, OCS
Mesa Building Office 215G
Cell 915-345-9354
Office hours: By Appointment (Call, Email, or Text)
Lajohnson4@utep.edu

Kosaku Aoyagi, PT, MSc, PhD
Mesa Building Office 215D
Office 915-747-8215, Cell 312-257-7638
kaoyagi@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 diathrodial 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 arthrodial 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. (7D9) [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 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*

Exam 1:	*15%*
Exam 2:	*25%*
Final Exam:	*30%*
Quizzes (2):	*10%*

Lab Skills Checks: *20%*

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 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

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 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: 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 in light of 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 expectation 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).**

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

Email me at Lajohnson4@utep.edu or call my cell phone, 915-345-9354 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 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 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 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 of your documentation whether or not 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 time 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 2024: 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**
17-January	8:30a – 10:00a	Mod 1: Background Getting Started and Joint Systems	Neumann Chapter 1 and 2	*1,2*
18-January	8:30a – 10:00a	Mod 2: Joint Systems Continued	Neumann Chapter 2	*1,2*
24-January	8:30a – 10:00a	Module 3 & 4: Biomechanics Part 1 and 2 Assignment due on 1/29 on Bb	Neumann Chapter 4	*1,3*
25-January	8:30a – 10:00a	Module 5: Muscular Systems	Neumann Chapter 3	*4*
31-January	8:30a – 10:00a	Mod 6: Ventilation/Mastication	Neumann Chapter 11	*2,4,5,6,7,8*
01-February	8:30a – 10:00a	Module 28: Kinesiology of Running Quiz 1: Modules 1-6	Neumann Chapter 16	*2,4,5,7,8,9*
05-February	**2:00-3:30**	**Exam 1**	**Through Module 6**	
07-February	8:30a – 10:00a	Module 7: Hip 1	Neumann Chapter 12	*2,4,5,6,7,8*
08-February	8:30a – 10:00a	Module 8: Hip 2	Neumann Chapter 12	*2,4,5,6,7,8*
14-February	8:30a – 10:00a	Module 9: Knee 1	Neumann Chapter 13	*2,4,5,6,7,8*
15-February	8:30a – 10:00a	Module 10: Knee 2	Neumann Chapter 13	*2,4,5,6,7,8*

21-February	8:30a – 10:00a	Mod 11: Foot Ankle 1	Neumann Chapter 14	*2,4,5,6,7,8*
22-February	8:30a – 10:00a	Mod 12: Foot Ankle 2	Neumann Chapter 14	*2,4,5,6,7,8*
28-Feburuary	8:30a – 10:00a	Mod 13: Normal Gait: Osteokinematics	Neumann Chapter 15-16	*2,4,5,6,7,8*
29- February	8:30a – 10:00a	Mod 14: Normal Gait: Muscle Action and Rancho	Neumann Chapter 15-16 and Handouts	*2,4,5,6,7,8*
06-March	8:30a – 10:00a	Mod 15: Lumbar 1	Neumann Chapter 9-10	*2,4,5,6,7,8*
07-March	8:30a – 10:00a	Mod 16: Lumbar 2 Quiz 2: Modules 7-15 & 28	Neumann Chapter 9-10	*2,4,5,6,7,8*
11-15 March		**Spring Break: No Classes**		
20-March	8:30a – 10:00a	Module 17: Sacroiliac Joint	Neumann Chapters 9, 10	*2,4,5,6,7,8*
21 March	8:30a – 10:00a	**EXAM 2: LE, Gait, Respiration and Mastication**	**Modules 7-16 & 28**	
27-March	8:30a – 10:00a	Module 18: CT Spine 1	Neumann Chapter 9-10	*2,4,5,6,7,8*
28-March	8:30a – 10:00a	Module 19: CT Spine 2	Neumann Chapter 9-10	*2,4,5,6,7,8*
03-April	8:30a-10:00a	Module 20: Shoulder 1	Neumann Chapter 5	*2,4,5,6,7*
04-April	8:30a-10:00a	Module 21: Shoulder 2	Neumann Chapter 5	*2,4,5,6,7*
10-April	8:30a – 10:00a	Module 22: Elbow/Forearm 1	Neumann Chapter 6	*2,4,5,6,7,8*
11-April	8:30a – 10:00a	Module 23: Elbow/Forearm 1	Neumann Chapter 6	*2,4,5,6,7,8*
17-April	8:30a – 10:00a	Module 24: Wrist	Neumann Chapter 7	*2,4,5,6,8*
18-April	8:30a – 10:00a	Module 25: Hand	Neumann Chapter 8	*2,4,5,6,8*
24-April	8:30a – 10:00a	Mod 26: Abnormal Gait	Handouts/Video	*2,4,5,6,7,8*
25-April	8:30a – 10:00a	Mod 27: Abnormal Gait	Handouts/Video	*2,4,5,6,7,8*
01-May	8:30a – 9:50a	Review: Exams and Quizzes		
02-May	8:30a – 10:00a	Review: Come with Questions		
06 May	**9-11**	**FINAL Examination: Date TBD**	**UE/Nervous System, Kinesiology of Running and COMPREHENSIVE**	

Tentative Topics for Laboratory Learning

15 January	NO LAB	MLK Day: Make Up April 29 for Wrist and Hand	HOLIDAY
22 January	B: 9-12 A: 1-4	Joint Systems	Lab Handouts
29 January	B: 9-12 A: 1-4	Muscular System, Mastication and Ventilation, Biomechanics Review	Lab Handouts
12 February	B: 9-12 A: 1-4	Hip	Lab Handouts
19 February	B: 9-12 A: 1-4	Knee	Lab Handouts
26 February	B: 9-12 A: 1-4	Foot and Ankle	Lab Handouts
4 March	B: 9-12 A: 1-4	Gait Analysis Observation and Rancho Los Amigos	Lab Handouts
11 March		**No Lab This Week: Spring Break**	
18 March	B: 9-12 A: 1-4	Lumbar Spine	Lab Handouts
25 March	B: 9-12 A: 1-4	**Skills Check A (LE, Normal Gait, Respiration and Mastication)**	
01 April	B: 9-12 A: 1-4	CT Spine	Lab Handouts
08 April	B: 9-12 A: 1-4	Shoulder	Lab Handouts
15 April	B: 9-12 A: 1-4	Elbow and Forearm	Lab Handouts
22 April	B: 9-12 A: 1-4	Wrist and Hand	Lab Handouts
26 April	All: 1-4	Abnormal Gait	*Lab Handout*
03 May	**All: 1-5**	**Skills Check B: UE, Abnormal Gait and Comprehensive**	Lab Handouts