

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

PT5407 Title of course: Medical Kinesiology & Motion Analysis 2021

COURSE SYLLABUS

Credit Hours: Four (4)

Contact Hours: 45 hours Lecture, 45 Hours Lab

Schedule: Lectures: Tuesday and Thursday 8:30 – 10:00a Remote
Lab on Mondays: Lab B 9a-12p; Lab A 1p-4p Room 113

Coordinator/Instructor:

Kevin L. Browne, PT, ScD, OCS, COMT
Office 915-747-6122, Cell 781-835-5045
Office hours: Thurs 10-11a and **Fri 2:00-3:00p (review)**
Office hours are remote and review is *optional*
klbrowne@utep.edu

Bryan Boyea, PT, DPT, OCS
Office 915-747-8219, Cell 915-346-9631
blboyea@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 kinesiological 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 arthrodiar 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]

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

Methods of Instruction: *Video Lecture and Select Works, Text Reading, Group work and discussion, Video analysis, Peer and community faculty motion analysis, Reading and Reporting of the Literature, Psychomotor Learning and Practice, Case Study Analysis*

Methods of Evaluation: *Evaluation of learning will consist of exams, quizzes (not graded), Lab check-offs, Papers and Presentations. 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>Daily Quizzes:</i>	<i>10%</i>
<i>Lab Skills Checks:</i>	<i>10%</i>
<i>Précis Papers/Presentations:</i>	<i>10%</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

I do round the final grades for this course. If you achieve an 89.5%, you will receive an A.

Course Content: *Please Refer to Topic Outline*

Attendance/Tardiness:

Attendance is expected, however, life happens. Therefore, **ONE excused absence of a single class*** is permitted for *any* reason. In order 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 accommodations 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 klbrowne@utep.edu or call my cell phone, 1-781-835-5045 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 counts 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. Additionally, failure to take the quiz on time before each course lecture will result in a decrease in participation grade of 1 full percentage point. Each student will have one "grace" quiz, where being tardy will be excused. For students who take every quiz on time, the lowest-graded quiz will be dropped.

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/>

Tentative Topic/Assignment Outline: See **Course Outline** under **Syllabus** on Blackboard

Daily Quizzes and Available Extra Credit

A 5-questions quiz will be administered each day at the beginning of the class. The expectation is for the learner to read and review all information prior to the class. Traditional lecture is not utilized; rather class time will be used to check understanding, clarify key concepts related to the learning objections/questions and to talk about the potential clinical relevance of the material. Understand that some material may have seemingly limited clinical relevance, but part of being a member of the health care team is having a basic knowledge of the medical science behind human movement.

Your quiz grade will be base on earning 100% with a cumulative score of 75%. In other words, you get 1 FREE point each quiz when the grades are calculated. The quiz will open at 8:30 ACCORDING TO BLACKBOARD time. You might want to sync your watch to it. No quiz will be issued beyond 8:33 ACCORDING TO BLACKBOARD TIME. You will **not** have extra time to complete the quiz.

The purpose of daily, graded quiz is to motivate the learner to keep up with the material. If you come prepared, you will get more from class. You can expect that the daily quiz questions will be quite similar in style to the questions on the exams. Even though you have not had clinical courses yet, a modest percentage of quiz and test questions will involve reading a simple clinical scenario and applying the knowledge you have gained.

You will have the opportunity to add a maximum 2 percentage points to your final grade through the quizzes. Every time you score 4/5 or better on a quiz (there will

be between 25 and 28 of them), you will earn a small percentage of extra credit to your course grade.

Example: You score 68% cumulative total in your quizzes and meet 4+/5, half the time.

68/75 = 90.67% is your quiz grade and 9.07/10 for the quiz component of your course grade. Additionally, you will have earned an extra 1% to your TOTAL grade once all components (quiz, précis, skills-check and exam) have been totaled.

Med Kinesiology PT 5407 Schedule and Due Dates Spring Semester 2021: 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
19-January	8:30a – 10:00a	Mod 1: Background Getting Started and Joint Systems	Neumann Chapter 1 and 2	1,2
21-January	8:30a – 10:00a	Mod 2: Joint Systems Continued	Neumann Chapter 2	1,2
26-January	8:30a – 10:00a	Module 3: Biomechanics Part 1 and 2	Neumann Chapter 4	1,3
28-January	8:30a – 10:00a	Mod 4: Biomechanics Part 2 Continued	Neumann Chapter 4	1,3
02-February	8:30a – 10:00a	Module 5: Muscular Systems	Neumann Chapter 3	4
04-February	8:30a – 10:00a	Mod 6: Ventilation/Mastication	Neumann Chapter 11	2,4,5,6,7,8
09-February	8:30a – 10:00a	Module 7: Hip 1	Neumann Chapter 12	2,4,5,6,7,8
11-February	8:30a – 10:00a	Module 8: Hip 2	Neumann Chapter 12	2,4,5,6,7,8
TBD: Between Feb 7 and Feb 14	TBD	Exam 1	Through Module 6	
16-February	8:30a – 10:00a	Module 9: Knee 1	Neumann Chapter 13	2,4,5,6,7,8
18-February	8:30a – 10:00a	Module 10: Knee 2	Neumann Chapter 13	2,4,5,6,7,8
23-February	8:30a – 10:00a	Mod 11: Foot Ankle 1	Neumann Chapter 14	2,4,5,6,7,8
35-March	8:30a – 10:00a	Mod 12: Foot Ankle 2	Neumann Chapter 14	2,4,5,6,7,8

02-March	8:30a – 10:00a	Mod 13: Normal Gait	Neumann Chapter 15-16	2,4,5,6,7,8
04-March	8:30a – 10:00a	Mod 14: Normal/Abnormal Gait	Neumann Chapter 15-16	2,4,5,6,7,8
09-March	8:30a – 9:50a	Mod 15: Lumbar 1	Neumann Chapters 9-10	2,4,5,6,7,8
11-March	8:30a – 10:00a	Mod 16: Lumbar 2	Neumann Chapters 9-10	2,4,5,6,7,8
15-19 March		Spring Break: No Classes		
22 March Pending COVID restrictions		Skills Check: Lower Extremity, Gait, Respiration and Mastication	Browne and Boyea	2,4,5,6,7,8,9
23-March	8:30a – 10:00a	Module 17: Sacroiliac Joint	Neumann Chapters 9, 10	2,4,5,6,7,8
25-March	8:30a – 10:00a	EXAM 2: LE, Gait, Lumbar	Modules 7-16	
30-March	8:30a – 10:00a	Module 18: CT Spine 1	Neumann Chapter 9-10	2,4,5,6,7,8
01-April	8:30a – 10:00a	Module 19: CT Spine 2	Neumann Chapter 9-10	2,4,5,6,7,8
06-April	8:30a – 10:00a	Module 20: Shoulder 1	Neumann Chapter 5	2,4,5,6,7,8
08-April	8:30a – 10:00a	Module 21: Shoulder 2	Neumann Chapter 5	2,4,5,6,7,8
13-April	8:30a – 10:00a	Module 22: Elbow/Forearm 1	Neumann Chapter 6	2,4,5,6,7
15-April	8:30a – 10:00a	Module 23: Elbow/Forearm 1	Neumann Chapter 6	2,4,5,6,7
20-April	8:30a – 10:00a	Module 24: Wrist	Neumann Chapter 7	2,4,5,6,7,8
22-April	8:30a – 10:00a	Module 25: Hand	Neumann Chapter 8	2,4,5,6,7,8
29-April	8:30a – 10:00a	Module 26: Nervous System Considerations: Upper Extremity Problem Solving	Supplemental Handout: Pending	2,4,5,6,8
30-April	8:30a – 10:00a	Module 27: Nervous System Considerations: Lower Extremity Problem Solving	Supplemental Handout: Pending	2,4,5,6,8
03-May		Skills Check Final: Boyea and Browne	Spine, Upper Extremity and Comprehensive	2,4,5,6,7,8,9
04-May	8:30a – 10:00a	Module 27: Kinesiology of Running	Neumann Chapter 16	2,4,5,7,8,9
06-May	8:30a – 10:00a	Course Review: Come with Questions		Review

11-May	9:00-TBD	FINAL Examination: Remote on Lockdown Browser	UE/Nervous System, Kinesiology of Running and COMPREHENSIVE	
---------------	-----------------	--	--	--

Tentative Topics for Laboratory Learning

25 January	B: 9-12 A: 1-4	Joint Systems	Lab Handouts	1,2,7,9
01 February	B: 9-12 A: 1-4	Biomechanics	Lab Handouts	1,3,9
08 February	B: 9-12 A: 1-4	Muscular System, Mastication and Ventilation, Biomechanics Review	Lab Handouts	2,4,5,6,7,8,9
15 February	B: 9-12 A: 1-4	Hip	Lab Handouts	2,4,5,6,7,8,9
22 February	B: 9-12 A: 1-4	Knee	Lab Handouts	2,4,5,6,7,8,9
01 March	B: 9-12 A: 1-4	Foot and Ankle	Lab Handouts	2,4,5,6,7,8,9
8 March	B: 9-12 A: 1-4	Gait Analysis Observation	Lab Handouts	2,4,5,6,7,8,9
15 March		No Lab This Week: Spring Break	18 March	
22 March	B: 9-12 A: 1-4	Skills Check A (LE, Gait, Respiration and Mastication)	Lab Handouts	4,5,6,7,8,9
29 March	B: 9-12 A: 1-4	Lumbar Spine		
05 April	B: 9-12 A: 1-4	CT Spine	Lab Handouts	2,4,5,6,7,8,9
12 April	B: 9-12 A: 1-4	Shoulder	Lab Handouts	2,4,5,6,7,8,9
19 April	B: 9-12 A: 1-4	Elbow and Forearm	Lab Handouts	2,4,5,6,7,8,9
26 April	B: 9-12 A: 1-4	Wrist and Hand	Lab Handouts	2,4,5,6,7,8,9
03 May	B: 9-12 A: 1-4	Skills Check B: Boyea and Browne Comprehensive	Lab Handouts	2,4,5,6,7,8,9

Assignments Due: Précis Papers: See “Précis Instructions” on Blackboard

21 February	Due PM Sunday End-of- Day	Lower Extremity	Choose 1 Article	<i>10</i>
28 March	Due PM Sunday End-of- Day	Axial Skeleton	Choose 1 Article	<i>10</i>
25 April	Due PM Sunday End-of- Day	Upper Extremity	Choose 1 Article	<i>10</i>