

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

**OT 6305 Biomechanics
SYLLABUS Spring 2023**

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Lab Instructor
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Office Hours: Thursday 9 AM – 10 AM

Lecture: Wednesday 8:30 am- 10:20 am Room: B-30
Lab A & B: Wednesday 1:00 pm- 3:50 pm Room B-30 and B-29

Course Description:

Biomechanics studies the application of biomechanical principles in the control of human movement. This course prepares you to evaluate and treat the functional status of joints, posture, and limb movement. This course also includes theory and application with case studies to demonstrate biomechanical principles in the evaluation and treatment related to strength, range of motion, stability, and endurance.

General and Specific Objectives: *Based on the ACOTE 2018 standards*

Demonstrate knowledge of:

- 1) The structure and function of the human body to include the biological and physical sciences, neurosciences, kinesiology, and biomechanics. Human development throughout the lifespan (infants, children, adolescents, adults, and older adults). Concepts of human behavior to include the behavioral sciences, social sciences, and science of occupation. (ACOTE: B.1.1)

- 2) Demonstrate the ability to use quantitative statistics and qualitative analysis to interpret tests and measurements for the purpose of establishing and delivering evidence-based practice using a biomechanical frame of reference. (ACOTE: B.1.4)
- 3) Apply, analyze, and evaluate scientific evidence, models of practice, and biomechanical frames of reference that underlie the practice of occupational therapy to guide and inform interventions for persons, groups, and populations in various practice contexts and environments. (ACOTE: B.2.1)
- 4) Analyze and evaluate the effects of disease processes including heritable diseases, genetic conditions, mental illness, disability, trauma, and injury on occupational performance. (ACOTE: B.3.5)
- 5) Demonstrate sound judgment in regard to safety of self and others and adhere to safety regulations throughout the occupational therapy process as appropriate to the setting and scope of practice. This must include the ability to assess and monitor changes in joint mobility and muscle tissue to ensure that the client is stable for intervention. (ACOTE: B.3.7)
- 6) Evaluate client(s)' occupational performance, including occupational profile, by analyzing and selecting standardized and non-standardized screenings such as ROM, manual muscle testing, grip and pinch testing and assessment tools such as goniometer, dynamometer, and pinch gauge to determine the need for occupational therapy intervention(s). Assessment methods must take into consideration cultural and contextual factors of the client. Interpret evaluation findings of occupational performance and participation deficits to develop occupation-based intervention plans and strategies. Intervention plans and strategies must be client centered, culturally relevant, reflective of current occupational therapy practice, and based on available evidence. (ACOTE: B.4.4)
- 7) Select and apply assessment tools, considering client needs, and cultural and contextual factors. Administer selected standardized and non-standardized assessments using appropriate procedures and protocols. Interpret the results based on psychometric properties of tests considering factors that might bias assessment results (e.g., culture and disability status related to the person and context). (ACOTE: B.4.5)

Curriculum Threads:

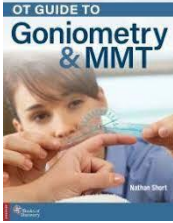
This course addresses the following curricular threads:

- Occupation-centered
- Evidence-based
- Culturally and Contextually Responsive

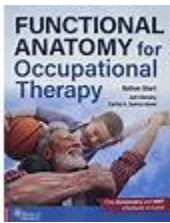
Areas of In-Depth Knowledge Development:

The UTEP OTD Program focuses on four areas of in-depth knowledge development: Clinical Practice Skills, Education, Advocacy, and Program Policy and Development. Students will choose one of these areas in which to concentrate with their OTD

Capstone Experience and Project. OT 6304 targets the following area: Clinical Practice

Required Texts:

Short, N. (2021). *OT Guide to Goniometry & MMT* (1st ed.). Books of Discovery.



Short, N. (2021). *Functional Anatomy for Occupational Therapy* (1st ed.). Books of Discovery.

Recommended Texts:

Dadio, G. D., & Nolan, J. A. (2019). *Clinical pathways and occupational therapy assessment for range of motion & manual muscle strength*. Philadelphia: Wolters Kluwer.
ISBN-13: 978-1496387783

Methods of Instruction: Regular access to a computer, Blackboard, and your UTEP email account. This course utilizes a student-centered approach to teaching via team-based learning (TBL) activities, with minimal use of lectures by faculty. Will use of TBL group participation with faculty guidance and problem-based learning in teams, exploratory learning for active learning by doing, with peer and instructor feedback. This course shall utilize:

- **Reading Assignments:** Reading assignments will be assigned utilizing the latest peer-reviewed evidence on the weekly topic. Students are expected to come to class prepared, including but not limited to completing all assigned reading.
- **Videos:** The instructor will provide videos to enhance learning on body mechanics, ROM measurements, and manual muscle testing.
- **Lecture:** The instructor will provide lectures on course materials relevant to all the learning objectives in an interactive way to allow for group and class discussion.
- **Visual Demonstrations for Lab:** The instructor will provide hands-on demonstrations of the biomechanical approach to assess joint motion and muscle activation/contraction.
- **Class discussions:** The instructor will engage students by facilitating topics for discussion. Special emphasis will be directed toward biomechanical function and dysfunction that leads to injury and the impact on occupation performance. Students will be expected to contribute to every discussion and be prepared to answer questions in a team-based approach.

Methods of Assessment:

Readiness Assessment Tests (RATs): At the beginning of each unit of study, each student will take a short test assess comprehension of text materials. Students will each take two RATs: an individual test and a team test.

Lab Practicum (3): Student knowledge of the required hands-on content on appropriate use of goniometer, documentation of measurements, and manual muscle testing will be conducted on a regular basis.

Case Study Application (2): Students will review a case study, including medical records and occupational profiles, to complete an occupational therapy evaluation/screening utilizing biomechanical principles.

Final Case Study Skill Application: Students will be provided with a case study to complete an occupational therapy evaluation/screening following biomechanical principles and will develop a plan of care.

Returned demonstration: Student will demonstrate the ability to perform skills introduced in lecture/lab and receive individual performance feedback. It is each student's responsibility to review all feedback on all assignments and contact the instructor for needed clarification. The students will be evaluated with a skills check form.

Participation and Team Member Performance: Participation will be evaluated during each lecture and lab. All portions of this course will require various amounts of self-directed learning. It will be demonstrated by:

- Actively participating during lecture/lab discussions
- Responsibility for team member participation and interactions
- Completing requested lecture/lab activities
- Professional Behaviors especially during any Guest Lectures etc

<u>Course Grading:</u>		<u>Letter Grade Equivalents:</u>
iRATs:	10%	A = 90 - 100 B = 80 - 89 F = below 79
tRATs:	5%	
Practicum: #1	15%	
#2	15%	
#3	15%	
Case Study Application (2):	10%	
Class/team participation:	10%	
Final Practicum Case Study Application:	20%	
Total	100%	

Professional Behaviors:

- 1) **Punctuality and Attendance:** Students are expected to arrive promptly (5-10 minutes before the beginning of class) and to **attend every class**.
 - a. **Tardiness** without prior approval from the instructor will result in a loss of accrual of points toward the computed final grade percentage per incident up to **15%** of the final grade. A text message, voice message, or email to the instructor can be left for approval.
 - b. **Any excused/unexcused** absence will result in no point accrual for participation. Any **unexcused** absence after that will result in losing points for participation for a maximum of 15% of the final grade.
 - c. **Excused** absences are at the instructor's discretion, but the daily points for attendance cannot be given for any reason as they are related to the level of participation. The 1st absence will result in no point accrual stated. Each **excused** absence afterwards will result in no point accrual. You are expected to make up missed work and get information and materials missed from your classmates.
 - d. **Participation:** Active participation in lectures and lab is required. Each lecture and lab will have points assigned for class participation, and points will only be given for active participation during the lecture and lab. If a student lacks participation, points will not be accrued for the lecture and/or lab. Please refer to Methods of Assessment regarding participation expectations.
- 2) **Time Management:** Late assignments will be deducted **10 points** off the grade, per day they are late. If assignments are due at the beginning of class and turned in after class has begun, **5 points will be deducted**.
- 3) **Acceptance of and participation in giving and receiving constructive criticism:** Students will be responsible for assessing fellow students' performance and modifying performance based on feedback.
- 4) **Disruptive Behavior:** Behaviors that detract from students learning will not be tolerated. These behaviors include but are not limited to: talking during class when an instructor or other student has the floor, attire that distracts from students learning, entering and exiting during instruction, and incoming messages on electronic devices.
- 5) **Electronic Devices:** All Cell phones should be turned off during class.
- 6) **Computer-Online Netiquette:** As we know, sometimes communication online can be challenging. It's possible to miscommunicate what we mean or to misunderstand what our classmates mean given the lack of body language and immediate feedback. Therefore, please keep these netiquette (network etiquette) guidelines in mind. Failure to observe them may result in disciplinary action.
 - a. Always consider audience. This is a college-level course; therefore, all communication should reflect polite consideration of other's ideas.
 - b. Respect and courtesy must be provided to classmates and to the instructor at all times. No harassment or inappropriate postings will be tolerated.
 - c. When reacting to someone else's message, address the ideas, not the person. Post only what anyone would comfortably state in a face-to-face situation.
 - d. Be professional: do not lay down in your bed during class where everyone can see you. Find a quiet spot where you can sit upright.

- e. Dress appropriately. Please do not wear pajamas or tank tops. Be comfortable, but not too comfortable.
- 7) Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space..m
- 8) **Clinical observations:** this course does not request participation in clinical observations or service-learning opportunities. However, in the even that students are allowed to observe, it is recommended students wear polo or button up shirts, pants and closed-toe, non-skid shoes.

Academic Integrity: Students are expected to be above reproach in all scholastic activities. Students who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and dismissal from the university. “Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, and the submission of credit of any work or materials that are attributed in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.” Regents Rules and Regulations, Part One, Chapter VI, Section 3.22. Since scholastic dishonesty hard the individual, all students and the integrity of the university, policies on scholastic dishonesty will be strictly enforced. If there is any suspicion of scholastic dishonesty, the student will be immediately referred to the Office of Student Conduct.

Academic Integrity during/after practicum: Students are expected to be above reproach when completing a practicum. Students are expected to leave all electronic devices and/or belongings in a designated area as assigned by the instructor. Upon completion of the practicum, it is **EXPECTED** that students will not disclose any information about the practicum to any student who has not completed the practicum. Upon completion of the practicum, students are to immediately leave the testing area and not discuss with any other student waiting to take the practicum. If there is suspicion of any collusion/discussion between students during a practicum, the student will be immediately referred to the Office of Student Conduct.

From the UTEP Dean of Student Affairs

(<http://studentaffairs.utep.edu/Default.aspx?tabid=4386>). It is an official policy of the university that all suspected cases or acts of alleged scholastic dishonesty must be referred to the Dean of Students for investigation and appropriate disposition. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, and submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. “Cheating” includes:

1. Copying from the test paper of another student, engaging in written, oral, or any other means of communication with another student during a test, or giving aid to or seeking aid from another student during a test;
2. Possession and/or use during a test of materials which are not authorized by the person giving the test, such as class notes, books, or specifically designed “crib notes”;

3. Using, obtaining, or attempting to obtain by any means the whole or any part of non-administered test, test key, homework solution, or computer program; using a test that has been administered in prior classes or semesters but which will be used again either in whole or in part without permission of the instructor; or accessing a test bank without instructor permission;
4. Collaborating with or seeking aid from another student for an assignment without authority;
5. Substituting for another person, or permitting another person to substitute for one's self, to take a test; and
6. Falsifying research data, laboratory reports, and/or other records or academic work offered for credit

Plagiarism means the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the unacknowledged submission or incorporation of it in one's own academic work offered for credit, or using work in a paper or assignment for which the student had received credit in another course without direct permission of all involved instructors. NOTE: This includes cutting-and-pasting and photocopying from on-line and other material.

Collusion means the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on scholastic dishonesty. If you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UTEP catalog policy. Refer to <http://www.utep.edu/dos/acadintg.htm> for further information

Test Proctoring Software

All iRATs will make use of Respondus Lock Down Browser and Respondus Monitor inside of Blackboard to promote academic integrity. You are encouraged to learn more about how to use these programs prior to the first test.

Please review the following guidelines:

- The assessments will only be available at the times identified on the course calendar.
- A reliable Internet connection is essential to completing the exam. If you must go to a location to take the exam (such as the library), be sure to follow their health and safety requirements.
- You have 1 attempt to take the test. Once the window closes, your answers will be saved, and no changes can be made.
- Respondus Lockdown Browser will require that all internet tabs are closed prior to the start of the test.
- Respondus Monitor requires a webcam and microphone.
- You will be required to show the webcam your student ID prior to the start of the test.
- Your face should be completely visible during the test. Blocking the camera will disable the test.
- No notes or textbook materials are permitted during the test. Respondus Monitor requires you to take a video of your surrounding area (desk, chair, walls, etc.)

You should not have conversations with other people and/or leave and return to the area during the test

Americans with Disabilities Act:

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 email 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/>

COVID-19 PRECAUTION STATEMENT

Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID-19 testing.

The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org.

**OT 6305 Medical Kinesiology and Biomechanics
Tentative Course Calendar**

Spring-2023 – Wednesday 8:30 AM-10:20 AM and Wednesday 1:00 PM to 3:50 PM

Note: The instructor reserves the right to modify the class calendar if necessary.

Date	Lecture/Lab Topics:	Lab	Readings & Assignments Due	Obj
Week 1 01/18/2023	Review syllabus Foundational Concepts of Occupational Therapy Assessment Types of ROM Assessment -Types of Joint end feel -Manual Muscle testing	-Anatomical Position Planes and axes of movements, and anatomical directional terms -Goniometers parts and degrees of motion -Postural Screening and Functional Range of Motion Screening	Review PPTs Functional Anatomy Ch. 1 OT Guide ROM & MMT Ch. 1 Application Activity	1, 2, 5
Week 2 01/25/2023	Shoulder	Functional Movement Patterns and Palpation of Surface Landmarks -Goniometric Measurements -Manual Muscle Testing Functional Muscle Movers	Functional Anatomy Ch. 5 OT Guide ROM & MMT Ch. 2 iRAT -1 tRAT -1 Application Activity	1-7
Week 3 02/1/2023	Shoulder	-Functional Movement Patterns and Palpation of Surface Landmarks -Goniometric Measurements -Manual Muscle Testing Functional Muscle Movers -Intervention (AROM, A/AROM, PROM). Strengthening activities	Functional Anatomy Ch. 5 OT Guide ROM & MMT Ch. 2 iRAT 2 tRAT 2 Application Activity	2, 3
Week 4 02/8/2023				1-7

	Practical Exam 1: Shoulder ROM and MMT			
Week 5 02/15/2023	Elbow and Forearm	Functional Movement Patterns and Palpation of Surface Landmarks -Goniometric Measurements -Manual Muscle Testing Functional Muscle Movers -Intervention (AROM, A/AROM, PROM). Strengthening activities	iRAT 3 tRAT 3 Functional Anatomy Ch. 6 OT Guide ROM & MMT Ch. 3 Application Activity	1-7
Week 6 02/22/2023	Wrist	Functional Movement Patterns and Palpation of Surface Landmarks -Goniometric Measurements -Manual Muscle Testing Functional Muscle Movers -Intervention (AROM, A/AROM, PROM). Strengthening activities	Functional Anatomy Ch. 7 OT Guide ROM & MMT Ch. 4 iRAT 4 tRAT 4 Application activity	1-7
Week 7 03/1/2023	Practical Exam 2: Elbow and Wrist ROM and MMT			1-7
Week 8 03/8/2023	Hand	Functional Movement Patterns and Palpation of Surface Landmarks -Goniometric Measurements -Manual Muscle Testing Functional Muscle Movers (Grip and Pinch strength) -Intervention (AROM, A/AROM, PROM). Strengthening activities	Functional Anatomy Ch. 7 OT Guide ROM & MMT Ch. 5 Dadio & Nolan Ch. 7 iRAT 5 tRAT 5 Application activity	1-7
Week 9 03/13/2023	SPRING BREAK!!!! NO CLASSES!!			
Week 10 03/22/2023	Hand (Thumb*)		iRAT 6	1-7

	Neck	<p>Functional Movement Patterns and Palpation of Surface Landmarks</p> <p>-Goniometric Measurements</p> <p>-Manual Muscle Testing Functional Muscle Movers (Grip and Pinch strength)</p> <p>-Intervention (AROM, A/AROM, PROM). Strengthening activities</p>	<p>tRAT 6</p> <p>OT Guide ROM & MMT CH. 5</p> <p>OT Guide ROM & MMT Ch. 6</p>	
Week 11 03/29/2023	Lab Practicum 3: Hand and Thumb ROM and MMT			1-7
Week 12 04/05/2023	<p>Evaluation of Edema and Upper Extremity Function</p> <p>Sensory Testing</p>	<p>Volumeter</p> <p>Tape Measurement</p> <p>DASH</p> <p>Sharp and Dull, Monofilaments, and Light Touch</p>	<p>i-RAT 7</p> <p>t-RAT 7</p> <p>Supplemental Readings and Lecture</p> <p>Review PPT</p>	1-7
Week 13 04/12/2023	<p>Lower Extremities</p> <p>Functional Mobility</p>	<p>Goniometry</p> <p>MMT</p> <p>Bed Mobility</p>	<p>Functional Anatomy Ch. 8, 9, and 10</p> <p>OT Guide ROM Ch. 7 & 8</p>	1, 2, 5, 7
Week 14 04/19/2023	Review of the course and skill application activities	Case Study Application assignment # 1	<p>Chart Review</p> <p>Intro to treatment Protocol</p> <p>Safety</p> <p>SOAP Note Practice</p>	1-7
Week 15 04/26/2023	Review of the course and skill application activities	Case Study Application assignment # 2	<p>OT Evaluation Practice</p> <p>Completing OT Evaluation Report</p>	1-7

Week 16 05/3/2021	Case Study Application Final Practicum	1-7
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College of Health Sciences: Occupational Therapy Program
OT 6305 Biomechanics
SYLLABUS Spring 2023

Student responsibilities:

1. Regular class attendance and participation. Understand **Punctuality and Attendance** policies.
2. All information presented in all learning activities.
3. Prior approval from instructor for any excused absence.
4. Completion of all reading materials before attending class.
5. All assignments are due as indicated on the course outline. Late assignments will be deducted **10 points** off the grade, per day they are late. If assignments are due at the beginning of class and turned in after class has begun, **5 points will be deducted**.
6. If a student is unable to take a scheduled exam or quiz, s/he is responsible for notifying the instructor before the examination. Another student informing the instructor of an absence is not acceptable. It is up to the discretion of the instructor to allow for rescheduling a quiz or exam.
7. Professional preparation of entry-level clinicians requires students master the skill of active participation with team members; therefore, students are expected to participate in classroom and lab activities and discussions. Lack of consistent participation will result in a non-negotiable maximum deduction of 15% off the final class grade. Active participation includes asking questions, practicing hands-on activities, participation in class discussion and group activities.
8. For all clinical observations, it is recommended you wear pants (twill or chinos), closed-toe, non-skid shoes, and polo or button-up shirts.

Disclaimer: Due to the content of this course, there will be physical contact with other classmates and instructors in order to fully comprehend and correctly perform specific evaluation and intervention techniques. By reading and signing this statement, you agree to fully participate and accept the necessity for physical contact by instructors, guest speakers, and other classmates for professional and educational purposes.

Student Name: _____

Student Signature: _____ Date: _____