

Graduate School of Health Sciences / Orthosis-Prothesis M.S.

2024 - 2025 Academic Year

BIOMECHANICAL ANALYSIS

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
BIOMECHANICAL ANALYSIS	OPZY1234710	Spring Semester	2+0	2	6
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	Turkish				
Course Level	Second Cycle (Master's Degree)				
Course Type	Required				
Course Coordinator	Assist.Prof. Sena ÖZDEMİR GÖRGÜ				
Name of Lecturer(s)	Assist.Prof. Sena ÖZDEMİR GÖRGÜ				
Assistant(s)					
Aim	The aim of this course is to evaluate technics of biomechanical analysis with up-to date literature				
Course Content	This course contains; Biomechanical principals, Forces, Analysis of biomechanical forces, Components of biomechanical forces in orthotics, Biomechanical principals of materials in orthotics, Biomechanical principals of materials in prothetics, Biomechanical principals of materials in prosthetics, Kinematic, Kinetic, Power, work and energy, Momentum, Recording muscle strength, Balance and Friction.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
Defines biomechanical principles.			10, 12, 9	A	
Explains the analysis of biomechanical forces.			10, 16, 4, 9	A	
Ability to comments on biomechanical effects of materials			10, 12, 4, 9	A	
Summarizes the materials used in prosthesis.			10, 16, 2, 4, 9	A	
Interprets the principles of work, power and energy.			10, 12, 16, 9	A	
Uses evidence-based studies.			10, 12, 4, 9	A	
Teaching Methods	10: Discussion Method, 12: Problem Solving Method, 16: Question - Answer Technique, 2: Project Based Learning Model, 4: Inquiry-Based Learning, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Biomechanical principals	Source 15th - Chapter 1			
3	Forces	Source 16th - Chapter 1			
4	Analysis of biomechanical forces	Source 16th - Chapter 1			
5	Components of biomechanical forces in orthotics	Source 5th-Chapter 4			
6	Biomechanical principals of materials in orthotics	Source 5th-Chapter 4			
7	Biomechanical principals of materials in prothetics	Source 15th - Chapter 2			
8	Biomechanical principals of materials in prosthetics	Source 15th - Chapter 2			
9	Kinematic	Source 15th - Chapter 6			
10	Kinetic	Source 15th - Chapter 6			
11	Power, work and energy	Source 15th - Chapter 6			
12	Momentum	Source 15th - Chapter 6			
13	Recording muscle strength	Source 15th - Chapter 7			
14	Balance and Friction	Source 15th - Chapter 4-5			
Evaluation Methods		Weight(%)			
Midterm Exam		50			
General Exam		50			

Resources
<p>Course presentations will be given.</p> <p>1)AAOS Atlas of Orthoses and Assistive Devices Frank Gottschalk, MD, MB, BCH, 2013 2)Atlas of Amputations and Limb Deficiencies/Douglas G. Smith MD, 2013 3)Orthotics and Prosthetics in Rehabilitation/Lusardi & Jorge & Nielsen, 2013 4)Introduction to Orthotics/Breand Coppard, Helene Lohman, Fourth Edition, 2015 5)Orthotic Intervention for the Hand and Upper Extremity, Marylyn Jacobs, Noelle Austin, Second Edition, 2014 6)Prosthetics and Orthotics Lower limb and Spinal, Ron Seymour, 2002 7)Kas iskelet Sisteminde Pratik Ölçme ve Değerlendirme, Deniz Evcik, Pelikan, 2008 8)Fundamentals of amputation care and Prosthetics, Douglas Murphy, 2014 9)Phantom Limb Amputation, Embodiment, and Prosthetic Technology, Cassandra Crawford, 2014 10)Careers in Orthotics and Prosthetics, 2015 11)Biomechanics of Lower Limb Prosthetics, Springer, 2010 12)İletişim, Emel Bahar, Detay yay, 2012 13)The Management of Uncontrolled Movement, Mark Comerford, Elsevier, 2014 14) Perspectives on Loss and Trauma, John Harvey, Sage, 2013</p> <p>15)Temel Kinezyo-Mekanik, N. Ekin AKALAN, Yener TEMELLİ, İstanbul Tıp Kitabevleri</p> <p>16)İnsan Hareketinde Biyomekanik, Barney Leveau, Yavuz Yakut, Pelikan yay., 2014</p>