

<p>Course Name: KNPE 153/3.0</p> <p>Introductory Biomechanics</p>	<p>Course Instructor:</p> <p>Dr. Pouya Amiri</p>	<p>Contact Hours:</p> <p>Lectures: 3 x 1 hr / 12 weeks Labs: 1 x 1 hr / 12 weeks</p>
		<p>Prerequisite:</p> <p>BSCH KINE students level one or above.</p>
		<p>Exclusion:</p>

<p>Course Description:</p> <p>The purpose of this course is to learn the fundamentals of analyzing human movement in a quantitative manner. Learn basic mechanics of rigid body motion and how they are applied in the context of human movement (i.e. how forces generate movement) to understand whole body movement and interaction among body segments.</p>	<p>Course Texts:</p> <p>Biomechanics of Sport and Exercise. Peter M. McGinnis. Human Kinetics, Champaign, IL. 2021 4th Ed. (Recommended)</p> <p>All course notes and materials will be available on the onQ page.</p>
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<p>Learning Outcomes:</p> <ul style="list-style-type: none"> • Understand the important concepts governing rigid-body motion, including kinematics, forces, and moments • Use Newtonian's Laws to write and solve equations of motion of rigid bodies • Use the mechanical principles in the context of human movement to quantify forces and resulting motion of the body as a whole, as well as, its individual segments 	<p>Course Evaluation:</p> <table> <tr> <td>Weekly quizzes</td> <td>20% (8 x 2.5 %)</td> </tr> <tr> <td>Assignments</td> <td>20% (4 x 5%)</td> </tr> <tr> <td>Midterm</td> <td>20%</td> </tr> <tr> <td>Final</td> <td>40%</td> </tr> </table>	Weekly quizzes	20% (8 x 2.5 %)	Assignments	20% (4 x 5%)	Midterm	20%	Final	40%
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Course Outline	
Introduction to biomechanics	Angular kinematics
Anatomical Terms and definitions	Forces. torques
Qualitative biomechanics	Center of mass
Linear kinematics: acceleration	Work, power and energy
Linear kinematics and projectiles	Qualitative biomechanics
Scalars and vectors Forces: fundamentals	Free-Body diagrams
Static equilibrium	Torques: joint moments
Newton's laws	Moment of inertia