



### Sample Brief Course Description

<b>Course title</b>	Biomechanics for engineering
<b>Course code</b>	MPHYS 212
<b>College</b>	Engineering
<b>Department / Program</b>	Biomedical Engineering
<b>Year/ Level</b>	3/9
<b>Course Type</b>	A. <input type="checkbox"/> University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Others b. <input checked="" type="checkbox"/> Required <input type="checkbox"/> Elective
<b>Credited Hours</b>	3
<b>Contact Hours</b>	(LT:3,LB:1,TR:0)
<b>Pre-requisites (if any)</b>	---
<b>Co-requisites (if any)</b>	---
<b>Course description</b>	The course introduces the engineering dynamics and a fundamental in biomechanics and overview of musculoskeletal anatomy. The course designed to apply the concept of Mechanics for human activities (Statics and Dynamics). Specific course topics will include Introduction to Biomechanics. Kinematic and kinetic concepts including presentation of the quantitative and qualitative approaches to analyze human motion. Dealing with the use of static equilibrium equations to solve problems applied of the different human joints. Determination of



	the center of gravity of multi-segment systems. Presentation of the biomechanical aspects of the bone and muscle structures. Bio fluid mechanics
<b>Course Main Objectives</b>	<ul style="list-style-type: none"> <li>• Understand the principles of engineering dynamics.</li> <li>• Ability to select modern tools of biomechanics.</li> <li>• Describe the different concepts of biomechanics to analyze the human motion.</li> <li>• Solves broadly defined biomechanical problems.</li> <li>• Describe the bone anatomy (macroscopic and microscopic), the processes involved in the normal growth and maturation of bone.</li> <li>• Explain how the material constituents and structural organization of bone affect its ability to withstand mechanical loads.</li> <li>• Understand the basic of bio fluid mechanics</li> </ul>
<b>Learning Outcomes</b>	<p><b>Knowledge and Understanding:</b></p> <ol style="list-style-type: none"> <li>1. Describe the bone anatomy (macroscopic and microscopic), and all it related the processes</li> <li>2. Explain the relationships of fiber types and fiber architecture to muscle function.</li> <li>3. Recognize the effects of both the force-velocity and length-tension relationships and the electro-mechanical delay on muscle function.</li> </ol>
	<p><b>Skills:---</b></p> <ol style="list-style-type: none"> <li>1. Identify and formulate basic kinematic quantities of rectilinear and curvilinear motion of particle such as: position, displacement, velocity and acceleration.</li> <li>2. Solve biomechanical static problems related to human joints.</li> <li>3. Compute the energy expenditure and power required to perform an activity.</li> </ol>
	<p><b>Values:---</b></p> <ol style="list-style-type: none"> <li>1. Work effectively within teams to accomplish certain goals</li> </ol>