Basic Biomechanics

Kinesiology 201

Section: D100

Term: 1998 Summer

Instructor: Tony Leyland; Room: K8638; 291-4338

Discussion Topics: This course will cover the application of basic mechanics to human movement. It will provide students with the basic understanding of how forces act on body segments and how movements are produced. The subject matter in this course is relevant to quantifying all forms of physical activity: activities of daily living; physically challenged movement patterns; elite athletic performance; work related tasks, etc. It also has applications in medical settings, including rehabilitation and sports medicine.

Lecture Topics

Introduction to problem solving, basic biomechanical terminology, forces & torques; translation and rotation; vectors; biomechanics of the skeletal system; linked segment models of the human body; basic muscle mechanics; levers; muscle moment arm; force-length and force-velocity relationships; biomechanics of articulations, linear kinematic quantities, equations of uniform motion; projectiles; angular kinematics; Newton's Laws of motion; forces, linear impulse; work power & energy; static & dynamic equilibrium; joint forces and torques under static conditions; centre of mass; distributed forces, centre of pressure; moment of inertia; angular momentum; angular impulse; linked segment dynamics; joint forces and torques under dynamic conditions; fluid mechanics.

Grading: Grading System

Assignments 20% (4 x 5%);

Midterm 30%;

Final exam 50%

Required Texts: No course text is required. Numerous texts will be placed on library reserve. Detailed lecture notes and problem sets will be provided for students so there will be a small charge to cover duplicating costs. If you have a chance to borrow an old cours

Recommended Texts:

Materials/Supplies:

Prerequisite/Corequisite: Prerequisites KIN 142; PHYS 101 or 120; MATH 152 or 155.

Notes: One two-hour and one-hour lectures, and one one-hour tutorial per week.

Note: Students with credit for KIN 401 may not take KIN 201 for further credit.