Enhancing student-centered learning in Biomechanics (KINE3050) using new and emerging technological educational tools

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Project Abstract

This project redesigned KINE-3050 (Biomechanics) as a blended course with the aim to enhance student-centered learning by: (1) developing online interactive learning modules and laboratory assignments and (2) increasing and improving the use of new technologies to enhance student learning and engagement (Wikis and Clickers).

Online Learning Modules

Covered topics:
- Work, Power, and Energy
- Angular Kinematics
- Forces
- Tissue Stress
- Bone and Joints

Each module includes, interactive tasks, videos, pictures, practice examples, self tests, and explanations (supplement to in-class lectures)

Example: Projectile motion

Students complete different experiments in order to learn how takeoff: 1) Speed, 2) Angle, and 3) height relative to landing affect the trajectory (vertical and horizontal displacement) of a projectile

Online Laboratories

Example of part of a wiki page

**Angular Kinetics**

Angular Kinematics includes all the kinematics for the movements that occur in and around joints. Angular Kinematics is represented through angular measurements, conservation of angular momentum, and the angular momenta. These concepts tell us about the linear aspects of motion. Linear motion includes the linear version of the linear momentum, angular momentum, and work. These concepts tell us about the angular aspects of motion. Angular motion includes the angular version of the angular momentum, angular work, and angular energy. Angular motion is dealt with in this module. Examples include the angular motion of the human body, the linear motions of the human body, and the angular motions of the human body.

Example of slides used in class

- The implementation of technology in KINE3050:
  - Did not improve exam scores
  - Improved overall score (grade) for course
  - Largely due to high scores on wiki assignments