EXERSCI 203
Biomechanics 1
15 points
Semester 1, City Campus
Prerequisite: EXERSCI 101

Who should take this course?

In this course we explore the physical principles that relate to human movement. Topics covered include linear and rotational motion, forces, momentum, mechanical work, torque, moment of inertia, and loading of bones. At the completion of the course, students will be able to qualitatively and quantitatively describe two-dimensional movements, and explain their causes, as well as quantitatively assess the stress applied to bones during simple movements. These techniques have applications in industries that include sports performance and assessment, rehabilitation, ergonomics and workplace design, and practical activities in the course will be related to these fields. EXERSCI 203 is a mandatory course in the Exercise Sciences programme.

Learning Outcomes

At the completion of this course, a student would be expected to:

- Fully understand the fundamental principles of biomechanics (kinematics and kinetics).
- Be able to quantitatively apply biomechanical principles to understand simple movements and
- Be able to apply biomechanics knowledge to qualitatively analyse more complex human movement, e.g. sporting events, gait analysis, ergonomics/human factors, etc.
- Be familiar with numerical calculations, data analysis, and presentation techniques used in biomechanics
Learning and Teaching

Students are expected to attend 3 1-hour classes and 1 3-hour lab per week.

This course uses the ‘flipped classroom’ method, where content is provided online, and classes are used for practical demonstrations, discussions, group and individual work to consolidate understanding. The laboratory sessions focus on demonstrating the practical implementation of theoretical concepts covered in the course.

Students with a limited background in mathematics (or physics) are strongly advised to seek out additional support in this area. This support may include accessing the Student Learning Centre, taking a course in basic mathematics or physics, forming a study group with your classmates, arranging for personal tutoring, and so on.

Teaching Staff

Lecturer/Course co-ordinator
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Assessment*

Assessment is used to drive learning and participation, with pre-class quizzes, mathematical problem assignments, and lab reports. A short article review encourages students to look at current applications of biomechanics research. Formal written assessment accounts for 45% of the final course grade.