BIOS 3005 APPLIED BIOMECHANICS

Credit Points 10

Legacy Code 401147

Coordinator Peter Clothier (https://directory.westernsydney.edu.au/search/name/Peter Clothier/)

Description To fully understand the science underlying the optimisation of human movement, students require a comprehensive working knowledge of Biomechanics. This subject represents a theoretical and applied study of selected topics in Biomechanics. It builds on the basic principles of Biomechanics that are presented in the subject Biomechanics and applies this knowledge to the analysis of sporting and human exercise performance. To achieve this, advanced methods and concepts in the biomechanical analysis of human performance are identified and explored.

School Health Sciences

Discipline Biological Sciences, Not Elsewhere Classified.

Student Contribution Band HECS Band 2 10cp

Check your fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 3 subject

Pre-requisite(s) HLTH 2003

Equivalent Subjects BIOS 3006 - Applied Biomechanics of Exercise BIOS 3007 - Applied Biomechanics of Sport and Exercise

Restrictions

Students must be enrolled in 4658 - Bachelor of Health Science (Sport and Exercise Science).

Assumed Knowledge

It is expected that students have the knowledge and skills associated with the prerequisite subject.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Describe and apply biomechanical principles to assess movement in the context of health, exercise, sport and/or activities of daily living in a variety of populations.
2. Articulate and synthesise factors governing efficient movement from a biomechanical perspective.
3. Utilise biomechanical measurement techniques to assess human movement, human interactions with equipment and the environment, and devise intervention strategies where appropriate.
4. Collect, process and present data common to biomechanical analyses using biomechanical equipment and software applications.
5. Identify and explain biomechanical factors associated with injury and injury prevention.
6. Describe and apply techniques to analyse gait using basic temporal, kinematic and kinetic measurement procedures.
7. Illustrate and explain muscle mechanics concepts that affect muscle performance.

Subject Content

- Qualitative analysis techniques: mechanical analysis of movement and methods of observation for The assessment of performance / technique
- Dynamometry: principles and applications of Force measurement in biomechanics
- Motion analysis: principles and applications in The use of video/ Motion analysis in biomechanics
- Muscle mechanics: theory, assessment and application of muscle mechanics principles in sport and Exercise
- Gait analysis: theory and application of gait analysis techniques in biomechanics
- he application of Biomechanical principles to selected Sports and Exercise movements
- Ergonomics: theoretical and practical applications of The Biomechanical analysis of workstations
- Electromyography: The collection and use of EMG data in biomechanics

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Poster	AO sized conference poster	30	N	Group	Y
Portfolio	10 hours	20	N	Individual	Y
Final Exam	1 hour 45 minutes	50	N	Individual	Y

Prescribed Texts

There is no prescribed textbook for this subject. However, students may be required to refer to the pre-requisite subject HLTH2003 Biomechanics text

- Hall, S.J., Basic Biomechanics, 9th Edition, McGraw-Hill, Boston, 2021

Teaching Periods

Spring (2025)
Campbelltown
Hybrid
Subject Contact Peter Clothier (https://directory.westernsydney.edu.au/search/name/Peter Clothier/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=BIOS3005_25-SPR_CA_3#subjects)