ENGR 3023 BIOMECHANICS IN PRODUCT INNOVATION

Credit Points 10

Legacy Code 301292

Coordinator Karen Yevenes (https://directory.westernsydney.edu.au/search/name/Karen Yevenes/)

Description In this subject students apply practical design thinking skills to propose viable solutions for solving complex problems in both human and environment centred contexts. Whilst working on an industry-based project, students will develop an understanding of human biomechanics and human anatomy and the challenges they bring to the design process. Students interested in design-based careers which involve improving ways people interact with products, systems and spaces will benefit from the skills developed in this subject.

School Eng, Design & Built Env

Discipline Other Engineering And Related Technologies

Student Contribution Band HECS Band 2 10cp

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

Level Undergraduate Level 3 subject

Equivalent Subjects ENGR 3010 Design Studio 4 Innovation through Systems Thinking

Assumed Knowledge

The ability to generate design concepts that reference human scale and basic knowledge in prototype model fabrication is desirable.

Learning Outcomes

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

1. Develop research skills by conducting ethical observations to collect quantitative data and report on findings.
2. Collaborate with others to develop, design and communicate concepts and designs.
3. Develop an experiment to understand the physical limitations in performing tasks associated with ageing.
4. Develop conceptual product designs that take advantage of applied biomechanical knowledge and empathic understanding.
5. Communicate design concepts, analysis and solutions in a variety of formats for a diverse audience.
6. Follow an iterative design discovery process in developing a product that improves product usability and user quality of life in a real-world scenario.

Subject Content

1. Human movement, levers and forces.
2. Basic human systems: circulatory, musculoskeletal, nervous, endocrine and integumentary systems.
3. Fine and gross motor movements and kinetic chains.
4. Anthropometric measurement tools, functions and procedures for using.
5. Basic data collection techniques, analysis and interpretation of results

6. Measurement of flexion, extension, and range of motion in joints.
7. Kinetic chains in human movement.
8. Empathic design methods; identifying challenges within human scenarios and identifying unique needs.
9. Ergonomic design.
10. Ethical research in undertaking observation methods and in reporting outcomes.
11. Iterative design methods including product conceptualisation, and model-making.
12. Design communication and presentation techniques

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
Report	1000 words with photos	10	N	Individual
Progress Portfolio	5 minute A/V narrated video & 1200 words 3 x A3 size annotated conceptual drawings & low-resolution 3D model	35	N	Group/ Individual
Presentation	7 minute A/V narrated video & 2000 words & 3D model Industry Partner Pitch including 6 x A3 size working drawings	55	N	Group/ Individual

Teaching Periods

Spring (2022)
Parramatta City - Macquarie St
Day
Subject Contact Karen Yevenes (https://directory.westernsydney.edu.au/search/name/Karen Yevenes/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ENGR3023_22-SPR_PC_D#subjects)

Spring (2023)
Parramatta City - Macquarie St
On-site
Subject Contact Karen Yevenes (https://directory.westernsydney.edu.au/search/name/Karen Yevenes/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR3023_23-SPR_PC_1#subjects)