

Short Title:	Biomechanics 3 APPROVED
Full Title:	Biomechanics 3
Language of Instruction:	English

Module Code:	BIOM H2333
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Credits:	5
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Field of Study:	Engineering, Manufacturing and Construction
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Module Delivered in	2 programme(s)
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Reviewed By:	DIARMUID RUSH
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Module Author:	FIONA MC EVOY
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Module Description:	This subject equips the student with a fundamental understanding of bioengineering Mechanics applied in the field of Biomedical and Sports Engineering. Force Systems, Stress/Strain and moments are introduced. It will provide the student with the analytical and practical skills for solving problems in this field. This forms the basis for further study in their final year.
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Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Describe the biomechanics of Joints in the body.
LO2	Calculate basic working stress and strain; Young's Modulus; Poisson Ratio in simple bio-engineering problems.
LO3	Perform calculations involving basic Stress and strain, shear bending and torque actions, and the corresponding stresses and strains in the Musculoskeletal system.
LO4	To Compare tensile and compressive behaviour of cortical and trabecular bone.
LO5	Calculate Shear force and bending moments.
LO6	Determine the Bending stress in simply supported beams under various loading conditions.
LO7	Perform and analyse problems using Simple Theory of Torsion. Torsion of bone.
LO8	Calculate the shear stress due to torsion in compound shafts.
LO9	Execute appropriate safety procedures and standards whilst using laboratory equipment.

Module Content & Assessment

Course Work				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Laboratory	Lab 1: Tensile Test Case Study (assessed by individual report)	2,9	5.00	Week 3
Laboratory	Lab 2: Modulus of Elasticity and Poisson's Ratio(group in lab assessment)	2,9	10.00	Week 5
Laboratory	Lab 3: Bending of Cantilever Beam (assessed by individual report.	2,5,6,9	10.00	Week 8
Laboratory	Lab 4: Torsion (group in lab assessment)	7,8,9	5.00	Week 11

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	End-of-Semester Final Examination	1,2,4,5,6,7,8	70.00	End-of-Semester

TU Dublin – Tallaght Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Class based instruction	3.00	Every Week	3.00
Lab	Lab based instruction	1.00	Every Week	1.00
Independent Learning	Indep learning	3.00	Every Week	3.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

Workload: Part Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Class based instruction	3.00	Every Week	3.00
Lab	Lab based instruction	1.00	Every Week	1.00
Independent Learning	Indep learning	3.00	Every Week	3.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

Module Resources

Required Book Resources

Course Notes by Dr Fiona McEvoy

Susan Hall, *Basic Biomechanics*, 7th Ed. [ISBN: 978-007352276]

Donald L. Bartel, Dwight T. Davy, Tony M. Keaveny 2006, *Orthopaedic biomechanics*, Pearson/Prentice Hall Upper Saddle River, N.J. [ISBN: 9780130089090]

Recommended Book Resources

Timothy Philpot 2008, *Mechanics of Materials*, Wiley

This module does not have any article/paper resources

This module does not have any other resources

Module Delivered in

Programme Code	Programme	Semester	Delivery
TA_EBIOM_B	B.Eng (Hons) in Biomedical Design	4	Mandatory
TA_EBIOM_D	Bachelor of Engineering in Biomedical Design	4	Mandatory