



UNIVERSITI TEKNOLOGI MARA

BCT507: BIO-COMPOSITE STRENGTH LAB

Course Name (English)	BIO-COMPOSITE STRENGTH LAB APPROVED
Course Code	BCT507
MQF Credit	1
Course Description	Fundamentals behaviour of materials: metal, wood, plastics, bituminous, cement concrete and bio-materials. Effect of atomic and anatomical microscopic and microscopic structures on behaviour, testing techniques and materials testing standards.
Transferable Skills	1. be able to understand and conduct tests on the fundamentals of material properties 2. be able to gain knowledge in mechanics of materials especially for construction
Teaching Methodologies	Lectures, Lab Work, Demonstrations, Field Trip, Discussion
CLO	CLO1 State, write and explain the concepts of mechanics of Materials CLO2 Identify and explain the different types of testing standards and procedures CLO3 State, specify and apply the concepts in mechanics of materials for specific materials strength testing such as in building and bridges. CLO4 Identify and analyze the strength behavior in beams, column, tension members and etc CLO5 Summarize and discuss relationship between forces and materials deformation.
Pre-Requisite Courses	No course recommendations
Topics	
1. 1.0 General Principle in laboratory testing 1.1) 1.1 Introduction 1.2) 1.3) 1.2 Data and report presentation 1.4) 1.5) 1.3 Units of Measurement 1.6) 1.7) 1.4 Dimensional Considerations	
2. 2.0 Materials properties and standards 2.1) 2.1 Introduction 2.2) 2.3) 2.2 Basic materials properties 2.4) 2.5) 2.3 Standards	
3. 3.0 Axial Stress-Strain behaviour of metals 3.1) 3.1 Introduction 3.2) 3.3) 3.2 Basic testing standards 3.4) 3.5) 3.3 Materials strength analysis 3.6) 3.7) 3.4 Reports.	

<p>4. 4.0 Elastic parameters of Isotropic, homogenous solids</p> <p>4.1) 4.1 Introduction 4.2) 4.3) 4.2 Basic testing standards 4.4) 4.5) 4.3 Materials strength analysis 4.6) 4.7) 4.4 Reports.</p>
<p>5. 5.0 Fatigue, hardness and Impact tests</p> <p>5.1) 5.1 Introduction 5.2) 5.3) 5.2 Basic testing standards 5.4) 5.5) 5.3 Materials strength analysis 5.6) 5.7) 5.4 Reports.</p>
<p>6. 6.0 Properties of wood, wood product</p> <p>6.1) 6.1 Introduction 6.2) 6.3) 6.2 Basic testing standards 6.4) 6.5) 6.3 Materials strength analysis 6.6) 6.7) 6.4 Report</p>
<p>7. 7.0 Properties of bio-composite materials</p> <p>7.1) 7.1 Introduction 7.2) 7.3) 7.2 Basic testing standards 7.4) 7.5) 7.3 Materials strength analysis 7.6) 7.7) 7.4 Report</p>
<p>8. 8.0 Properties of polymers and elastomers</p> <p>8.1) 8.1 Introduction 8.2) 8.3) 8.2 Basic testing standards 8.4) 8.5) 8.3 Materials strength analysis 8.6) 8.7) 8.4 Report</p>
<p>9. 9.0 Time dependent behaviour of materials</p> <p>9.1) 9.1 Introduction 9.2) 9.3) 9.2 Basic testing standards 9.4) 9.5) 9.3 Materials strength analysis 9.6) 9.7) 9.4 Report</p>
<p>10. 10.0 Properties of cement concrete, bricks, masonry or mortar</p> <p>10.1) 10.1 Introduction 10.2) 10.3) 10.2 Basic testing standards 10.4) 10.5) 10.3 Materials strength analysis 10.6) 10.7) 10.4 Report</p>

Assessment Breakdown	%
Continuous Assessment	55.00%
Final Assessment	45.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Online Quiz	Quiz on basic mechanics, instrumental, scientific report writing and various strength test.	55%	CLO1 , CLO2 , CLO3 , CLO4 , CLO5

Reading List	Recommended Text
	<ul style="list-style-type: none"> James M. Gere, Stephen Timoshenko 1984, <i>Mechanics of Materials</i>, 2th Ed., 12, Thomson Brooks/Cole USA [ISBN: 0-534-03099-8] Russell Charles Hibbeler, S. C. Fan, <i>Mechanics of Materials</i>, 2008 Ed., 14, Pearson Singapore [ISBN: 981-06-7994-7]

Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources