



UNIVERSITI TEKNOLOGI MARA

BCM462: STRUCTURES II

Course Name (English)	STRUCTURES II APPROVED
Course Code	BCM462
MQF Credit	2
Course Description	This course is a continuation of Structure 1. This topic encompass the properties of soil, the design of foundation and simple beams of various materials, and the design of gravity retaining wall structures
Transferable Skills	Problem-solving skill
Teaching Methodologies	Lectures, Tutorial
CLO	CLO1 Evaluate Structural design for Timber Beam, Steel Beam and Reinforced Concrete Column CLO2 Define the principal of structural design for timber, steel beam and reinforced concrete column. CLO3 Demonstrate good ethics in basic design analysis for simple beam and reinforced concrete column.
Pre-Requisite Courses	No course recommendations
Topics	
1. Classification and identification of soil 1.1) n/a	
2. Foundation Design 2.1) To analyses suitable sizes of shallow foundations 2.2) Base pressures 2.3) Uplift and how to avoid it	
3. Simple Beam Design (Timber) 3.1) Using formula $MR = fl/y$ to design timber beam 3.2) Principle of Modular of Section $Z = bd^2/6$	
4. Simple Beam Design (Steel) 4.1) Using Universal Beam Design Table to obtain size of beam and mass (UB) 4.2) Comment on the different sizes according to the weight	
5. Simple Beam Design (Reinforced Concrete) 5.1) Using area of concrete and area of steel to find the number of 5.2) reinforcement	
6. Euler's Theorem for Axially Loaded Column 6.1) Design factors 6.2) Slenderness ratio 6.3) Effective length of columns	
7. Gravity Retaining Wall Design 7.1) Effect of horizontal forces due to wind and water 7.2) Effect of horizontal forces due to granular material 7.3) Effect or surcharge 7.4) Pressure under the wall 7.5) Check factor of safety 7.6) Uplift 7.7) Sliding 7.8) Overturning 7.9) Soil bearing capacity	

Assessment Breakdown	%
Continuous Assessment	40.00%
Final Assessment	60.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Tutorial for all topics	30%	CLO3
	Test	Test 1 for Timber Beam Design Test 2 - Steel Beam Design and Reinforced Concrete Column	10%	CLO2

Reading List	Recommended Text
	<ul style="list-style-type: none"> • Vine, G. B 2003, <i>Structural Analysis</i>, Longman • Shaefer, R. E 2002, <i>Elementary Analysis and Design</i>, Prentice-Hall • William, D.T., Morgan, W. & Durka, T 2006, <i>Structural Mechanics</i>, 6th Ed., Pittman • Whitlow, R 1973, <i>Material and Structures</i>, Longman

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