



UNIVERSITI TEKNOLOGI MARA

BCT432: APPLIED MATHEMATICS

Course Name (English)	APPLIED MATHEMATICS APPROVED
Course Code	BCT432
MQF Credit	2
Course Description	This course deals with the principal of structural mechanics and covered the topics which are studies during diploma. This course also covers the basic mathematics especially to promote an awareness of the relevance of mathematics in variety of contexts especially in structural design and others field.
Transferable Skills	Problem solving
Teaching Methodologies	Lectures, Tutorial
CLO	CLO1 Describe the fundamental of applied mathematics and basic mechanic in building structure. CLO2 Apply concept of basic applied mathematics and mechanics in building structure. CLO3 Demonstrate teamwork skills in related to applied mathematics in building structure.
Pre-Requisite Courses	No course recommendations
Topics	
1. Statics 1.1) • Force, mass and weight 1.2) • Types of loads on building 1.3) • Resultant force and equilibrant 1.4) • Static equilibrium for concurrent coplanar force system, Static equilibrium for non-concurrent coplanar force system 1.5) • Laws of triangle, parallelogram and polygon of forces, 1.6) • Beam reactions.	
2. Stress and Strain 2.1) • Simple stress and strain 2.2) • Types of stresses and strains 2.3) • Load extension diagram for different materials 2.4) • Hook's law, Modulus of elasticity	
3. Cross-section properties of structural members 3.1) • Center of gravity/centroid, section modulus 3.2) • Moment of inertia of an area or second moment of area for symmetrical and unsymmetrical sections.	
4. Quadratic Equations and Functions / Coordinates Geometry 4.1) • Basic of quadratic equations and functions 4.2) • Solving Quadratic Equations and Functions, Graphs of quadratic functions, maximum and minimum values of quadratic functions. 4.3) • Cartesian points, Lines of Intersection, Solving coordinate geometry problems	
5. Differentiation 5.1) • Limit and derivative 5.2) • Differentiation Rules 5.3) • Maximum and minimum values 5.4) • Application of differentiation	
6. Integration 6.1) • Area and Distance, Determining Integrals, The definite integral, substitution rules 6.2) • Application of integration	

Assessment Breakdown		%		
Continuous Assessment		100.00%		
Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	n/a	20%	CLO2
	Assignment	n/a	20%	CLO3
	Quiz	n/a	20%	CLO1
	Test	n/a	20%	CLO2
	Test	n/a	20%	CLO3
Reading List	Recommended Text	<ul style="list-style-type: none"> • Durka, F., Al Nageim, H., Morgan, M., & Williams, D. 2010, <i>Structural Mechanics: Loads, Analysis, Materials and Design of Structural Elements</i>, Longman 		
	Reference Book Resources	<ul style="list-style-type: none"> • Viridi, S 2012, <i>Construction Science and Materials</i>, John Wiley and Sons, Ltd • Sim, O., B., et al. 2010, <i>ACE AHEAD STPM Text Mathematics S&T (2nd Edition)</i>, Oxford Fajar Sdn Bhd • Hin, L., B., et al. 2008, <i>Q & A for Matriculation Semester 1</i>, Oxford Fajar Sdn Bhd • Morrow, H., W., & Kokernak, R., P. 2007, <i>Statics and Strength of Materials (6th Edition)</i>, Pearson Education International 		
Article/Paper List	This Course does not have any article/paper resources			
Other References	This Course does not have any other resources			