



CHRISTIAN HERITAGE COLLEGE

MT110

FOUNDATIONS OF MATHEMATICS

This sample unit outline is provided by CHC for prospective and current students to assist with unit selection.

Elements of this outline which may change with subsequent offerings of the unit include Content, Required Texts, Recommended Readings and details of the Assessment Tasks.

Students who are currently enrolled in this unit should obtain the outline for the relevant semester from the unit lecturer.

Unit code	MT110		
Unit name	Foundations of Mathematics		
Associated higher education awards	Bachelor of Education (Primary) Bachelor of Education (Secondary) Bachelor of Arts/Bachelor of Education (Secondary)		
Duration	One semester		
Level	Introductory		
Core/elective	Required for a minor in Mathematics		
Weighting	Unit credit points:	10	
	Course credit points:	Bachelor of Education (Primary)	320
		Bachelor of Education (Secondary)	320
		Bachelor of Arts/Bachelor of Education (Secondary)	320
Delivery mode	Face-to-face on-site		
Student workload	<i>Face-to-face on site</i>		
	Contact hours	30 hours	
	Reading, study and assignment preparation	120 hours	
	TOTAL	150 hours	
	Students requiring additional English language support are expected to undertake an additional one hour per week.		
Prerequisites/ co-requisites/ restrictions	Nil		
Rationale	<p>This unit covers important basic concepts in algebra and trigonometry that a tertiary student is expected to master to undertake advanced mathematical concepts, such as calculus. Emphasis is placed on developing strong foundation mathematical skills in the areas including: polynomial, rational, exponential, logarithmic and trigonometric functions. The unit also covers topics of analytical geometry, matrices, sequences and statistics.</p> <p>This course prepares future teachers by equipping them with a strong foundation of skills relating to a range of mathematical concepts that are needed in higher mathematics. Students will also investigate ways mathematics reveals the order of God's creation.</p>		
Prescribed text(s)	<p>Washington, A. (2013). <i>Basic technical mathematics with calculus</i>. (10th ed.). New York, NY: Pearson.</p> <p>Selected readings will be available via the Moodle™ site for this unit.</p>		
Recommended readings	<p>Abramson, J. (2014). <i>PreCalculus</i>. Houston, TX: OpenStax College.</p> <p>Croft, A., & Davison, R. (2010). <i>Foundation Mathematics</i>. (5th ed.). Essex, UK: Prentice-Hall.</p> <p>Larson, R. (2014). <i>Precalculus</i>. (9th ed.). Boston, MA: Cengage Learning.</p> <p>Safier, F. (2012). <i>Schaum's outline of precalculus</i>. (3rd ed.). New York, NY: McGraw-Hill.</p> <p>Stewart, J., Redlin, L., & Watson, S. (2015). <i>Precalculus: Mathematics for calculus</i>. (7th ed.). Boston, MA: Cengage Learning.</p>		

	<p>In addition to the resources above, students should have access to a Bible, preferably a modern translation such as The Holy Bible: The New International Version 2011 (NIV) or The Holy Bible: New King James Version (NKJV).</p> <p>These and other translations may be accessed free on-line at http://www.biblegateway.com. The Bible app from LifeChurch.tv is also available free for smart phones and tablet devices.</p>
Specialist resource requirements	Casio fx-82AU PLUS II scientific hand-calculator or equivalent
Content	<ol style="list-style-type: none"> 1. Algebra 2. Trigonometry 3. Functions 4. Complex numbers 5. Analytic Geometry 6. Matrices 7. Introduction to statistics 8. Sequences
Learning outcomes	<p>On completion of this unit, students will have demonstrated that they have:</p> <ol style="list-style-type: none"> 1. developed fluency in quantitative, algebraic and graphical manipulations; 2. executed simple mathematics with accuracy and clarity 3. solved problems involving elementary but key mathematical ideas in algebra, geometry, trigonometry, and statistics; 4. developed and applied recognised processes to solve mathematical problems; 5. reflect on the order of God's creation which mathematics reveals; 6. applied appropriate strategies to effectively communicate relevant mathematical concepts and arguments using either written English or mathematical notations, as appropriate; and 7. communicated at an appropriate tertiary standard: with special attention to design elements, grammars, usage, logical relations, style, referencing and presentation.
Assessment tasks	<p>Task 1: Folio</p> <p>Word Length/Duration: 1 each week</p> <p>Weighting: 20%</p> <p>Learning Outcomes: 1-4, 6</p> <p>Assessed: Weekly</p> <p>Task 2: Investigation and Modelling</p> <p>Word Length/Duration: 1500 words</p> <p>Weighting: 30%</p> <p>Learning Outcomes: 1-7</p> <p>Assessed: Week 7</p> <p>Task 3: Examination</p> <p>Word Length/Duration: 3 hours</p> <p>Weighting: 50%</p> <p>Learning Outcomes: 1-7</p> <p>Assessed: Examination Week</p>
Unit summary	This unit develops students' understanding and skills in foundational mathematics and its applications to prepare them for further studies in mathematics and science.