



**MATH0009**

**MATHEMATICS 2**

**2021**

**SUBJECT OUTLINE**

Last amended:	September 2021
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<b>Subject name</b>	Mathematics 2
<b>Subject number</b>	MATH0009
<b>Coordinator</b>	Zdenka Misanovic
<b>Session</b>	2021.3
<b>Handbook summary</b>	This subject has been specifically designed for students who need to refresh or upgrade their understanding of basic mathematical concepts taught in high school mathematics. The topics include basic arithmetic and algebra, functions, geometry, trigonometry, coordinate geometry, indices, logarithms and introductory calculus.
<b>Credit point value</b>	10
<b>Prerequisite/s</b>	N/A
<b>Corequisite/s</b>	N/A
<b>Subject incompatible with and not to be counted for credit with</b>	N/A
<b>Assumed knowledge</b>	Mathematics Year 10 or equivalent
<b>Subject level</b>	Level Z — Non-award
<b>Attendance requirements</b>	Students are expected to attend at least 80% of classes. Educational research consistently demonstrates that this attendance level is associated with a high likelihood of achieving a passing grade.
<b>Enrolment restrictions</b>	Students must be enrolled at The College.
<b>Learning outcomes</b>	<p>On successful completion of this subject, students should be able to:</p> <ol style="list-style-type: none"> <li>1. select and apply a variety of algebraic techniques to solve equations and problems</li> <li>2. solve geometric and trigonometric problems that involve two and three dimensional objects</li> <li>3. use the concept of a function and the relationship between dependent and independent variables to solve a variety of problems both algebraically and graphically</li> <li>4. use algebra to solve geometrical problems in Cartesian and polar coordinate systems</li> <li>5. apply a variety of strategies to find mathematical models for problems involving exponential and logarithmic functions</li> <li>6. demonstrate an ability to solve problems by identifying interrelationships between ideas from different areas of mathematics, and</li> <li>7. interpret and communicate mathematical ideas in a clear and effective manner, using logical arguments and appropriate notation.</li> </ol>

<b>Subject content</b>	<p>In this subject, students will learn about:</p> <ul style="list-style-type: none"> <li>• basic arithmetic operations (with whole numbers, fractions and decimals, index numbers, units and measurements)</li> <li>• basic algebra (terminology, simplifying algebraic expressions, expanding and factorising, working with algebraic fractions, solving linear and quadratic equations, substituting into formulas and changing the subject, simultaneous equations)</li> <li>• functions (terminology and notation, domain and range, graphs of functions, composite functions, inverse functions), elementary functions (linear, quadratic, exponential and logarithmic).</li> <li>• geometry (angles, triangles, rectangles, circles, Pythagoras' Theorem, areas and volumes)</li> <li>• trigonometry (basic trigonometric ratios, exact ratios, complementary angles, angles of any magnitude, sine and cosine rule, trigonometric functions and their graphs), and</li> <li>• coordinate geometry (Cartesian coordinate system, distance between two points, equation of a straight line, gradient of a line, distance of a point from a line, loci, equation of a circle, polar coordinates, Pythagoras' Theorem in 3D).</li> </ul>
<b>Mode of delivery</b>	<p>This subject consists of 6 hours of class lessons each week as well as online activities via vUWS. In addition, students will be required to access vUWS regularly to download additional learning material, and to check for any announcements about the subject that may be posted there.</p>
<b>Online learning requirements</b>	
<b>Essential requirements</b>	<p><b>Essential texts</b></p> <p>Breach, M 2011, <i>Fundamental maths: for engineering and science</i>, Palgrave Macmillan, Basingstoke.</p> <p>The College, <i>Mathematics 2 question booklet</i>, Western Sydney University The College, Sydney.</p> <p><b>Additional readings</b></p> <p>Croft, A 2015, <i>Mathematics for engineers: a modern interactive approach</i>, 4th edn, Pearson-Prentice Hall, Harlow.</p> <p>Croft, A 2016, <i>Foundation maths</i>, 6th edn, Pearson-Prentice Hall, New York.</p> <p>Fitzpatrick, JB 2013, <i>New senior mathematics for Years 11 and 12</i>, 2nd edn, Pearson Australia, Melbourne.</p> <p>James, G 2015, <i>Modern engineering mathematics</i>, 5th edn, Pearson-Prentice Hall, Harlow.</p> <p>Washington, AJ 2018, <i>Basic technical mathematics with calculus</i>, 11th edn, Pearson-Prentice Hall, Upper Saddle River, NJ.</p> <p><b>Essential equipment</b></p> <ul style="list-style-type: none"> <li>• A College-approved, non-programmable scientific calculator</li> </ul>

## ASSESSMENT ITEMS AND WEIGHTING

Assessment for this subject will be based on the following components:

Task	Weighting	Learning outcomes assessed	Mandatory task
1. Numerical problem-solving task 1 (Class test 1) (1 hour)	10%	1, 6 and 7	Yes
2. Numerical problem-solving task 2 (Class test 2) (1 hour)	25%	1, 2, 3, 6, 7	Yes
3. Numerical problem-solving task 3 (Class test 3) (1 hour)	25%	1, 4, 5, 6, 7	Yes
4. End of Session exam (2 hours)	40%	1-7	Yes
Total	100%		

For details of assessment due dates, please refer to the learning guide for this subject.

All marks will be determined in accordance with The College [Assessment Policy](#).

All assessment tasks are mandatory unless otherwise specified. Should a student fail to attempt/submit the first formal assessment task in a subject, they will be deemed to be at risk and will need to follow an intervention plan in order not to receive a Fail Non-Submission (FNS) grade. However, failure to attempt/submit all other mandatory assessment tasks will result in an immediate FNS grade for the subject.

To pass this subject, students must:

- attempt/submit all assessment tasks (including the End of Session exam), and
- achieve an overall mark of at least 50%.