

# MATH 1001 ANALYSIS OF CHANGE

**Credit Points** 10

**Legacy Code** 300830

**Coordinator** Rehez Ahlip ([https://directory.westernsydney.edu.au/search/name/Rehez Ahlip/](https://directory.westernsydney.edu.au/search/name/Rehez%20Ahlip/))

**Description** This Level 1 subject introduces students to the mathematical modelling techniques that are used to formulate and solve problems in the physical and biological sciences. To use these techniques successfully, students must develop the ability to formulate a problem mathematically and then be able to use the appropriate knowledge to test conclusions by analytical and numerical means. These skills will be emphasized as each technique is introduced. Apart from some introductory work on logarithms and exponentials (essential concepts in the sciences), the main techniques developed involve aspects of differential calculus, culminating in the use of differential equations to model real phenomena in the sciences.

**School** Computer, Data & Math Sciences

**Discipline** Mathematics

**Student Contribution Band** HECS Band 1 10cp

Check your fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 1 subject

**Equivalent Subjects** MATH 1011 - Fundamentals of Mathematics LGYB 0484 - Analysis of Change (WSTC)

**Incompatible Subjects** MATH 1014 - Mathematics 1A

**Restrictions** Students may complete the three subjects Quantitative Thinking, Analysis of Change and Maths 1A in the following order: 300831 Quantitative Thinking, 300830 Analysis of Change, 300672 Mathematics 1A. This means that students may complete 300831 before attempting 300830, but not after. 300830 and 300831 may be attempted before 300672, but not after. Students may not enrol in 300831 and 300830 or 300831 and 300672 or 300830 and 300672 in the same teaching session. Students enrolled in the Bachelor of Engineering (Honours), Bachelor of Engineering or Bachelor of Engineering Science may not enrol in any of the subjects 300830, 300831 or 300672.

**Assumed Knowledge**

General Mathematics background achieved at bands 5 or 6, or Mathematics, achieved at band 4, or equivalent or 300831 Quantitative Thinking.

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Define, graph and manipulate exponential, logarithmic and trigonometric functions.
2. Apply correctly the techniques of differential calculus to solve biological and chemical-based problems
3. Apply correctly algebraic techniques and manipulate basic limits.
4. Communicate mathematical ideas using standard practices

## Subject Content

Exponential and Logarithmic functions  
 Differential Calculus  
 Limits  
 Rules of differentiation  
 Applications of differentiation  
 Basic Integration  
 Trigonometry

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Numerical Problem Solving	30 minutes each	50	N	Individual	N
Final Exam	2 hours	50	Y	Individual	Y

Prescribed Texts

- Reed, M. B. (2011). Core maths for the biosciences. Oxford: Oxford University Press.
  - Monk, P. M. S., & Munro, L. J. (2010). Maths for chemistry: a chemist's toolkit of calculations. Oxford: Oxford University Press.
- OR

Teaching Periods

## Spring (2024)

### Campbelltown

**On-site**

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View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=MATH1001\\_24-SPR\\_CA\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MATH1001_24-SPR_CA_1#subjects))

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