

# MATH 1026 QUANTITATIVE THINKING

**Credit Points** 10

**Legacy Code** 300831

**Coordinator** Patrick O'Doherty ([https://directory.westernsydney.edu.au/search/name/Patrick O'Doherty/](https://directory.westernsydney.edu.au/search/name/Patrick%20Doherty/))

**Description** This level 1 subject develops the quantitative skills that underpin many fields of study in the sciences. The content covered includes basic algebra, functions, graphs, equations, linear and quadratic, introductory probability and descriptive statistics. These mathematical/statistical concepts will be revised and developed using scientific concepts such as molarity and dilution, optical density, population growth, and predator-prey models. In all aspects of this subject, students will be developing and using critical thinking skills to solve mathematical/statistical problems set in a scientific context.

**School** Computer, Data & Math Sciences

**Discipline** Mathematics

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

Check your HECS Band contribution amount 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  
MATH 1027 Quantitative Thinking (WSTC)

**Restrictions** Students may complete the three subjects Quantitative Thinking, Analysis of Change and Mathematics 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

Basic competence in algebraic manipulation and some familiarity with elementary probability and statistical concepts.

## Learning Outcomes

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

1. Manipulate algebraic and numeric expressions.
2. Recognise and draw graphs representing linear, quadratic, logarithmic and exponential functions.
3. Solve linear equations, and quadratic equations.
4. Use modelling techniques to represent basic biological systems.
5. Describe data in both numerical and graphical forms.
6. Communicate mathematical and statistical ideas using standard practices.
7. Employ critical thinking skills to solve mathematical and statistical problems set in a scientific context.

## Subject Content

- Critical Thinking Skills: Problem-solving strategies; Inductive and Deductive reasoning.
- Numeracy and Calculation: Fractions; Index rules; SI units; Scientific notation; Rounding and estimation; Significant figures; Accuracy and precision; Using a calculator.
- Basic Algebra Review: Substitution in formulae; Rearranging formulae; Proportional reasoning.
- Interpretation: functions; graphs - linear, parabola, logarithmic, exponential; linear equations, quadratic equations.
- Uncertainty and Probability: introductory probability; basic statistics; Descriptive statistics; Random variables and probability distributions; the Normal distribution; treatment and assessment of errors; introductory hypothesis testing; introductory I

## 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 |
|--------------|-----------------|---------|-----------|-----------------------|
| Short Answer | 50 minutes      | 20      | N         | Individual            |
| Quiz         | 30 minutes each | 10      | N         | Individual            |
| Short Answer | 10 minutes each | 30      | N         | Individual            |
| Final Exam   | 2 hours         | 40      | Y         | Individual            |

## External

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 |
|-----------------------|----------------------------------|---------|-----------|-----------------------|
| 5 x Practical Quizzes | 30 minutes each                  | 10      | N         | Individual            |
| 4 x Assignments       | Worked solutions for assignments | 40      | N         | Individual            |
| Final Exam            | 2 hours                          | 50      | Y         | Individual            |

## Summer

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 |
|-------------------------|--------------------------------------------|---------|-----------|-----------------------|
| 2 x Assignments         | Approximately 20 questions                 |         | N         | Individual            |
| - Written, short answer | each, each taking approx. 5 hours in total |         |           |                       |
| 5 x Online Quizzes      | 30 minutes each                            | 10      | N         | Individual            |

|            |            |    |   |            |
|------------|------------|----|---|------------|
| Class Test | 50 minutes | 20 | N | Individual |
| Final exam | 2 hours    | 50 | Y | Individual |

Teaching Periods

## Summer A (2022)

### Online

#### Online

**Subject Contact** Patrick O'Doherty ([https://directory.westernsydney.edu.au/search/name/Patrick O&#x27;Doherty](https://directory.westernsydney.edu.au/search/name/Patrick%20Doherty))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=MATH1026\\_22-SUA\\_ON\\_O#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MATH1026_22-SUA_ON_O#subjects))

## Autumn (2022)

### Campbelltown

#### Day

**Subject Contact** Patrick O'Doherty ([https://directory.westernsydney.edu.au/search/name/Patrick O&#x27;Doherty](https://directory.westernsydney.edu.au/search/name/Patrick%20Doherty))

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### Hawkesbury

#### Day

**Subject Contact** Patrick O'Doherty ([https://directory.westernsydney.edu.au/search/name/Patrick O&#x27;Doherty](https://directory.westernsydney.edu.au/search/name/Patrick%20Doherty))

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### Parramatta - Victoria Rd

#### Day

**Subject Contact** Patrick O'Doherty ([https://directory.westernsydney.edu.au/search/name/Patrick O&#x27;Doherty](https://directory.westernsydney.edu.au/search/name/Patrick%20Doherty))

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## Spring (2022)

### Campbelltown

#### Day

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## Summer (2022)

### Parramatta - Victoria Rd

#### On-site

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### Campbelltown

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## **Parramatta - Victoria Rd**

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## **Summer (2023)**

### **Parramatta - Victoria Rd**

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