

MATH 1027 QUANTITATIVE THINKING (WSTC)

Credit Points 10

Legacy Code 700123

Coordinator Michael CASEY ([https://directory.westernsydney.edu.au/search/name/Michael CASEY/](https://directory.westernsydney.edu.au/search/name/Michael%20CASEY/))

Description This Level 1 unit 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 unit, 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/) page.

Level Undergraduate Level 1 subject

Equivalent Subjects MATH 1011 - Fundamentals of Mathematics
MATH 1026 - Quantitative Thinking

Restrictions Students must be enrolled at Western Sydney University, The College. Students enrolled in Extended Diplomas must pass 40 credit points from the preparatory subjects listed in the program structure prior to enrolling in this University level subject. Students may complete 700123 Quantitative Thinking before 700108 Analysis of Change. Students may not enrol in Quantitative Thinking and Analysis of Change in the same teaching session. Students enrolled in the combined Diploma/Bachelor programs listed below must pass all College Preparatory subjects listed in the program structure before progressing to the Year 2 subjects.

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

1. Critical Thinking Skills: Problem-solving strategies; Inductive and Deductive reasoning
2. Numeracy and Calculation: Fractions; Index rules; SI units; Scientific notation; Rounding and estimation; Significant figures; Accuracy and precision; Using a calculator
3. Basic Algebra Review: Substitution in formulae; Rearranging formulae; Proportional reasoning
4. Interpretation: functions; graphs ? linear, parabola, logarithmic, exponential; linear equations, quadratic equations
5. 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 linear regression and correlation
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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.

Item	Length	Percent	Threshold	Individual/Group Task
Quiz	60 minutes	15	N	Individual
Intra-session Exam	60 minutes	20	N	Individual
Applied Project	10 hours commitment for each student in the group	15	N	Group
End-of-session Exam	2 hours	50	Y	Individual

Prescribed Texts

- Reed, M.B. (2011). Core maths for the biosciences. Oxford: Oxford University Press.

Teaching Periods

Term 1

Nirimba Education Precinct

Day

Subject Contact Michael CASEY ([https://directory.westernsydney.edu.au/search/name/Michael CASEY/](https://directory.westernsydney.edu.au/search/name/Michael%20CASEY/))

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MATH1027_22-T1_BL_D#subjects)

Term 2

Nirimba Education Precinct

Day

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View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MATH1027_22-T2_BL_D#subjects)