

UNIVERSITY OF SYDNEY
2-UNIT MATHEMATICS BRIDGING COURSE

Outline of the Course

- Day 1 Variables and relationships between them. Introduction to functions and function notation. Evaluating simple functions at various points. Graphing simple functions.
- Day 2 Linear functions. Rates of change. Gradient of a straight line.
- Day 3 Factorisation. Solving quadratic equations.
- Day 4 The derivative of x^2 from first principles. Geometrical interpretation of the derivative. Maximum and minimum values of quadratics.
- Day 5 Derivative of a general polynomial. Applications – optimisation problems and sketching curves.
- Day 6 Second derivatives. Curvature and points of inflexion. Velocity and acceleration.
- Day 7 Index laws. Derivative of x^n for n negative or fractional.
- Day 8 The exponential function. Derivative of e^x . Exponential growth. Composite functions.
- Day 9 Derivative of a composite function. Product and quotient rules for differentiation.
- Day 10 The circular functions – their graphs and derivatives. Some trigonometric identities.
- Day 11 Inverse functions. The logarithm function – graph and derivative. Logarithm rules.
- Day 12 Absolute value. A session for applications, problem solving and revision.

**PLEASE NOTE THAT YOU WILL NEED A SCIENTIFIC CALCULATOR
THROUGHOUT THE COURSE**