SUBJECT HANDBOOK ENTRY 2008 – New Generation BSc

Subject Code	620-173
Title of the subject	Introduction to Mathematics
Credit points	12.5
Coordinator	Karen Baker
Semester of offer	1
Prerequisites and/or corequisites	Successful completion of VCE Mathematical Methods 1/2 or equivalent
Mode of delivery	Lectures and tutorials
Contact hours	36 hours of lectures, 11 hours of tutorials
Estimated total time commitment: *(including non-contact time)*	120 hours
Description	Students will strengthen and develop algebraic and conceptual skills, building a firm mathematical base for Calculus 1. Fundamental concepts about number systems and set theory will be followed by introductory counting principles and techniques. These will be applied to the laws of probability, leading to the study of discrete and continuous random variables. Basic ideas about functions and their inverses will be introduced using examples such as the logarithmic, exponential and trigonometric functions. Differential and integral calculus will be studied with applications to graph sketching and optimization problems. Students will also learn integration techniques, with applications to areas between curves.
Assessment	Up to 25 pages of written assignments 10% (due during semester), a 45-minute written test 10% (held mid-semester), a 3-hour written examination 80% (in the examination period).
Prescribed texts	To be determined
Notes	This subject is equivalent for pre-requisite purposes to VCE Mathematical Methods 3/4. This subject cannot count towards course credit in the Bachelor of Science or the Bachelor of Commerce degrees. Students with a score of 25 or more in VCE Mathematical Methods 3/4 will normally not be permitted to enrol in this subject.
Subject objectives	Students completing this subject will: • understand fundamental concepts of number systems and counting techniques and be able to use logic and set notation;

	• understand the fundamental concepts of probability and be able to calculate probabilities for discrete and continuous random variables, including binomial and normal probabilities; • understand the concept of a function, domain, range and inverse function; • be able to apply transformations and the ideas of sum, difference, product and composite functions to graphing polynomial, exponential, logarithmic and circular functions; • understand the derivative as a limit and use the product, quotient and chain rules of differentiation with polynomial, circular, exponential and logarithmic functions and apply these techniques to graph sketching and optimisation problems; • understand the process of integration as anti-differentiation and be able to find definite and indefinite integrals of polynomials, exponential and circular functions with application to calculating the area of a region under a curve and between curves.
Generic skills	In addition to learning specific skills that will assist students in their future careers in science, they will have the opportunity to develop generic skills that will assist them in any future career path. These include • problem-solving skills: the ability to engage with unfamiliar problems and identify relevant solution strategies; • analytical skills: the ability to construct and express logical arguments and to work in abstract or general terms to increase the clarity and efficiency of analysis; • collaborative skills: the ability to work in a team; • time-management skills: the ability to meet regular deadlines while balancing competing commitments.