

620-351 Number Theory

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 2, - Taught on campus.
Time Commitment:	Contact Hours: 36 lectures (three per week) and up to 12 practice classes (one per week) Total Time Commitment: 120 hours
Prerequisites:	One of [07]620-120 (UMEP Maths for High Achieving Students), [07]620-121, [07]620-140, [07]620-141.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	Dr J Groves
Subject Overview:	<p>This subject introduces the elementary concepts of divisibility; the basic theory and use of congruences; the properties of powers of elements in congruences, particularly Euler's theorem; the law of quadratic reciprocity; and basic properties of continued fractions and some applications. It develops applications of all of the above to primality testing, factorisation algorithms and cryptanalysis. Students should develop the ability to perform the algorithms inherent in the subject material; and to understand and present proofs related to the subject material. This subject demonstrates the extent and uses of elementary number theory, its applicability in other parts of mathematics, and its potential for application outside of mathematics.</p> <p>Topics include factorisation, primes and greatest common divisors; congruences; primitive roots; quadratic reciprocity; continued fractions and Pell's equation; compositeness testing and factorisation; and applications to cryptanalysis.</p>
Assessment:	Up to 24 pages of written assignments due during the semester and a 50-minute written test held mid-semester (equally weighted, with a total of either 0% or 20%); a 3-hour written examination in the examination period (80% or 100%). The relative weighting of the examination and total assignment plus test mark will be chosen so as to maximise the student's final mark.
Prescribed Texts:	None
Breadth Options:	<p>This subject is a level 2 or level 3 subject and is not available to new generation degree students as a breadth option in 2008.</p> <p>This subject or an equivalent will be available as breadth in the future.</p> <p>Breadth subjects are currently being developed and these existing subject details can be used as guide to the type of options that might be available.</p> <p>2009 subjects to be offered as breadth will be finalised before re-enrolment for 2009 starts in early October.</p>
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Notes:	This subject is available for science credit to students enrolled in the BSc (pre-2008 degree only), BAsc or a combined BSc course.
Related Course(s):	Bachelor of Arts and Bachelor of Science

Bachelor of Arts and Sciences
Bachelor of Science