Unit sets: Science

Year offered: 2010
Admissions: Yes

Unit sets
These unit sets have been designed such that introductory units have no prerequisites. Later units in each set may have earlier units as prerequisites.

Due to timetabling constraints it may not be possible to complete all units in a University Wide Elective Set.

Consult with your course coordinator and relevant discipline coordinators prior to undertaking interfaculty studies.

Please be aware that the units you complete in a University Wide Elective Sets will appear on your academic transcript but the unit set title will not unless the set exists as a minor in your course.

Science for the Games IT Industry unit set

Science for the Games IT Industry unit set

PCB150 Physics 1H
PQB460 Astrophysics 1
PLUS EITHER
MAB100 Mathematical Sciences 1A
OR
MAB105 Preparatory Mathematics
OR
MAB111 Mathematical Sciences 1B
PLUS EITHER
NQB201 Planet Earth
Or
NQB202 History of Life on Earth
Or
SCB222 Exploration of the Universe

UNIT SYNOPSISES

MAB100 MATHEMATICAL SCIENCES 1A
To enrol you should have (1) at least Sound Achievement in 4 semesters of Mathematics B, or (2) a grade of least 4 in MAB105, or (3) the equivalent. This unit will reinforce the notion of a function with particular emphasis on polynomial, trigonometric, exponential and logarithmic functions including arithmetic and geometric progressions and the binomial theorem. Calculus will be reviewed and expanded with an emphasis on integration and on integration techniques and applications. Vectors and matrices will be introduced with vectors interpreted geometrically and algebraically and matrices as representations of linear systems, with applications. If time permits, complex numbers will be introduced. This unit is incompatible with HA in Senior Mathematics C. 
Prerequisite(s): MAB105 or SA in Senior Maths B (or equivalent) 
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2009 SEM-1, 2009 SEM-2 and 2009 SUM
Incompatible with: Prior pass in MAB180, MAB131, HA in Senior Maths C

MAB105 PREPARATORY MATHEMATICS
This unit is a substitute for Senior Mathematics B for those students who need the equivalent background for the successful study of units which assume it. It includes: basic number facts, natural numbers, integers, rational numbers, real numbers and their operations; basic algebra; functions and equations, graphs, linear functions, equations and applications; systems of linear equations; quadratic, exponential, logarithmic and trigonometric functions, properties and applications; introduction to calculus; rates of change, derivatives, rules of differentiation, second derivatives, maxima and minima and applications; integration and applications. This unit is incompatible with an exit assessment of High Achievement or better in Senior Mathematics B.

Assumed knowledge: Year 10 Level 6 Mathematics is assumed knowledge
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2010 SEM-1 and 2010 SEM-2

MAB111 MATHEMATICAL SCIENCES 1B
Limits and continuity, including limits of rational functions, functions involving radicals, trigonometric functions; L'Hopital's Rule; differentiation techniques - parametric, logarithmic; inverse functions and their derivatives; partial derivatives. Introduction to differential equations and mathematical modelling. Riemann sums, fundamental theorems of integral calculus; applications including solids of revolution and first-order-separable differential equations. Taylor series, Fourier series and applications. Students must have completed four semesters of Senior Mathematics C with an exit achievement of Sound Achievement, or have passed MAB100 (or equivalent).

Assumed knowledge: Grade of at least Sound Achievement in Senior Mathematics C (or equivalent) or MAB100 is assumed knowledge.
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
NQB201 PLANET EARTH
Earth Science impacts every aspect of modern life. Hence, the concepts of Earth Science are fundamental not only to the field of Geology, but also to Environmental Science, natural resource management, civil engineering and society at large. Planet Earth provides an introduction to Earth Science, including earth materials, geologic history, geological process at the Earth's surface, and the complex interplay between the lithosphere, atmosphere, hydrosphere and biosphere through geologic time. Thus, Planet Earth is a foundation unit for further studies in Geology and Environmental Science and also serves as a broad introduction to the world we live on.
Equivalents: NRB230  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-2

NQB202 HISTORY OF LIFE ON EARTH
This unit provides an introduction to the history and development of life on Earth with an emphasis on fundamental biological and ecological principles as they have operated through geological time. The unit provides the student with an understanding of the processes of evolution, extinction and the changing environmental conditions through Earth's history. The unit provides the student with practical experience in fossil identification, classification and morphological interpretation. It provides the student with a "deep-time" perspective of climate and other environmental changes affecting modern ecosystems. Hence, History of Life on Earth is a foundation unit for the Earth and Environmental Sciences as well as Ecology, Biological Sciences and Education.
Equivalents: NRB240  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-2

PCB150 PHYSICS 1H
This unit introduces basic physical measurements, mechanics, heat, waves, acoustics and optics, and the instrumentation used to measure physical parameters.
Credit points: 12  Contact hours: 5 per week  Campus: Gardens Point  Teaching period: 2010 SEM-1 and 2010 SEM-2

PQB460 ASTROPHYSICS 1
This second level unit is one of the key units in the astrophysics co-major and introduces students to most of the main aspects of astrophysics. This unit is essential as it defines the connections between the supporting units of the co-major. Students are required to use the knowledge and skills developed in first level physics, maths and natural resource units.
Prerequisites: PCB136 or PQB250 or SCB123  Equivalents: PCB469  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2010 SEM-2