

MATH 1570 Advanced Calculus (3,3,0)

Prerequisite: Year I standing

This course gives students fundamental mathematical knowledge in a wide variety of areas including vector algebra, vector differentiation and integration, as well as an introduction to basic linear algebra.

MATH 1590 Calculus and Linear Algebra for Chemistry (3,3,0)

This course introduces topics in linear algebra, mathematical analysis and differential equations. Applications to chemistry are provided.

MATH 1680 Manage your Money without Formulas (3,3,0)

This course is intended to introduce basic growth models to fancy and complicated annuity models. Formulas are useful only for regular patterns, however, that is not what going on around us. Students will explore a sequence of financial problems with Hong Kong daily life examples in order to improve their sensitivity to numbers and helps them take control of their financial situations.

MATH 1690 Mathematics of Fairness (3,3,0)

This course is intended to introduce how mathematics can help in searching for procedures to ensure a fair and equitable resolution of conflicts. It will provide students with skills and concepts to identify, model and solve social problems. Hong Kong social issues will be used as examples in order to enhance students' interests.

MATH 1710 Numbers Save the Day (3,3,0)

Every time we use computer or make a telephone call, we use devices that rely on numbers to operate. Numbers play many roles in our everyday lives, it is used to describe the natural world, to communicate information, and to model important daily applications. This course shows how the study of numbers and their properties make all these roles possible.

MATH 1720 Speaking of Statistics (3,3,0)

Misuse and mislead of statistical arguments are commonly found in Hong Kong. This course introduces ways to present data in proper statistical sense. The objective of this course is to teach students to develop the statistical thinking, and to apply critical thinking skills effectively to their reading, writing, and even learning.

MATH 2110 Differential Equations (3,2,1)

Prerequisite: MATH 1120 Linear Algebra

This course aims to introduce students to the basic theory of ordinary differential equations and the modelling of diverse practical phenomena by ordinary differential equations by a variety of examples. Students will learn both quantitative and qualitative methods for solving these equations. Topics include first and second order differential equations, linear systems of first order differential equations, autonomous systems of differential equations, existence and uniqueness theorem and Laplace transform to initial value problem.

MATH 2130 Real Analysis (3,3,0)

Prerequisite: MATH 1111 Mathematical Analysis I

This course provides an introduction to measure theory, Lebesgue integration, L^p spaces, and Fourier analysis. Equipped with this knowledge, students are prepared for further studies in numerical analysis, functional analysis and advanced probability theory.

MATH 2140 Numerical Methods I (3,3,0)

Prerequisite: Year II standing

This course provides students with the ideas underlying commonly used numerical methods. It teaches students how to choose an appropriate numerical method for a particular problem and to interpret the resulting output. It also highlights important considerations on convergence and stability for numerical algorithm design.

MATH 2150 Mathematical Analysis III (3,3,0)

Prerequisites: MATH 1111-2 Mathematical Analysis I & II

(MATH 1120 Linear Algebra is not required but recommended)

This course deals with vectors calculus. It provides basic concept on several variables real-valued functions. Topics include sequences in space, limit and continuity, differentiation, Riemann integrals, multiple integrals, line integrals and surface integrals.

MATH 2160 Mathematical and Statistical Software (3,1,2)

Prerequisite: COMP 1170 Structured Programming

This course teaches students how to use some popular software packages for solving problems in various areas of mathematics, statistics and operations research. Examples of software packages that may be covered are MATLAB, SAS, S-plus, LINDO, and Latex. Students will learn both how to use these software packages to efficiently to solve the related problems and how to interpret the results. Such knowledge should be useful for students' course work, projects and future careers.

MATH 2220 Partial Differential Equations (3,3,0)

Prerequisites: MATH 1111 Mathematical Analysis I and MATH 2110 Differential Equations

This course treats the theory and solution techniques for partial differential equations appearing in physics, biology, chemistry and social sciences.

MATH 2230 Operations Research I (3,3,0)

Prerequisite: MATH 1120 Linear Algebra

This course aims to introduce students some fundamental topics in operations research. Students will learn theory, techniques and applications of linear programming, network programmes, dynamic programming and inventory control problems.

MATH 2610 Graph Theory (3,3,0)

Prerequisite: Year II standing

This course covers some fundamental concepts and principles of graph theory. Some algorithms of graphs are also discussed. Students will learn some techniques to solve some graph problems.

MATH 2630 Number Theory (3,3,0)

Prerequisite: Year II standing

This course will provide an introduction to the theory of numbers. Basic concept such as divisibility, congruence, diophantine equations will be covered. Some applications such as cryptography will be introduced.

MATH 3591 Mathematical Science Project I (3,0,9)

Prerequisite: Year III standing

This is a half-year individual project which usually relates to an interdisciplinary or applied topic, and requires knowledge and skill acquired in various courses. A thesis and an oral presentation are required upon completion of the project.

MATH 3592 Mathematical Science Project II (3,0,9)

Prerequisites: MATH 3591 Mathematical Science Project I and Recommendation by the supervisor

This is an extension of MATH 3591 for outstanding students, who are now supposed to conduct more innovative further developments for their results obtained in MATH 3591. A thesis and an oral presentation for Project I are waived but will be required upon completion of Project II.

MATH 3620 Numerical Methods II (3,3,0)

Prerequisite: MATH 2140 Numerical Methods I

As a continuation of MATH 2140 Numerical Methods I, this course covers techniques for numerical solution of mathematical problems. Students are introduced to widely-used computer software packages. At the same time the underlying ideas of algorithms are taught.

MATH 3640 Theoretical Numerical Analysis (3,3,0)

Prerequisite: MATH 2140 Numerical Methods I

This course provides a theoretical understanding of the major