PHYS 1005 Introduction to Physics (3,3,0) (E)
This course introduces some basic concepts of physics with emphasis on real-life examples. It explores the fundamental physical principles in the workings of everyday objects and natural phenomena.

PHYS 1121 General Physics I (3,3,0) (E)
Prerequisite: AS-Level Physics, or O-Level Physics and Mathematics, or consent of the instructor
This course covers classical mechanics and thermodynamics at an introductory level. After a brief review of Newton's three laws, a number of applications illustrating the use of conservation laws with the help of calculus are discussed. This is followed by an elementary treatment of rigid body and fluid mechanics. The last part deals with thermal phenomena and the uses of statistical concepts in describing the gaseous state.

PHYS 1122 General Physics II (3,3,0) (E)
Prerequisite: PHYS 1121 General Physics I or consent of the instructor
Introductory concepts of electricity, magnetism, electromagnetic wave and optics will be presented.

PHYS 1160 Electronics (3,3,0) (E)
Co-requisite: PHYS 1170 Electronics Laboratory
This course aims at instilling the basic knowledge of electronic circuits, devices, and transducers (both for discrete components and integrated circuits). Operational knowledge of instruments for electrical measurement will be emphasized.

PHYS 1170 Electronics Laboratory (1,0,3) (E)
Co-requisite: PHYS 1160 Electronics or consent of the instructor
This is a laboratory course which provides a set of experiments complementing the course PHYS 1160 Electronics.

PHYS 1320 Experimental Physics I (2,0,3) (E)
Prerequisite: PHYS 1121 General Physics I or consent of the instructor
This course consists of a series of laboratory experiments (and lectures, for PHYS 1320) complementing the following courses: PHYS 1121-2 General Physics I & II.

PHYS 1330 Mathematical Methods of Physics (3,3,0) (E)
Prerequisite: MATH 1570 Advanced Calculus or consent of the instructor
Ordinary differential equations, partial differential equations, Fourier series, Fourier transform, Laplace transform, function of a complex variable, and applications to physics problems are discussed.

PHYS 1620 Introduction to Astronomy (3,3,0) (E)
Introductory astronomy, from the solar system to the large scale structure of the universe, will be presented to both science and non-science students. Physical concepts will be emphasized. Presentation will be mainly on a qualitative level.

PHYS 1640 Energy, Environment and Sustainability (3,3,0) (E)
Climate change and the depletion of energy resources are issues of major international concern in the contemporary world. The focus of this course is on the multiple and intricate relationships between energy, environment and sustainability issues. It allows students to fully understand the subject matter from both the natural science and social science perspectives. Through appropriate real-life examples, the course aims to guide students, in an exploration of viable alternative energy sources and to enable them to embark on a way of life that promotes a clean and sustainable use of energy resources. In addition to classroom learning, the teaching will be supplemented by field visits, demonstrations, group projects and debates.

PHYS 1650 Nano-Living: Impact of Nanoscience and Nanotechnology (3,3,0) (E)
This course will popularize basic knowledge of nanoscience and nanotechnology, introduce an increasing range of pragmatic applications in daily life, establish critical consciousness of their social consequences (in environment, safety and human health), and prevent misleading.

PHYS 2005 Heat and Motion (3,3,0) (E)
Prerequisite: PHYS 1005 Introduction to Physics and MATH 1005 Calculus or consent of instructor
This course covers classical mechanics and thermodynamics pertaining to energy science applications. The concepts and theory of Newtonian mechanics will be introduced followed by applications to rigid body motions, wave propagation, and fluid dynamics. After presenting the laws of thermodynamics, the energy flow and energy conversion mechanisms in various thermodynamic processes will be examined.

PHYS 2006 Electricity and Magnetism (3,3,0) (E)
Prerequisite: PHYS 1005 Introduction to Physics and MATH 1005 Calculus or consent of instructor
This course introduces the basic concepts of electricity and magnetism as applied to energy technology fields. Topics include electrostatics, circuits, induction, motors, generators, alternating currents, transformers, electromagnetic waves and optics.

PHYS 2008 Green Energy Laboratory I (1,1,0) (E)
Co-requisite: PHYS 2005 Heat and Motion or consent of instructor
By way of lectures and a series of experiments related to principles and application of energy science, this practical course introduces Year 2 students to the basic concepts and methodologies behind experimentation and energy science.

PHYS 2009 Green Energy Laboratory II (1,1,0) (E)
Prerequisite: PHYS 2005 Heat and Motion or consent of instructor
Co-requisite: PHYS 2006 Electricity and Magnetism or consent of instructor
By way of a series of Green Energy experiments, this practical course introduces Year II students to the basic concepts and methodologies behind Green Energy.

PHYS 2130 Electromagnetism I (3,3,0) (E)
Prerequisite: PHYS 1122 General Physics II or consent of the instructor
Review of vector field theory, Coulomb's law, electric field, Gauss's law, electric potential, Poisson's equation, Laplace's equation, electric energy, boundary value problems, multiple expansion, electric fields in matter, magnetic field, Lorentz force, Ampére's law, and Biot Savart law.

PHYS 2140 Electromagnetism II (3,3,0) (E)
Prerequisite: PHYS 2130 Electromagnetism I or consent of the instructor
Magnetic fields in matter, Maxwell's equations, vector potential, gauge transformation, electromagnetic energy and momentum, Poynting's theorem, electromagnetic waves, polarization, reflection and refraction, electromagnetics waves in conducting media, dispersion, wave guides, electromagnetic radiation, retarded potential and Liénard-Wiechert potential, and relativistic electrodynamics.

PHYS 2260 Modern Physics (3,3,0) (E)
Prerequisite: PHYS 1121-2 General Physics I & II, or consent of the instructor
This course introduces the key concepts of 20th-century physics: special relativity, light quantization, wave-particle duality, and quantum physics.