concepts, models and theories of public and interpersonal communication; to be able to apply public and interpersonal communication concepts and theories to analyse their own, interpersonal, and group behaviors; to enhance their team building and leadership skills; to improve their written and oral communication skills relevant to sport and recreation.

PERM 4015 Marketing in Leisure Services (3,2,1)
Prerequisite: PERM 2006 Organization and Administration in Physical Education and Recreation
The course covers the fundamental marketing knowledge of sport and recreation and its applications in the Western and Chinese sport industry. Upon completion of the course, students should be able to (1) understand the differences between services and physical product; (2) identify the role of marketing in leisure and sport services; and (3) apply the marketing knowledge in leisure and sport services.

PERM 4016 Outdoor Recreation (3,3,0)
Prerequisite: PERM 1317 Outdoor Pursuits
This course is to introduce fundamental knowledge and issues in outdoor recreation as well as in leading recreation activities. Upon completion of the course, students should be able to (1) comprehend the fundamentals of outdoor recreation; (2) understand the nature and outdoor resources for recreation; and (3) acquire essential skills to be leaders in outdoor recreational activities.

PERM 4017 Principles and Practice of Exercise and Weight Management (3,3,0)
This course introduces students to the scientific principles underlying the design of weight management programmes. It also provides students with an understanding of the obesity issues. It enables students to: (1) understand the health risks and the etiology of obesity; (2) introduce exercise prescription and intervention to combat obesity; and (3) understand the issue of obesity and weight control in physiological, sociological, and psychological context.

PERM 4895 Honours Project (3,*,*)
Prerequisite: PERM 3006 Research Methods
This course is a required project for all BA (Hons) in Physical Education and Recreation Management students. Students will pursue in-depth research on a specific topic of interest to the student under the guidance of appointed lecturers from the Department offering the course. Students are to consult with their advisers regarding the necessary field study, experimentation, library or archival research required, and how best to integrate this into their Honours Project.
This course enables students to initiate, conduct and write-up a research project in the physical education and reaction management field; to integrate the professional skills which have been taught in the preceding two years with specific application to a topic to produce a well-argued and documented report.

PHYS 1005 Introduction to Physics and Energy Science (3,3,0)
This course introduces some basic concepts of physics with emphasis on real-life examples, in particular applications in energy science. It explores the fundamental physical principles in the workings of everyday objects and natural phenomena, everyday objects and the processes of energy conversion and usage.

PHYS 2005 Heat and Motion (3,3,0)
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)
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 2007 Mathematical Methods for Physical Sciences (4,4,0)
Prerequisite: MATH 1005 Calculus or consent of instructor
This course provides students with the necessary mathematical knowledge in preparation for studying further courses in physical sciences. It illustrates the use of mathematics in physical sciences context so that students can apply their math skills in a practical situation.

PHYS 2008 Green Energy Laboratory I (1,1,0)
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)
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 2015 Guided Study in Physics and Energy Science I (3,0,0)
This course is part of an elite undergraduate study program supervised by a faculty member in the Physics Department. The goal is to prepare the student for advanced studies and research in physics and energy science. Examples of topics include electrodynamics, statistical physics, materials science, electronic instrumentation, spectroscopy, and nuclear physics and technology. The student should accomplish one of the following. (1) Research on a non-textbook problem, (2) acquire a research skill, (3) learn how to use a research tool, or (4) study an advanced subject in depth. The student must submit a written report at the end of the semester.

PHYS 2115 Electronics (3,3,0)
Prerequisite: PHYS 1005 Introduction to Physics or consent of instructor
This course provides students with basic concepts of electronic circuits. Foundation concepts in both dc and ac circuit analysis will be introduced. Next, the behaviours and applications of solid state electronic devices, including diodes and transistors will be examined. The last part covers power electronics and techniques to control the flow of electrical energy between the source and the load. This course builds a foundation upon which further work in electronics and instrumentation are based. The course includes a lab-based tutorial component which gives students hand-on experience.

PHYS 3005 Atomic and Nuclear Physics (4,4,0)
Prerequisite: PHYS 2005 Heat and Motion or consent of instructor
This course begins by introducing the key concepts of quantum physics including the wave-particle duality, the Heisenberg uncertainty principle and the Schrödinger equation. Using the language of quantum physics, students will then explore the structure and properties of atoms and nuclei. This course

also introduces the basic concepts of radioactivity and nuclear reactions and lays a foundation for understanding the working principles of nuclear power generation.

PHYS 3006 Renewable Energy Sources (3,3,0)
Prerequisite: PHYS 2005 Heat and Motion or consent of instructor
This course covers the physics and working principles of renewable energy sources such as wind, water, biomass, and geothermal energy. Environmental impacts of the various technologies are explained. Selected examples of emerging technologies and latest developments are also discussed.

PHYS 3007 Energy Storage, Distribution and Conservation (3,3,0)
Prerequisite: PHYS 2005 Heat and Motion or consent of instructor
This course explores the current practice and emerging technologies in energy storage, distribution and efficient energy usage. Selected topics on novel technologies such as high power density rechargeable batteries, nonhydrogen based fuel cells, and smart energy management etc. will also be discussed.

PHYS 3015 Structure and Properties of Matter (3,3,0)
Prerequisite: PHYS 3005 Atomic and Nuclear Physics or consent of instructor
By using the framework of quantum physics, this course examines the structural, chemical, and electronic properties of matter, which form the basis for energy device applications.

PHYS 3016 Energy Management (3,3,0)
Prerequisite: PHYS 2005 Heat and Motion or consent of instructor
This course explores the basic energy management strategy to streamline energy flow and maximize energy usage efficiency in daliy life. In addition to new supply-side management topics not covered in PHYS 3007 Energy Storage, Distribution and Conservation, the course will emphasize demand-side management including economics models, energy audit procedure, user-based source planning and implementation methods.

PHYS 3017 Green Energy Lab with LabVIEW (3,0,3)
This course provides an introductory level to graphical programming for data acquisition and instrument control encountered by science students, using LabVIEW™ as the programming platform. This course has experiments in the area of energy generation and device characterization such that the measurements are carried out with the use of LabView for data acquisition, data conversion, information presentation and file storage and retrieval.

PHYS 3025 Physics and Technology of Energy Conversion (3,3,0)
Prerequisite: PHYS 2005 Heat and Motion or consent of instructor
This course provides a solid foundation of energy conversion technology which is the key to renewable energy science. The processes include the conversion of Thermal, Mechanical and Chemical energy into electricity.

PHYS 3026 Instrumentation and Data Acquisition Laboratory (3,*,*)
Prerequisite: COMP 1005 Essence of Computing
This course introduces graphical programming for data acquisition and instrument control encountered by science students, using LabVIEW™ as the programming platform. This course provides a basic concept of hardware interface and sampling theory, and to equip students with practical skills to data acquisition, analysis and instrument control.

PHYS 3027 Intermediate Electromagnetism (3,3,0)
Prerequisite: PHYS 2006 Electricity and Magnetism or consent of instructor
This course studies electomagnetism up to Maxwell's equations at an intermediate level. It uses the tools of vector calculus for solving special problems in electrostatics and magnetostatics including the presence of dielectric and magnetic materials.

PHYS 3035 Energy and Thermodynamics (3,3,0)
Prerequisite: PHYS 2005 Heat and Motion or consent of instructor
This course introduces the relation between free energy and kinematics by demonstrating the statistical formalism of thermodynamics. Different kinds of free energy for different ensembles will be discussed, followed by applications of the statistical formalism to simple thermodynamic systems.

PHYS 3036 Mechanics (3,3,0)
Prerequisite: PHYS 2005 Heat and Motion or consent of instructor
This course deals with the basic theory of Lagrangian and Hamiltonian mechanics, coupled oscillations, and central force motion. It extends the basic discussions on mechanical motion in the lower level course, Heat and Motion, to a more general mathematical and theoretical framework, and provides a broader foundation for understanding and employing classical mechanics in energy science applications.

PHYS 3037 Guided Study in Physics and Energy Science II (3,0,0)
This course is part of an elite undergraduate study program supervised by a faculty membter in the Physics Department. The goal is to prepare the student for advanced studies and research in physics and energy science. Examples of topics include electrodynamics, statistical physics, materials science, electronic instrumentation, spectroscopy, and nuclear physics and technology. The student should accomplish one of the following. (1) Research on a non-textbook problem, (2) qcquire a research skill, (3) learn how to use a research tool, or (4) study an advanced subject in depth. The student must submit a written report at the end of the semester.

PHYS 4005 Non-Fossil Fuels (3,3,0)
Prerequisite: PHYS 3005 Atomic and Nuclear Physics and PHYS 3015 Structure and Properties of Matter or consent of instructor
This course covers the physics and working principles of important nonfossil fuels, including nuclear, geothermal, and solar energy sources. Environmental impacts of the various technologies are explained. Selected examples of emerging technologies and latest developments are also discussed.

PHYS 4006 Advanced Green Energy Laboratory (Metrology) (3,0,3)
Prerequisite: PHYS 3017 Green Energy with LabView or consent of instructor
This laboratory course uses LabVIEW based software to perform experiments. The teaching mode includes lectures, lab exercises, and project-based experiments related to (1) energy harvesting; (2) energy conversion efficiency; (3) energy conservation; (4) measurements of meteorological parameters and atmospheric constituents; (5) meteorological instrumentation; and (6) characterizations of energy harvesting materials and solar cells.

PHYS 4007 Advances in Displays and Lighting (3,3,0)
Prerequisite: PHYS 4025 Solid State Physics I and PHYS 4017 Semiconductor Physics and Devices, or consent of instructor
This course provides students with an insight on understanding the principles of displays and lighting that are widely used for application in mobile appliance, automotive lighting, traffic signals, signage, LCD backlighting, advanced displays and energy efficient lighting.