

**Announcement for Students**  
2025-26

**Term 2**

**EESC2010 Solid Earth Dynamics**

Have you ever wondered why and where earthquakes and volcanos happen? Do you want to learn how to tell the differences between fool's and real gold in a rock? Are you interested in a geological adventure in Hong Kong's GeoPark or a journey to the centre of the Earth (using earthquake waves)? You will get all these knowledge and experience in EESC2010 Solid Earth Dynamics. This introductory course offers comprehensive and insightful surveys on fundamental phenomena, processes, and principles of the solid earth system under the scientific framework of plate tectonics.

**EESC2030 Computational Earth and Environmental Sciences**

This course covers basic computation skills which are important to modern Earth and Environmental Sciences research and data analysis. Python 3 will be used throughout the course. Examples and tutorials will be based on various problems in Earth and Environmental Sciences.

**EESC2270 Introduction to Environmental Science**

This course introduces the fundamental concepts and principles of environmental science. Students will explore the interrelationships between the environment and human activities, with a focus on understanding the impacts of human actions on ecosystems and the importance of sustainable practices. Through a combination of lectures, discussions, and practical exercises, students will develop a holistic understanding of environmental issues and the role of science in addressing them.

**EESC3100 Structural Geology** is an intermediate level EESC/ESSC course. It trains students to recognize different lithological units and their geometries in three dimensions (3D); and understand the related tectonic environment and formation mechanism. Class lectures introduce geological structural features in 3D manner, basic skills of map reading and interpretation. Field projects are real case studies of local field observation, description, field data acquisition, analysis, sample collection and geological map compilation.

**EESC3220 Atmospheric Chemistry** is a study of the composition of the atmosphere, the sources and fates of gases and aerosols (or particulate matter, PM) in air, and changes induced by natural and anthropogenic processes. It has received great attention since many environmental issues such as ozone holes, greenhouse gases, and air pollution involve gases and aerosols. Atmospheric chemistry not only focuses on the photochemistry of the constituents of air, but also studies the formation of aerosols, dispersion of gases and aerosols, and biogeochemical cycles. It is a multidisciplinary study that helps students to better understand our environment through broad thinking.

### **EESC3230 Principles of Environmental Protection and Pollution Control**

This course discusses from a multidisciplinary viewpoint the anthropogenic causes of environmental degradation and the various approaches to environmental protection and pollution control. Students are introduced the concept of sustainability in environmental protection, economic measures and voluntary approach in environmental management, control and treatment technologies, and their comparative effectiveness in the abatement of various types of pollution. Management programmes and control strategies in tackling local environmental problems are illustrated.

### **EESC3300 Oceanography**

This course will help you develop a fundamental understanding of how the oceans work and why they behave the way that they do. We will explore how the different components of the ocean – its seafloor, physical components, chemical constituents, lifeforms and its circulation – form an interacting and interrelated system. Understanding the relationship between the various oceanographic phenomena and how they interact with other components of the Earth System is an inherently interdisciplinary endeavour so the course will embody this spirit.

### **EESC3415 Environmental Instrumentation Techniques**

This course provides students with a basic understanding of the operational principles and application of various instrumental techniques commonly used for studies of air and water pollution. Emphasis will be placed on the application of such techniques for pollution monitoring and preventive detection systems.

### **EESC3600 Ecosystems and Climate**

Most of us are aware of how different life forms adapt to the environment and climate they live in. This course, however, focuses on the opposite question: do living organisms actively modify the world around them? Here you will learn the various interesting ways through which different life forms (mostly plants and microbes) interact and shape their environment and climate, both physically and chemically. Simple mathematical and computer models, as well as numerical and computational exercises using the R programming language, will be used to illustrate the emerging interrelationships between life and climate. We will also ask important questions such as how we should better manage ecosystem resources to better mitigate climate change and pollution. This course will not only be crucial for students in the atmospheric and climate sciences, but also highly relevant for students in the physical, life and social sciences who are interested in the basics of ecohydrology, biogeochemistry and ecosystem ecology, and who want to acquire basic computational skills for analyzing climate and ecosystems.

### **EESC3601 Principles of Ecosystems and Climate**

This course is the same as EESC3600 but with one fewer credit unit (i.e., two credit units only), and without the numerical and computational exercises using the R programming language. This course, therefore, focuses more on the theories and scientific aspects, but omits the technical aspects.

**EESC4220 Tropical Meteorology**

Are you curious about the dynamics of tropical cyclones? How about “El Nino”? This course introduces the tropical circulation, comprising both time-mean (Hadley and the Walker circulation, ITCZ) and transient features (tropical cyclones, equatorial waves, Madden Julian Oscillation, El Nino-Southern Oscillation). Simple dynamical models will be used for understanding these phenomena.

**EESC4550 Practical Atmospheric Modeling**

Numerical modeling is indispensable in atmospheric science. This course introduces the basic principles behind atmospheric numerical modeling and provides hands-on practice in performing numerical simulations on computers. Specifically, students will learn pre-processing data, modeling, and post-processing data. We will introduce basic skills in model development as well. Students can anticipate grasping the basic skills of using one atmospheric model (or one atmospheric chemistry model), which will be helpful for their future pursuit in academia and industry.

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If you have any questions about any of EESC courses, feel absolutely free to contact Prof. Amos TAI ([amostai@cuhk.edu.hk](mailto:amostai@cuhk.edu.hk)).