

Subject Description Form

Subject Code	ABCT3103
Subject Title	Environmental Science
Credit Value	3
Level	3
Pre-requisite	ABCT1102 General Biology
Co-requisite	Nil
Exclusion	Nil
Objectives	This subject explains the physical and chemical processes in environments and their interactions with biological systems, including humans. These interactions constitute different types of ecosystems and ecosystem services, such as provision of clean water and nutritious food which are vital for our survival.
Intended Learning Outcomes	<p>Upon completion of this subject, students will be able to:</p> <ol style="list-style-type: none"> a. realise environmental science as a multidisciplinary subject including chemistry, biology, food science and other disciplines; b. have a better understanding of the physical and chemical principles of the environmental processes; c. define ecology and ecosystems, which comprise interactions among species and the environments in which they live; d. aware that food production is part of the ecosystem services and largely dependent on healthy environments; e. identify the negative environmental impacts of human activities such as pollution and options of mitigation; f. develop judgmental and analytical skills in environmental monitoring; and g. appreciate the importance of environmental sustainability and the positive environmental impacts brought by humans such as ecological restoration.
Subject Synopsis/ Indicative Syllabus	<p>This subject covers five closely interconnected topics, namely,</p> <ol style="list-style-type: none"> 1. <u>aquatic and terrestrial environments</u>, and their physical and chemical processes such as cycling of water and nutrients. Major environments including coral reefs and tropical rainforests are discussed; 2. <u>ecological processes and evolution</u>, which describe the interactions among species at different levels of the ecological hierarchy and their adaptation to the environments; 3. <u>natural resources and ecosystem services</u>, which support the life of humans and our society, for example, provision of food through agriculture and aquaculture; 4. <u>adverse environmental impacts caused by humans</u>, such as global climate change and ocean acidification, along with pollution of heavy metals, persistent organic pollutants and microplastics; and 5. <u>environmental sustainability</u>, which explains the principles and methods in

	environmental monitoring, renewable energy options, novel food production in the face of environmental changes, and ecological restoration by humans as an example of positive environmental impacts.								
Teaching/Learning Methodology	Interactive lectures will facilitate students' learning of key concepts of environmental science and ecology, and promote communication between teachers and students. Tutorials will include small group discussion of relevant topics to enhance knowledge sharing among students and their awareness of recent environmental and ecological issues. Practical sessions will provide students with hands-on experience in environmental monitoring along with data analysis and interpretation. Group projects will encourage students to work as a team, to research into interesting environmental and ecological topics, and to present their findings in class. If possible, a field trip will be organised for students to experience the ecology of Hong Kong.								
Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						
			a	b	c	d	e	f	g
	1. Practical	30%		✓	✓		✓	✓	✓
	2. Group project	30%	✓	✓	✓	✓	✓	✓	✓
	4. Examination	40%	✓	✓	✓	✓	✓		
Total	100 %								
	<p><u>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</u> The practical sessions will provide a platform for students to relate the concepts learnt in class with environmental applications. The group project aims to foster students' interests in environmental conservation. Through information searching and discussion on selected topics, students will gain better insights into real-world environmental and ecological issues. The examination will evaluate students' level of understanding of the taught topics. High-order thinking questions will be used to assess students' analytical and problem-solving skills.</p>								
Student Study Effort Expected	Class contact:								
	<ul style="list-style-type: none"> ▪ Lecture ▪ Tutorial ▪ Practical 						26 hours		
							4 hours		
Other study effort:									
<ul style="list-style-type: none"> ▪ Practical report, group project and self-study (and a field trip, if any) 						9 hours			
Total study effort:						81 hours			
						120 hours			
Reading List and References	Reference materials will be provided in class.								