

# The Hong Kong Polytechnic University

## Subject Description Form

<b>Subject Code</b>	ISE1D01
<b>Subject Title</b>	Learning for a Sustainable Future
<b>Credit Value</b>	3
<b>Level</b>	1
<b>Pre-requisite / Co-requisite/ Exclusion</b>	Nil
<b>Objectives</b>	<p>This subject explores the emerging concept of sustainable development which is an increasingly important issue for governments, businesses, educational institutions and non-government organizations around the world. Sustainable development is a learning process. Studies have shown that, in many cases, there is a lack of understanding of sustainability concepts and their implementation in university teaching and learning practices. Traditional subjects have focused on solutions to complex problems and have equipped students with the skills to resolve such problems within a relatively narrow area. The overall objective of this subject is to promote commitment and skills so that students can develop an enhanced understanding of what it means to work for a sustainable future, a sense of responsibility for future generations and a spirit of optimism and hope for a sustainable future.</p> <p>The degradation of natural resources threatens the livelihood of people. Human health and well-being is increasingly determined by environmental conditions. This subject highlights the interdependence of these issues and how people's daily lives are related to social, economic, environmental and technological processes. It also demonstrates that social and environmental problems can be solved through changes to the way resources are used are that people have an obligation to overcome the environmental problems humanity faces.</p> <p>The objectives of the subject are to enable students to:</p> <ol style="list-style-type: none"><li>1. Understand the concepts of sustainability and sustainable development; the interdependence of natural and socio-economic systems at local, national and global levels</li><li>2. Develop an understanding of the social, economic, environmental and technological issues facing the world today and establish an understanding of the interrelationships among these issues</li><li>3. Have a critical reflection and decision making caused by personal lifestyles</li><li>4. Engage in active participation in building sustainable development</li></ol>

<p><b>Intended Learning Outcomes</b></p>	<p>The study of sustainability is intellectually stimulating and seeks to empower students to draw upon their capacity to engage in and future thinking enhanced by concepts, tools, and techniques. Students are increasingly concerned with sustainability issues but feel unprepared as to what the future might bring. This subject is designed for undergraduate students by introducing selected issues that need to be addressed in building a sustainable future.</p> <p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> <li>(a) Develop an understanding of the emerging concepts of sustainable development</li> <li>(b) Develop an understanding of the interrelationships among selected sustainable development issues</li> <li>(c) Analyze the value base behind a range of different interpretations of sustainable development</li> <li>(d) Develop key competencies in sustainability, such as problem solving, linking knowledge to action, and the ability to collaborate successfully with experts and stakeholders that have a vested interest in sustainable development</li> <li>(e) Appreciate the differences in approach to sustainable development between Hong Kong and a selected City in China</li> </ul>
<p><b>Subject Synopsis/ Indicative Syllabus</b></p>	<p>China is demonstrating its intentions to promote Sustainable Development Goals. A key driver in this aspiration is to strive to realize an ecological civilization by 2030. Ecological civilization can be defined as “a dynamic equilibrium state where humans and nature interact and function harmoniously”. To speed up high-quality development in a sustainable way, most local governments have made efforts in ecological construction and improving the public's awareness of environmental protection. To improve the public's living environment and enhance residents' sense of happiness, China's many cities aim to build a demonstration zone for ecological civilization.</p> <p>Due to China's long history, it is an excellent location for students to understand the concept of sustainability. China takes environmental protection as a top priority, transforming its industrial structure and promoting green development. Therefore, how to ensure the preservation of natural resources and the environment, protect citizens health and increase social harmony and welfare, while maintaining its economic vitality and competitiveness, is one of the important tasks for China in the 21st century. Therefore, in China, students are able to explore and familiarize themselves with the following issues related to sustainability:</p> <p><u>Energy Conservation, Carbon Reduction and Climate Change</u></p> <ul style="list-style-type: none"> <li>• Promoting Climate Change Adaptation Technology Integration Research</li> <li>• Promoting greenification of industries</li> <li>• Promoting green LOHAS and low-carbon transportation</li> <li>• Promoting green consumption in the general public</li> </ul>

	<p><u>National Land and Resources</u></p> <ul style="list-style-type: none"> <li>• Water resource development, utilization, management and conservation</li> <li>• Sustainable management of maritime resources</li> <li>• National land planning, management, and conservation</li> <li>• Conservation of wetland ecology</li> </ul> <p><u>Biodiversity</u></p> <ul style="list-style-type: none"> <li>• Establishing and integrating biodiversity information database</li> <li>• Planning of Land, Wetland, and Maritime Biodiversity Monitoring Systems</li> <li>• Implementing boat reduction and fishing moratorium, regulating fishing yield, and implementing fishery management</li> <li>• Prevention and cataloguing of invasive species</li> <li>• Promoting excellent agricultural products</li> </ul> <p><u>Energy and Production</u></p> <ul style="list-style-type: none"> <li>• Promoting green factories and integration of energy and resources</li> <li>• Encouraging energy conservation and carbon reduction, developing renewable energy</li> <li>• Invigorative measures for agriculture</li> <li>• Encouraging transformation in the fishing industry and curbing illegal fishing</li> </ul> <p><u>Transportation and Livelihood</u></p> <ul style="list-style-type: none"> <li>• Improving public road transportation efficiency; Strengthening disaster prevention system for roads and bridges</li> <li>• Promoting ecotourism, environmental education and a friendly tourism environment</li> <li>• Improving weather forecasting and earthquake detection capabilities</li> <li>• Promoting environmental management systems and energy conservation/carbon reduction equipment for the aviation industry</li> </ul> <p><u>Urban and Rural Development</u></p> <ul style="list-style-type: none"> <li>• Urban and rural sustainable development</li> <li>• Green building for eco-cities</li> <li>• Enhancing living environment</li> </ul> <p><u>Health and Welfare</u></p> <ul style="list-style-type: none"> <li>• Protection and service for women, children and youth</li> <li>• Molding a friendly city for the elderly, and enhancing their social participation</li> <li>• Handling epidemics and promoting the development of vaccine production</li> <li>• Risk assessment and management of environmental pollution quality</li> </ul> <p><u>Education and Promotion</u></p> <ul style="list-style-type: none"> <li>• Improving knowledge and understanding of sustainable development and environmental awareness</li> <li>• Advancing sustainable development through collaboration with the government, schools and the general public</li> </ul>
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	<ul style="list-style-type: none"> <li>• Strengthening social education centers and promoting sustainability and environmental protection</li> <li>• Promoting research and international cooperation on education of sustainable development</li> </ul>
<p><b>Teaching/Learning Methodology</b></p>	<p>Providing students with quality learning activities outside the classroom is vital for helping them obtain first-hand experience from different perspectives. Experience outside the classroom enhances learning by providing students with opportunities to practice enquiry skills, value analysis and clarification, and problem solving. This unique learning opportunity helps students increase their understanding of sustainability problems. Supported by China local universities, local governments, and industry partners, this subject will help students turn concepts and methods into practical competence. Through a carefully designed teaching/learning methodology, students will obtain real-world experience on how to link knowledge to action for sustainability.</p> <p>Basically, three learning stages are included in this subject: (i) preparation in class (Pre-field Stage); (ii) fieldwork (Field Stage) and (iii) Follow-up in class (Post-field Stage)</p> <p><u>Pre-Field Stage</u></p> <p>There will be lectures to provide essential knowledge and information on various topics in sustainability issues. Students are required to identify a real-world problem, evaluate whether and why it is a sustainability problem, perform a stakeholder analysis, and formulate a problem-solving approach (what, why, who, and how). During this stage, students will be able to: (i) develop knowledge and skills, (ii) practice data collection techniques, (iii) know groups and personal responsibilities, (iv) be aware of arrangements and necessary materials, and (v) understand safety requirements.</p> <p><u>Fieldwork</u></p> <p><i>(a) Field Teaching and Research</i></p> <p>This involves taking students to several field locations and delivering mini-lectures or seminars on-site from which students are expected to take notes. This approach involves students in careful observation and description of a scene or activity and in suggesting possible explanations based on previously acquired information. This approach provides a structured way for students to find their own examples as an integral part of the learning experience. Pre-reading materials are made available to ensure students are well prepared before the fieldtrip.</p> <p><i>(b) Sites Visit (Winners of National Sustainable Development Awards)</i></p> <p>Fieldtrips that involve local experts increase the exposure of students to the real world and to its stakeholders and thereby add interactive components. Students are required to ask relevant questions in order to explore sustainability dimensions of an issue on-site, in particular, how things are done, by whom, and why. During the fieldwork, students are able to: (i) make direct observations: identifying, describing, constructing, and measuring, (ii) collect and record data, (iii) make initial analysis and interpretations, and (iv) be aware of their own and other people's perceptions.</p>

	<p><i>(c) Seminars</i></p> <p>Interaction with guest speakers is an important feature of this subject. Experts involved in sustainable development and specific fields from governments, media, business, and related associations are invited to engage in dialogue with the students. The consideration of local and opinion leaders and experts to highlight on challenges of the areas forms an integral part of the subject.</p> <p><u>Post-Fieldwork</u></p> <p>After completing fieldtrips, students need to (i) organize the information they have collected, (ii) check findings with others, (iii) test hypotheses, (iv) make generalizations, (v) discuss puzzling issues with others, (vi) research unanswered questions, and (vii) prepare project reports and presentations.</p> <p><i>(a) Group Project</i></p> <p>Students from Hong Kong and China are required to form groups together on chosen case studies, which run over the total subject duration. Each group will conduct a project addressing a sustainable issue by researching, developing, and preparing a solution portfolio. Group projects are intended to be an enjoyable learning experience in which students become familiar with the <i>economic, political, social and cultural, environmental and technical</i> issues associated with the sustainability topic that they are exploring. Working through a group project can help students in:</p> <ul style="list-style-type: none"> <li>• Identifying possible causes and effects of a problem</li> <li>• Brainstorming potential solutions to the underlying problem</li> <li>• Developing criteria for evaluating solutions</li> <li>• Evaluating all solutions to determine the preferred one</li> <li>• Developing an action plan for the best solution</li> </ul> <p><i>(b) Essay</i></p> <p>Each student will submit one research essay assignment based on their learning activities of the subject. This assignment will deal with important technological, economic and environmental aspects associated with sustainability. Also, it will foster students' understanding of the relationship between theory and real world experience. Students will review and critique literature with respect to critical issues about sustainable development.</p> <p>Through group projects and essay assignments, students' ability to apply and synthesize acquired knowledge can be evaluated on the basis of their performance in group discussions, oral presentations, and the quality of their project reports on these case studies.</p>																														
<p><b>Assessment Methods in Alignment with Intended Learning Outcomes</b></p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed</th> </tr> <tr> <th>a</th> <th>b</th> <th>c</th> <th>d</th> <th>e</th> <th></th> </tr> </thead> <tbody> <tr> <td>1. Tests</td> <td>20%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>2. Research essay</td> <td>30%</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> </tbody> </table>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed						a	b	c	d	e		1. Tests	20%	✓	✓			✓		2. Research essay	30%	✓	✓			✓	
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	3. Individual reflective journal	10%	✓	✓	✓	✓	✓	
	4. Group project report	30%	✓	✓	✓	✓	✓	
	5. Project Oral presentation	10%	✓	✓			✓	
	Total	100%						
	<p>This subject involves students working in groups to study cases where they apply knowledge learnt and suggest preferred solutions to reduce pressure on the environment and increase sustainable development in specific areas/regions. Through such exercises, students' ability to apply and synthesize acquired knowledge can be evaluated on the basis of their performance in group discussions, oral presentations, and the quality of their written reports on these case studies. Tests are used to assess students' knowledge, critical thinking, and values and attitudes regarding sustainability issues.</p>							
<b>Student Study Effort Expected</b>	Class contact:							
	Lectures		12 Hrs.					
	Tutorials/Seminars/Case studies		13 Hrs.					
	Site visits/mini-lectures		14 Hrs.					
	Other student study effort:							
	Research/preparation for site visits and information gathering		56 Hrs.					
	Preparation for the essay, project presentation and report writing		22 Hrs.					
	Total student study effort		117 Hrs.					

<b>Reading List and References</b>	<ol style="list-style-type: none"><li>1. 2014 Global Sustainable Development Report, UN-DESA</li><li>2. Inclusive Green Growth: The Pathway to Sustainable Development, The World Bank, 2012</li><li>3. Bert J. M., Sustainability Science, 2012, Cambridge University Press</li><li>4. The Council for Sustainable Development in Hong Kong, <a href="http://www.susdev.gov.hk/html/en/council/">http://www.susdev.gov.hk/html/en/council/</a></li><li>5. Engineering for Sustainable Development: Guiding Principles, Royal Academy of Engineering, 2005</li><li>6. Education for Sustainable Development - An Expert Review of Processes and Learning, UNESCO, 2011</li><li>7. UN-DESA, <a href="http://sustainabledevelopment.un.org/index.html">http://sustainabledevelopment.un.org/index.html</a></li><li>8. Engineering-Issues, Challenges and Opportunities for Development, USECO, 2010</li><li>9. Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication, UNEP, 2011</li><li>10. WBCSD, <a href="http://www.wbcsd.org/home.aspx">http://www.wbcsd.org/home.aspx</a></li></ol>
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