

THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

Approval of Undergraduate Course

Section 1: Academic Administration ⁽¹⁾

1.1 Catalog

- a) Course to be effective from: Academic Year 2023-2024 Term Fall
- b) Department Code⁽³⁾: IPO Subject Area⁽³⁾: ENVR Course Number ⁽⁴⁾: 2080
 Previous Course Code⁽⁵⁾: N/A
- c) Full Title⁽⁶⁾ (max. 100 characters): Circular Economy and Life Cycle Assessment
- d) Abbreviated Title⁽⁷⁾ (max. 30 characters): Circular Econ and LCA
- e) Course Credits⁽⁸⁾: ☒ Fixed: 3 ☐ Range: From _____ To _____

- f) Catalog Description⁽⁹⁾ (word limit = 150):

This course identifies the purpose of green finance as a means to promote and enable sustainable and resource-conserving economic systems.

While viable benchmarks and concepts for sustainable development exist, economic decision-makers and financial institutions by and large still focus on economic profit, leaving environmental and societal sustainability outside of their cost-benefit assessments. In order to provide an alternative approach that guides financial investment towards green ventures, the course offers insights into sustainable development concepts and respective assessment mechanisms for sustainable corporate performance. These concepts and mechanisms are exemplified in the Circular Economy (CE) and Life Cycle Assessment (LCA), which constitute increasingly important elements in sustainable development.

By adopting a multidisciplinary perspective, the classes cover the fundamentals of sustainable concepts, benchmarks on how to measure sustainable performance in the economic domain (i.e., at the corporate-, meso- and system-level) and empirical cases on how green finance has and can make a difference to promote sustainable growth.

- g) Grading Type⁽¹⁰⁾: ☒ Letter Grades ☐ Distinction/Credit/Pass/Fail ☐ Pass/ Fail
☐ Distinction/Pass/Fail ☐ Others (please specify): _____

- h) ☒ Prerequisites⁽¹¹⁾:

Course Code / Public Exam	Course Title / Exam Subject and Level / Grade attained
SUST1000	Introduction to Sustainability

- i) ☐ Corequisites⁽¹²⁾:

Course Code	Course Title

- j) ☐ Exclusions⁽¹³⁾:

Course Code / Public Exam	Course Title / Exam Subject and Level / Grade attained

- k) ☐ Co-listing⁽¹⁴⁾: ☐ Multi-coding⁽¹⁴⁾:

Course Code	Course Title

- l) Other Enrollment Restrictions⁽¹⁵⁾ ☒ No ☐ Yes
- ☐ Instructor's approval required
- ☐ Restricted to specified student group(s)
(please specify, e.g. year and program of study): _____
- ☐ Others (please specify): _____
- m) Medium of Instruction/Materials⁽¹⁶⁾: ☒ English ☐ Others, (Pls specify and provide a justification in Section 1.3): _____
- n) Allow course repetition for credit⁽¹⁷⁾: ☒ No ☐ Yes

1.2 Contribution of course to Programs of Study [Check all appropriate boxes below]

<input checked="" type="checkbox"/> Major	<table border="1"> <tr> <th>Program of Study</th> <th colspan="3">As</th> </tr> <tr> <td>BSc in Sustainable and Geen Finance</td> <td><input checked="" type="checkbox"/> Required Course</td> <td><input type="checkbox"/> Elective</td> <td><input type="checkbox"/> Prerequisite</td> </tr> </table>	Program of Study	As			BSc in Sustainable and Geen Finance	<input checked="" type="checkbox"/> Required Course	<input type="checkbox"/> Elective	<input type="checkbox"/> Prerequisite
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1.3 Rationale for Introducing this course and other relevant information ⁽¹⁸⁾

In order to understand how financing can render systems located in the economy-environment-society nexus more green, it is important to analyse three core dimensions: (1) Which factors constitute current systems and how do they operate; (2) which are the benchmarks of sustainable systems and their operation; (3) at which instances can financial investments help to induce a shift from non-sustainable to sustainable development patterns. Given the paucity of sustainable operations in the economy, the novelty of the sustainability concept, and the urgency for a sustainable transformation due to anthropogenic forcing, this course intends to equip students with a basic understanding of current and desired mechanisms in this vast transformation.

By implication, the main idea is to first provide basic insights into the characteristics of the currently most prominent sustainability paradigm, the Circular Economy, and selected indicator benchmarks for guiding the decision-making process in green finance.

In the second instance, the course introduces the Life Cycle Assessment (LCA) tool to provide a holistic assessment of emerging technologies, new products, and engineering systems and helps to identify opportunities for improving product designs to conserve resources and reduce pollution. The integration of environmental LCA can provide a measure of scope 3 carbon emissions (carbon footprints) and other environmental impacts of investment portfolios. Social LCA complements environmental LCA by measuring the impacts on society, including the challenge of child labor and worker health. The life cycle cost (LCC) offers an insight into the financial cost for investing in sustainable projects from a cost-benefit perspective. The introduction of environmental, economic, and social LCA will help students equip themselves with the capacity to understand and quantify the "green" component of financial projects.

Based on this tool-set, students will be confronted with various cases, which have to be solved in groups. Essentially, the task lies in using financial means (public, corporate, societal) to render system operations, products, and corporate processes sustainable. By exposing students to such causal mechanisms, i.e., how financial inputs do or don't induce processes/ products/ operations to be sustainable, the course will train a specific mindset currently sought by financial regulators and institutions.

Section 2A: Learning Outcomes and Alignment (for courses not proposed to be Common Core Courses)

2.1 Key Course Intended Learning Outcomes (Should not normally exceed six or eight outcomes)

Upon completion of this course, students are expected to be able to do the following:

	Course ILOs	Nature of the learning outcomes (A - Knowledge/Content Related; B - Academic Skills/Competencies; C - Others)
1	Understanding the idea of the CE, its role in the future, and the function of Green Finance to promote CE related business ventures	A, B
2	Master key benchmarks/ indicators for assessing corporate CE performance & thereupon decide over green finance investment strategies/ approaches	A,B
3	Understand the principles of environmental, social, and economic life cycle assessment	A
4	Interpret and explain the conclusion from the life cycle assessment	B
5	Apply the life cycle assessment framework and circular economy perspectives for supporting investment decisions	B

2.2 Contribution of Learning Outcomes to Programs of Study identified in Section 1.2

(Please also complete Section 4.1)

	Program of study 1: <u>BSc in Sustainable and Green Finance</u> Program ILOs	To be achieved through these course ILOs (Write CLO-1, CLO-2, etc.)
1	Have a broad understanding of sustainable and green business functions and integrate these functions to adopt an inter-disciplinary approach and formulate effective and innovative solutions to tackle complex real-world problems.	1, 5
2	Have an in-depth grasp of Sustainable and green finance knowledge and skills, and transfer acquired knowledge and skills to meet changes and challenges in different fields.	1-5
3	Engage in activities that lead to the impact of societal improvement	1
4	Make effective ESG finance decisions supported by analytical and quantitative techniques	2-5
5	Have the ability to create and innovate with divergent thinking	2,4,5
6	Communicate effectively with people of different levels and work areas.	5
7	Work independently, collaborate effectively in teams, and lead a team to success	4,5
8	Demonstrate a global outlook and function effectively in multi-cultural and international settings.	1
9	Effectively use information technology and sources of information in work applications	4,5
10	Understand professional and ethical responsibility, and recognize the importance of a sustainable and green living society	1-5

Section 2B: Additional Information⁽²⁾ (for courses not proposed to be Common Core Courses)

2.3 Planned Teaching & Learning Arrangement

Teaching & Learning Arrangement		Weekly Scheduled Hours/ Estimated Weekly Learning Hours	Indicate which course ILOs this activity serves to achieve (Write CILO-1, CILO-2, etc.)	Additional Information (optional)
Face-to-face activities	<input checked="" type="checkbox"/> Lecture*	3	CILO-1-5	
	<input type="checkbox"/> Tutorial*			
	<input type="checkbox"/> Seminar/Small-class*			
	<input type="checkbox"/> Laboratory*			
	*Does the above scheduled component(s) involve structured active learning activities? ⁽¹⁹⁾ <input type="radio"/> No <input type="radio"/> Yes If yes, please specify for each scheduled component, the percentage and the type of active learning involved in the "Additional Information" column.			
	<input type="checkbox"/> Others (e.g. fieldtrip, visit, etc.), pls specify: _____			
Online activities	<input type="checkbox"/> Online lecture videos			
	<input type="checkbox"/> Other online learning tasks, pls specify: _____			
The total learning hours of the course[#] is equivalent to <u>120</u> hours ⁽⁸⁾ <i># including both scheduled instructional hours and hours for self-study activities & assessment</i>				

☐ For course adopting a pedagogic approach other than lecture, tutorial and laboratory, please indicate the pedagogy used:

☐ Blended learning ⁽²⁰⁾

☐ Pure online delivery ⁽²¹⁾

☐ Experiential learning ⁽²²⁾

☐ Others, pls specify: _____

2.4 Planned Assessment Weightings

Assessment Task	Proportion of Final Grade (%)	Indicate which course ILOs this task is to assess (Write CILO-1, CILO-2, etc.)	Additional Information (optional)
<input type="checkbox"/> In-class test			
<input checked="" type="checkbox"/> Mid-term test	30	CILO-1 to CILO-3	Assessment of students' understanding of the course basics via a written mid-term (standardized questions)
<input type="checkbox"/> Final exam			
<input checked="" type="checkbox"/> Written assignment	15	CILO-1 to CILO-5	Personal reflection paper; aims to discern students' incorporation of acquired knowledge into their professional life
<input checked="" type="checkbox"/> Project report	40	CILO-1 to CILO-5	Based on a given task assigned student groups have to produce a project report. Metrics centre on CILOs and individual innovativeness
<input type="checkbox"/> Presentation			
<input type="checkbox"/> Learning portfolio			
<input checked="" type="checkbox"/> Course participation	10	n.a.	Measurement: Presence in class and frequency of comments & questions made in class
<input checked="" type="checkbox"/> Peer evaluation	5	n.a.	Measurement: Participation and activity in groups for working on the project report
<input type="checkbox"/> Others (e.g. proctored online exam, etc.), <i>pls specify</i> : _____			

2.5 Course Duration

☒ 1 term ☐ 2 terms ☐ Others, pls specify: _____

2.6 Planned Frequency of Offerings [Check all appropriate boxes]:

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Every Fall | <input type="checkbox"/> Every Winter |
| <input checked="" type="checkbox"/> Every Spring | <input type="checkbox"/> Every Summer |
| <input type="checkbox"/> No fixed pattern | |
| <input type="checkbox"/> Other (pls specify): _____ | |

2.7 Course outline attached

☐ No ☒ Yes

☐ Internationalization:

Internationalization in a course refers to course content and/or pedagogic approaches which incorporate an intercultural and international perspective. Examples may include:

- *Collaboration with overseas institutions to develop and adopt international course content, or to arrange international field trip*
- *Insertion of international theme as part of the course*
- *Integrating the course content with international material as examples or case studies*
- *Elements to provide global diversified perspectives and/or practices around the world*

Please briefly list or summarize any component(s) in the course that contributes to internationalizing the curriculum:

Given the various approaches towards green bonds, this course will use a set of case examples and best case practices from all over the world to expose students to the latest trends and approaches towards sustainability assessment and economic approaches.

2.8 Resources

Request extra resources for teaching this course? ☐ No ☒ Yes

Section 3: Learning Outcomes and Alignment (for Common Core Course) NOT APPLICABLE

Section 4: Development, Concurrence and Approval

4.1 Contribution to the Program Learning Outcomes

The course is confirmed by the following Major/Minor program department(s)/unit(s) as indicated in Section 1.2 that it would contribute appropriately to overall program learning outcomes.

<i>Department/Program unit</i>	<i>Position</i>	<i>Name</i>	<i>Date</i>
Division of Environment & Sustainability	Head of Division	Prof. Alexis LAU	16-Feb-21

4.2 Approvals

Recommendation from offering department(s) and School(s)/IPO

<i>Offering Department/Program Unit</i>	<i>Position</i>	<i>Name</i>	<i>Date</i>
<u>Division of Environment & Sustainability</u>	<u>Head of Division</u>	<u>Prof. Alexis LAU</u>	<u>16-Feb-21</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

<i>Recommending School/IPO</i>	<i>Position</i>	<i>Name</i>	<i>Date</i>
<u>Interdisciplinary Programs Office</u>	<u>Chair of IUSC</u>	<u>Prof Jimmy FUNG</u>	<u>19-Feb-21</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

Concurrence from other Schools or departments/units

[illegible]

Attachment 1: Course Outline

Week	Topics	Briefly outline what this topic will cover <i>(Include reading assignments if available)</i>
1	Sustainable development and Green Finance	Concept, history, and principals
2	Circular Economy	Concept & history
3	The CE in practice	Applications at systemic, corporate & product levels
4	CE indicators and benchmarks	
5	Assessment tools for CE: Framework for LCA	Framework for environmental LCA
6		Social LCA
7		Life Cycle Costing
8	CE and LCA approaches for green finance and comparison / complementary tools	
9		
10	Synergies for CE& LCA & Sector-specific case examples	Construction, Energy & Transport, Agriculture etc.
11		
12		
13	Group Project Presentations	