The Hong Kong Polytechnic University

Subject Description Form

Subject Code	CE1001
Subject Title	Construction and Environmental Professionals in Society
Credit Value	3
Level	1
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	This subject is entitled "Construction and Environmental Professionals in Society", specially devised for all first-year students enrolled in the Faculty of Construction and Environment. It focuses on integrating students into the professional and ethical dimensions of the construction and environmental fields. The objectives of the subject include: - Introducing students to the construction and environmental industries, familiarising them with key concepts, practices, and the current landscape in their freshman year - Instilling a strong ethical mindset that emphasises environmental sustainability and societal well-being in decision-making processes - Actively engaging students with contemporary challenges and debates such as climate change, urban development, and changes in regulations affecting their fields - Preparing students for their future roles by exposing them to industry norms, expectations, and various career opportunities - Offering networking sessions and providing insights from experienced professionals through guest lectures, helping students connect with the industry
Intended Learning Outcomes *(Note 1)*	Upon completion of the subject, students will be able to: (a) Describe the role and impact of the construction and environmental industries and their professional fields in addressing contemporary societal needs at local, national and global levels (b) Identify the qualities and competencies required to become a successful professional in the construction and environmental industries and explain why they are important for professional work (c) Reflect on their professional aspirations and develop a personal development plan for pursuing their career goals (d) Discuss how professionalism and professional ethics are manifested in the professional settings and practices of the construction and environmental industries

	(e) Explain how professionals in the construction and environmental industries approach and solve problems
Subject Synopsis/ Indicative Syllabus *(Note 2)*	**<u>Subject Synopsis</u>** The Faculty of Construction and Environment (FCE) at PolyU is a cornerstone institution renowned for advancing sustainable urban development and improving the built environment. Emphasising the integration of sustainability principles across all facets of construction and environmental practices, FCE has been instrumental in developing skilled professionals who now contribute across diverse sectors within the construction and environmental industries. In this subject, faculty members from various departments within FCE will impart their expertise to freshmen by detailing the historical context, evolution, current practices, and ethical norms of key construction and environmental professions, with a specific focus on architecture, surveying, building services engineering, and civil engineering. Leveraging their extensive knowledge of current industry practices, FCE instructors will further explain how environmental parameters related to these disciplines impact sustainable development. Additionally, they will explain how cutting-edge technologies are employed to promote sustainable construction and environmental development, ultimately contributing to societal well-being. Reputable industrial practitioners or FCE alumni will be invited to give seminars to students to share their experiences in handling construction projects and solving problems on technical, financial and other issues in the industry. **<u>Indicative Syllabus</u>** The teaching content is divided into three parts as follows: ***Part 1 – Fundamental discipline introduction and practicum-based elaboration*** A subject coordinator from each of the four departments within FCE will coordinate and deliver two focused lectures: A series of **foundational lectures** will be delivered to outline the historical development and core principles of their respective disciplines in each department. Four lectures (each department will deliver one foundational lecture) will serve as a fundamental introduction to environmental parameters, regulatory standards, and current technologies influencing the construction and environmental sectors. A series of **guest lectures** led by an industry expert, highlighting real-world considerations of environmental and construction parameters within that discipline will be delivered after the foundational lectures. Each department will organise one guest lecture, tailored to ethical considerations and field-specific applications in their area of expertise. ***Part 2 – Professional ethics*** An online learning module will be provided to introduce the principles and practices of professional ethics in the construction and engineering industry. The module will cover key ethical standards, industry codes of conduct, and common dilemmas faced by professionals. ***Part 3 – "Flipped the classroom"*** Four "flipped classroom" will be organised with students accessing the online

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<tr><td></td><td>materials before the class and participating in group discussion to reflect and elaborate on the contents in the classroom. Each department will be responsible for organising one “flipped classroom”.</td></tr>
<tr><td>Teaching/Learning Methodology

(Note 3)</td><td>The teaching and learning methodology of this course is distinguished by its dynamic and blended approach, utilising a variety of educational tools to enhance the student experience. It features inspirational lectures to establish a strong knowledge base, complemented by flexible, self-paced online micro-modules and practical online assignments. Additionally, seminars led by experienced practitioners provide real-world insights into the industry, bridging the gap between theoretical knowledge and practical application. An online companion site further supports the educational delivery, ensuring easy access to materials and fostering robust interactions both within and outside the classroom.

This subject is specifically designed to engage freshman students at FCE, fostering development in creative thinking, problem-solving, global awareness, and entrepreneurship through both theoretical learning and practical application. The integration of seminars by industry practitioners emphasises the practical relevance of the curriculum, highlights the real-world challenges in the construction industry, and reinforces the programme’s core competencies. This comprehensive and cohesive approach not only ensures a deep understanding of theoretical concepts but also hones students’ ability to apply these concepts in real-world settings, effectively preparing them for professional success.

Furthermore, this course is notable for its innovative approach, which seamlessly combines traditional lectures with modern digital learning tools and emphasises sustainability and ethical practices. This strategy prepares students not just for immediate academic success but also equips them to make meaningful contributions to society and meet the demands of the global market, ensuring their readiness for future careers in the construction and environmental sectors.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes

(Note 4)</td><td>
<table>
<tr><td colspan="2" rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="5">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td></tr>
<tr><td rowspan="3">1. “Pathfinder” virtual module and flipped classroom activities</td><td>1a. Completion of “Pathfinder”</td><td>10%</td><td>✓</td><td></td><td>✓</td><td></td><td>✓</td></tr>
<tr><td>1b. Online exercise associated with the “Pathfinder”</td><td>10%</td><td>✓</td><td></td><td>✓</td><td></td><td>✓</td></tr>
<tr><td>1c. Group video presentation</td><td>30%</td><td>✓</td><td></td><td>✓</td><td></td><td>✓</td></tr>
<tr><td colspan="2">2. Professional ethics online module</td><td>10%</td><td></td><td></td><td></td><td>✓</td><td></td></tr>
<tr><td colspan="2">3. In-class quizzes (four quizzes to be held in Weeks 2, 4, 6, and 8)</td><td>40%</td><td>✓</td><td>✓</td><td></td><td></td><td>✓</td></tr>
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Total	100 %	

The assessment task 1 plays a part in addressing the intended learning outcomes (a), (c) and (e) covered by the "flipped classroom" arrangement. Students are required to complete four virtual modules from Weeks 10-13 and submit their presentation videos after the in-class discussion.

The assessment task 2 assesses students' comprehension of key ethical standards and industry codes of conduct in the construction and engineering industry to address the intended learning outcome (d). The online module will be delivered in Week 4.

The assessment task 3 serves as an assessed task (i.e., 40% of the overall assessment grade) for students to demonstrate their overall attainment of intended learning outcomes (a), (b) and (e) at the end of the curriculum.

Professional ethics
An online learning module will be provided to introduce the principles and practices of professional ethics in the construction and engineering industry. Students are required to complete an online module and complete a series of exercises. The exercises will be in the form of MC questions, aiming to test students' comprehension of the knowledge.

"Pathfinder" virtual module and flipped classroom activities

Students will participate in four "Pathfinder" virtual module activities, each developed and delivered by one of the four departments within FCE. Each virtual module will provide career scope of specific construction/engineering discipline (e.g. land surveyor, building surveyor, quantity surveyor, architect, building service engineer, civil engineer), career path planning, and real-life examples of engineering/construction professional practitioners. Following each module, students are required to complete an associated online exercise to reinforce their understanding.

Each module will culminate in a flipped classroom session, resulting in a total of four sessions -- one per department. Given the large class size, students will engage in group-based, in-class discussions facilitated by the respective departments. The in-class discussions will further assist students in reflecting on their own career interests and assist them to map their development plan.

These discussions will serve as the foundation for a group presentation, for which students are required to prepare and submit a video recording that demonstrates their collective analysis and insights on industry trend and future outlook. They are encouraged to discuss the group presentation topic with the instructor during the in-class discussion.

In-class online quizzes

Four in-class online quizzes are scheduled for Weeks 2, 4, 6, and 8, each taking place at the end of the lecture and lasting 30 minutes. The four quizzes are intentionally designed to align with the modular structure of the course, which is jointly delivered by four separate departments. Each department is responsible for one specific module, and the content of each module is distinct and self-contained. These four departments represent key professional disciplines within the construction and engineering industry. Each contributes its unique perspective by delivering two lectures: the first introduces the fundamental principles of the discipline, and the second is a guest lecture focused on professional practices and real-world applications. To reinforce

	students' understanding, each in-class quiz is held at the end of the second session (i.e., the guest lecture) and is designed to assess knowledge specific to that module's content. The subject examiner coordinates with all departments to collect the relevant topics and ensures that the quizzes are aligned with the intended learning outcomes of the course. Each quiz comprises 15-20 multiple-choice (MC) questions, which are distributed randomly to ensure that each student receives a unique set of questions. Students are required to access these quizzes using their smartphones or laptops, integrating technology into the learning environment and allowing for immediate feedback on their performance.	
Student Study Effort Expected	Class contact:	
	▪ Inspirational Lectures/ Guest Lectures/ In-class discussions	39 Hrs.
	Other student study effort:	
	▪ Reading, studying and on-line exercise	40 Hrs.
	▪ "Pathfinder" virtual modules	4 Hrs.
	▪ Preparation for quizzes	26 Hrs.
	Total student study effort	109 Hrs.
Reading List and References	Migliaccio, G. C., Holm, L. (2018). Introduction to Construction Project Engineering. United Kingdom: CRC Press. Digital Transformation of the Design, Construction and Management Processes of the Built Environment. (2019). Germany: Springer International Publishing. Foxell, S. (2018). Professionalism for the Built Environment. United Kingdom: CRC Press LLC. Mirsky, R., Schaufelberger, J. (2022). Professional Ethics for the Construction Industry. United Kingdom: CRC Press. Yates, J. K., Castro-Lacouture, D. (2015). Sustainability in Engineering Design and Construction. United Kingdom: CRC Press.	

Note 1: Intended Learning Outcomes
Intended learning outcomes should state what students should be able to do or attain upon completion of the subject. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/ Indicative Syllabus
The syllabus should adequately address the intended learning outcomes. At the same time over-crowding of the syllabus should be avoided.

Note 3: Teaching/Learning Methodology
This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4: Assessment Method
This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method purports to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.