

## The Hong Kong Polytechnic University

### Subject Description Form

*Please read the notes at the end of the table carefully before completing the form.*

<b>Subject Code</b>	EEE5R03
<b>Subject Title</b>	Engineering Ethics and Academic Integrity
<b>Credit Value</b>	1
<b>Level</b>	5
<b>Pre-requisite/ Co-requisite/ Exclusion</b>	Nil
<b>Objectives</b>	<p>The objectives of the subject are to:</p> <ol style="list-style-type: none"> <li>1. Raise students' awareness of the importance of adhering high standards of academic integrity</li> <li>2. Enhance students' ability to critically analyse ethical issues and make appropriate ethical decisions.</li> </ol>
<b>Intended Learning Outcomes</b> <i>(Note 1)</i>	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> <li>1. Demonstrate knowledge and understanding of the concepts and principles of academic integrity and ethics.</li> <li>2. Demonstrate awareness and ability to analyse academic integrity and ethical issues, such as copyright and plagiarism, and act properly to avoid academic and ethical misbehaviours.</li> <li>3. Recognise important ethical issues and practices in a university context.</li> <li>4. Understand the implications and concerns on academic integrity raised by the latest technology, such as ChatGPT and other Generative Artificial Intelligence (GenAI) tools.</li> <li>5. Identify and deal with complex ethical and professional issues in discipline-specific settings, and be able to communicate effectively the issues to the stakeholders and the public.</li> <li>6. Critically analyse and discuss problem cases related to engineering ethics and academic integrity.</li> </ol>
<b>Subject Synopsis/ Indicative Syllabus</b> <i>(Note 2)</i>	<p><u>Keyword Syllabus</u></p> <ul style="list-style-type: none"> <li>• Introduction to engineering and research ethics – Needs for research ethics to the integrity and well-being of industry, professions, and community; overview of theories and methods in engineering and research ethics.</li> </ul>

	<ul style="list-style-type: none"> <li>• Ethical issues related to project collaboration, publication, and authorship – Responsibility for quality works; credit and responsibility of project collaborators; citation and acknowledgment; qualifications for authorship; engineering case studies.</li> <li>• Professional and research misconduct – Definition of professional and research misconduct; self-deception in misconduct; factors that undermine integrity; understanding and fostering responsible conduct; engineering case studies.</li> <li>• Involving human subjects and animals – The common rule for the protection of human subjects in research and professional functions; responsibility for experimental animals; requirements governing research and professional functions involving human subjects and animals; engineering case studies.</li> <li>• Rights and responsibilities regarding intellectual property – Individual credit and the ownership of innovation; copyrights, “Fair Use,” and the Digital Millennium Copyright Act; patents and trade secrets; property rights contrasted with credit for invention; patenting of inventions contrasted with publication of project result; engineering case studies.</li> <li>• Cyber ethics – Common threats to information and systems in the cyberspace; core values of cybersecurity: privacy, security, fairness, and accountability; potential value conflicts and solutions; ethical hacking and concerns; legislative framework: EU Data Protection Regulation; engineering case studies.</li> <li>• Ethical use of Generative AI – AI ethics; introduction of Generative AI and its ethical considerations in engineering research and professional functions; AI hallucination; technical efforts in fake, bias, and plagiarism identification; ethical responsibility of developers using generative AI; regulating generative AI and the AI Act; engineering case studies.</li> </ul>
<p><b>Teaching/Learning Methodology</b> (Note 3)</p>	<ul style="list-style-type: none"> <li>• Lectures: Formal classroom lectures will be given to introduce the concepts of engineering research ethics. Core principles of ethics will be illustrated with engineering cases. They support the intended learning outcomes 1 to 5. Since all lectures are important, <u>students need to achieve 100% attendance in the lectures to pass the subject.</u></li> <li>• Group discussions and quizzes: During the lecture, students will form groups to analyse and discuss various engineering ethics cases related to the topic of the lecture. Students also need to complete an online quiz after the lecture to show their understanding of the teaching material. They support the intended learning outcomes 1 to 6.</li> <li>• Case study and reflection: Students need to choose one of the problem cases in engineering ethics and academic integrity for in-depth analysis. The analysis result will be shared with other students in a presentation session. Students also need to analyse an ethical problem related to their research project/field of</li> </ul>

	professional work for the reflective study. They support the intended learning outcomes 1 to 6.							
<b>Assessment Methods in Alignment with Intended Learning Outcomes</b> <i>(Note 4)</i>	This subject will be assessed on a pass/fail grading system and will not be included in the GPA calculation. To pass the subject, students need to attend all lectures and score 50% or higher in the total marks.							
	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
			1	2	3	4	5	6
	1. Quizzes	20%	✓	✓	✓	✓	✓	
	2. Case study - Presentation	40%	✓				✓	✓
	3. Reflective writing	40%	✓				✓	✓
Total	100 %							
<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>Quizzes: Students will complete an online quiz after each lecture to show their understanding of the teaching material. They assess the intended learning outcomes 1 to 5.</p> <p>Case study presentation: The best way to learn engineering ethics and academic integrity is to analyse previous problem cases so that students can learn the lessons from them. A presentation session will be arranged for students to share with other students their analysis results. It assesses the intended learning outcomes 1, 5, and 6.</p> <p>Reflective writing: To assist students to sink in the discussion in the classes, they are required to submit a reflective report to detail their analysis of an ethical problem related to their research project/field of professional work. It assesses the intended learning outcomes 1, 5, and 6. The reflective writing assignment submissions will be marked by students' supervisors adopting a holistic approach.</p>								
<b>Student Study Effort Expected</b>	Class contact:							
	<ul style="list-style-type: none"> <li>Lecture and class activity</li> </ul>							13 Hrs.
	Other student study effort:							
	<ul style="list-style-type: none"> <li>Self-study and group work</li> </ul>							12 Hrs.
	<ul style="list-style-type: none"> <li>Assignment preparation</li> </ul>							10 Hrs.
	Total student study effort							35 Hrs.

<p><b>Reading List and References</b></p>	<ol style="list-style-type: none"> <li>1. Caroline Whitbeck (2011). <i>Ethics in Engineering Practice and Research</i>, Cambridge University Press.</li> <li>2. Lance Eliot (2023). <i>Generative AI ChatGPT And AI Ethics</i>, Lance B. Eliot.</li> <li>3. Markus Christen, Bert Gordijn, and Michele Loi (2020). <i>The Ethics of Cybersecurity</i>, Cham : Springer.</li> <li>4. Kristin Shrader-Frechette (1994). <i>Ethics of Scientific Research</i>, Lanham, Md.: Rowman &amp; Littlefield.</li> <li>5. University of California, San Diego (UC San Diego). <i>Resources for Research Ethics Education</i>, <a href="http://research-ethics.net">http://research-ethics.net</a>.</li> </ol>
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Note 1: Intended Learning Outcomes

Intended learning outcomes should state what students should be able to do or attain upon subject completion. 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, overcrowding 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 is intended to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.

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