

Subject Description Form

Subject Code	ENG3004
Subject Title	Society and the Engineer
Credit Value	3
Level	3
Pre-requisite/Co-requisite/Exclusion	Nil
Objectives	<p>This subject is designed for engineering students as a complementary subject on the role of the professional engineer in practice and their responsibilities toward the profession, colleagues, employers, clients, and the public. The objectives of the subject are to enable students to</p> <ol style="list-style-type: none"> 1. appreciate the historical context of modern technology and the nature of the process whereby technology develops and the relationship between technology and the environment, as well as the implied social costs and benefits; 2. understand the social, political, legal, and economic responsibilities and accountability of the engineering profession and the organizational activities of professional engineering institutions; 3. be aware of the short-term and long-term effects related to safety and health, and the environmental impacts of technology; 4. observe professional conduct, as well as the legal and other applicable constraints, related to various engineering issues; and 5. develop a strong vision to optimize their contribution to sustainable development.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to</p> <ol style="list-style-type: none"> a. identify and evaluate the effects of technology as it applies to the social, cultural, economic, legal, health, safety, and environmental dimensions of society; b. explain the importance of local and international professional training, professional conduct and ethics, and responsibilities in various engineering disciplines, particularly the Washington Accord; c. evaluate and estimate, in a team setting, the impact of contemporary issues, planned projects, and unforeseen technological advances related to engineers; effectively communicate and present the findings to laymen and peers.
Subject Synopsis/ Indicative Syllabus	<ol style="list-style-type: none"> 1. <u>Impact of Technology on Society</u> <p>Historical cases and trends of technological innovation explored through their impact on social and cultural developments of civilization and their commonalities.</p>

	<p>2. <u>Environmental Protection and Related Issues</u></p> <p>Roles of the engineer in energy conservation, ecological balance, and sustainable development.</p> <p>3. <u>Global Outlook for Hong Kong's Economy and Industries</u></p> <p>Support organizations, policies and their impacts on industrial and economic development in Greater China, the Pacific Rim, and the world.</p> <p>4. <u>Regulatory Organizations and Compliance</u></p> <p>Discussion of engineer's responsibilities within different regulatory frameworks and environments; Examples from various entities such as the Labor Department and the Occupational Health and Safety Council; Legal dimensions to engineering such as liability, contract law, and industrial legislation.</p> <p>5. <u>Professional Institutions</u></p> <p>Local and overseas professional institutions; Washington Accord and the qualifications and criteria of professional engineers.</p> <p>6. <u>Professional Ethics</u></p> <p>Prevention of bribery and corruption; The work of the Independent Commission Against Corruption (ICAC); Social responsibilities of engineers.</p>
<p>Teaching/Learning Methodology</p>	<p>Class comprises short lectures to provide essential knowledge and information on the relationships between society and the engineer under a range of dimensions.</p> <p>Other methods include in-class discussions, case studies, and seminars to develop students' in-depth analysis of the relationships.</p> <p>Each student will submit two assignments based on their weekly learning activities, which will be part of the subject's evaluation. The assignments will deal with important issues of social, cultural, economic, legal, health, safety, and environmental dimensions of society.</p> <p>Students are assembled into groups; throughout the course, they will work on engineering cases by completing the following learning activities:</p> <ol style="list-style-type: none"> 1. Case analysis where students explore the relationships between society and the engineering issues of a project under specific dimensions; 2. Construction and assembly of a case portfolio which includes <ol style="list-style-type: none"> i. Presentation slides ii. Feedback critiques iii. Individual Reflections 3. Final oral presentation

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed		
			a	b	c
	1. Continuous assessment	70%			
• Group weekly learning activities	(20%)	✓	✓	✓	
• Individual Assignments (2)	(20%)	✓	✓		
• Individual final presentation	(15%)	✓	✓		
• Individual reflection statement	(5%)	✓	✓		
• Group project	(10%)	✓	✓	✓	
2. Take-home Assignment	30%	✓	✓		
Total	100%				
<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The coursework requires students to work in groups to study cases from the perspectives of the eight dimensions in an engineering setting. Based on these exercises, students' ability to apply and synthesize acquired knowledge can be assessed through their performance during groups' discussion, oral presentations, and the quality of their portfolio reports on the case studies.</p> <p>The take-home assignment is used to assess students' critical thinking and problem-solving skills when working on their own and give students more time and flexibility to complete an assignment. It provides students the opportunity to review and extend what they have learnt in class and to check their understanding and progress.</p>					
Student Study Effort Expected	Class contact:				
	▪ Lectures and review		27 Hrs.		
	▪ Presentation		12 Hrs.		
	Other student study efforts:				
	▪ Research and preparation		55 Hrs.		
	▪ Report and Assignments writing		25 Hrs.		
	Total student study effort			119 Hrs.	

<p>Reading List and References</p>	<p>Reference Books & Articles:</p> <ol style="list-style-type: none"> 1. Education for Sustainable Development - An Expert Review of Processes and Learning, UNESCO, 2011 2. Poel, Ibo van de, and Lambèr M. M. Royakkers. Ethics, Technology, and Engineering : an Introduction. Wiley-Blackwell, 2011 3. Engineering-Issues, Challenges and Opportunities for Development, USECO, 2010 4. Engineering for Sustainable Development: Guiding Principles, Royal Academy of Engineering, 2005 5. Securing the future: delivering UK sustainable development strategy, 2005 6. Johnston, F S, Gostelow, J P, and King, W J, 2000, <i>Engineering and Society Challenges of Professional Practice</i>, Upper Saddle River, N.J.: Prentice Hall 7. Hjorth, L, Eichler, B, and Khan, A, 2003, <i>Technology and Society A Bridge to the 21st Century</i>, Upper Saddle River, N.J.:Prentice Hall 8. The Council for Sustainable Development in Hong Kong, http://www.enb.gov.hk/en/susdev/council/ 9. Poverty alleviation: the role of the engineer, http://publications.arup.com/publications/p/poverty_alleviation_the_role_of_the_engineer <p>Reading materials:</p> <p>Engineering journals:</p> <ul style="list-style-type: none"> - Engineers by The Hong Kong Institution of Engineers - Engineering and Technology by The Institution of Engineers and Technology <p>Magazines: Time, Far East Economic Review</p> <p>Current newspapers: South China Morning Post, China Daily, Ming Pao Daily</p>
---	---

(revised) June 2021