EE2066: ENGINEERS IN SOCIETY

Effective Term
Semester A 2024/25

Part I Course Overview

Course Title
Engineers in Society

Subject Code
EE - Electrical Engineering
Course Number
2066

Academic Unit
Electrical Engineering (EE)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
EE3012 Engineers in Society

Exclusive Courses
Nil

Part II Course Details

Abstract
Students will gain knowledge about the obligations, roles and professional conduct of engineers in a modern society. It stimulates students to develop a basic awareness of the legal, environmental and socio-economic factors that have a

significant impact on engineering design. Students will analyze these factors, evaluate professional responsibilities, apply critical thinking to real-world scenarios, and develop an understanding of ethical considerations in engineering practice. Industry professionals are invited to deliver some of the lectures, aiming to provide students with an understanding of social analysis adequate for the society in which they will work. Through engaging with lectures, case studies, and guest speaker sessions, students will cultivate insights into the social dimensions of engineering, equipping them to become responsible professionals capable of addressing the challenges in our rapidly evolving world.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Analyze the socio-economic and technological issues relating to local and global industries, including worldwide technology trends and innovation.		x	x	
2	Evaluate the impact of technology on society, economy, and the environment, while implementing principles of environmental protection, health, and safety in engineering practice.		x	x	
3	Apply principles of engineering design, effective presentation, and entrepreneurial thinking in professional contexts.		x	x	
4	Examine and resolve ethical dilemmas using professional codes of conduct in the context of contemporary science and technology.		x	x	

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Students engage with core concepts through instructor-led discussions, multimedia presentations, and in-class exercises on engineering ethics, societal impact, and professional responsibilities.	1, 2, 3, 4	3 hrs/week

2	Guest Speaker Sessions	Students interact with eminent professionals from various engineering fields, gaining practical insights into the social dimensions of engineering practice through Q&A sessions and post-lecture discussions.	1, 2, 3, 4	
3	Reflective Writing	Students engage in regular written reflections on course topics, connecting theoretical concepts to practical applications and personal experiences in engineering.	1, 2, 3, 4	

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Tests (min.: 2)	1, 2, 3, 4	20	
2	#Assignments (min.: 5)	1, 2, 3, 4	50	

Continuous Assessment (%)

70

Examination (%)

30

Examination Duration (Hours)

2

Additional Information for ATs

Remark:
To pass the course, students are required to achieve at least 30% in the coursework and 30% in the examination.

include individual technical report, group project presentation, and other components (e.g., in-class exercise and homework).

Assessment Rubrics (AR)

Assessment Task

Coursework

Criterion

Achievements in CILOs

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

1.1 Introduction to Local Industry
Overview of electronics, materials and IT industries in Hong Kong, and mainland China. The interaction and link of local industry with Pearl River Delta, and Greater China, Asia Pacific Region, Europe, North America and other newly industrialized countries. Current socio-economic issues in local industry, and its impact on engineering and manufacturing technology.

1.2 Society and Engineering
Economic, political and social structure of Hong Kong in relation to engineering activities. Role and obligation of an engineer towards society. Impact of engineering on societal development.

1.3 Product Engineering and Innovation
Quality assurance practices in Hong Kong and international standards. Product engineering skills: integration of design, research, development, production, marketing and sales. Technology transfer and management of intellectual property. Market competition: price, quality, delivery, product differentiation, and technological advantage.

1.4 Business and Entrepreneurship for Engineers
Product life cycle and market synamics. Fundamental elements of business in engineering sector. Sales / Marketing management for technical products. Entrepreneurship and start-up considerations for engineers.

1.5 Professional Ethics and Conduct
Professional ethics for engineers. Ethical decision-making frameworks. Case studies on illegal advantages, confidential information, conflicts of interest, and other ethical dilemmas in engineering practice.

1.6 Health, Safety, and Environmental Responsibilities
Engineer’ s duties for securing the health, safety and welfare of persons at work. Controlling dangerous substances and emissions. Environmental impact assessment and mitigation strategies.

1.7 Sustainable Engineering Practices
Principles of sustainable design, life cycle assessment, and circular economy concepts in engineering. Methods, products, and technologies to reduce, reuse, and recycle industrial wastes. On-site waste treatment and reuse strategies. Case studies in sustainable engineering.

1.8 Professional Career Advising

Industry professional talks on career development. SWOT analysis, manpower demand in the field. Graduate employment survey data. Continuing professional development and pathways to professional engineering registration.

1.9 Emerging Technologies and Societal Impact

Discussion on AI, IoT, blockchain, and other emerging technologies and their societal implications. Analysis of their societal, ethical, and economic implications. Responsible innovation practices.

1.10 Global Engineering Challenges

Analysis of major global issues such as climate change, urbanization, and resource scarcity from an engineering perspective. Role of engineers in addressing these challenges. International collaboration in engineering projects.

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	L. S. Hjorth, B. A. Eichler, A. S. Khan, J. A. Morello: Technology and Society – issues for the 21st century and beyond. (Pearson, 3rd edition, 2008)
2	Chengi Kuo: Business Fundamentals for Engineers, (McGraw-Hill, 1992)
3	J. D. Kemper: Engineers and Their Profession, (5th Ed. 2001)
4	Website of HKIE http://www.hkie.org.hk/~Eng/html/home/index.asp