

SEEM4066: PROFESSIONAL ENGINEERING PRACTICE

Effective Term

Summer Term 2023

Part I Course Overview

Course Title

Professional Engineering Practice

Subject Code

SEEM - Systems Engineering and Engineering Management

Course Number

4066

Academic Unit

Systems Engineering (SYE)

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

For normative 4-year student: must complete a minimum of 60 CUs to be eligible; For Advanced Standing I student: must complete a minimum of 30 CUs to be eligible; For Advanced Standing II student: must complete a minimum of 15 CUs to be eligible

Precursors

Nil

Equivalent Courses

MEEM4066/MBE4066/MNE4066/BME4066/JC4066 Professional Engineering Practice

Exclusive Courses

Nil

Part II Course Details

Abstract

This course provides an over-arching coverage of the role of engineers with essential knowledge to be professional engineer in society. It strengthens students' assimilation of fundamental engineering and technical subject matters of a BEng programme and their appreciation of modern engineering's technology, political, environmental and socio-economic factors (economic, ethics, etc.) implications. With the increasing integration of the industrial fabrics of Hong Kong and Southern China, Guangdong-Hong Kong-Macao Greater Bay Area and One Belt One Road initiatives, the course will also examine on the role of engineering in advance manufacturing, entrepreneurship, startup management, testing and certification, as well as, innovation and technology disciplines.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Recognise and appreciate the socio-economic, policy and advance technological issues relating to the industry – Guangdong-Hong Kong-Macao Greater Bay Area (GBA)	15			
2	Discuss the role of an engineering in sustainable development, QHES management, innovation and technology management in the industry	20			
3	Clarify the legal responsibilities and ethical obligations of a professional engineer such as in testing and certification industry and IP issues	20			
4	Describe the role of engineering in the development of advanced manufacturing, innovation and technology in Hong Kong and GBA	25	x		
5	Communicate effectively the outcome of group project discussion and individual proposal	20	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.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	The TLAs are made up of a mixture of lectures and a series of groupwork and individual assignments in tutorials. Professional engineers, eminent industrialists and ICAC officers will be invited as guest lecturers to enrich students' learning of the CILO 1-4. Students' learning on each lecture topic is complemented by selected case studies and follow-up groupwork or individual assignments.	1, 2, 3, 4	2 hours/week
2	Tutorial(Group Work Individual Work)	Tutorials provide the forum for case analyses, topical discussions and interactions among students and tutor.	1, 2, 3, 4, 5	1 hour/week
3	Consultation hour	1 hour per week will be scheduled for clearing doubts of students who can meet the teaching staff on an individual or small group basis in his/her office.		13 hrs/semester

Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Group projects in Workshops(Case analyses, discussions and presentation)Students will be working in groups where they will be given selected topics related to engineering practice such as professional accreditation, ethics, case studies, etc. The group topic should be confirmed by Week 2 and approved by the instructor. Students are required to conduct analysis and discuss selected cases, and present their findings to the class toward the end of the semester.	1, 2, 3, 4, 5	40
2	Individual assignment(Mini essays and presentation slide)In addition to the group report, each member of the group has to summarise their own contributions in 1-2 pages towards the completion of the group paper. Individuals should explain what their study within 5-6 slide of ppt.	1, 2, 3, 4, 5	60

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)**Assessment Task**

Coursework

Criterion

Group projects in Workshops:Case analyses, discussions and presentation

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

Assessment Task

Coursework

Criterion

Individual assignment: Mini essay and presentation slide.

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

Industrial and advanced manufacturing environment of Hong Kong, China and the world

Engineers in private practices and public sectors - sustainability development, quality, safety and health, professional ethics and legal responsibilities

Innovative and creative thinking – innovation management, patents and copyrights

Engineers in society – Entrepreneurship, Startup Ecosystem environment protection and social responsibilities

Reading List

Compulsory Readings

Title	
1	Nil

Additional Readings

	Title
1	Margaret A. White & Garry D. Bruton (2007) “The Management of Technology Innovation: A Strategic Approach” , Thomson South-Western
2	C. Touzard (2008) “Going Green in Hong Kong 2nd ed” , ECOSOL
3	Nancy R. Tague (2005) “The Quality Toolbox 2nd ed” , ASQ
4	Donald C. Singer, Editor (2001) “A Laboratory Quality Handbook of Best Practices and Relevant Regulations” , ASQ
5	Karen Gadd (2011) “TRIZ for Engineers: Enabling Inventive Problem Solving” , Wiley
6	C.Y. Yang & W. Cai (2013) “Extenics : Theory, Methods and Applications” , Science Press Beijing
7	Peter Thiel (2014) “Zero to One: Notes on Startups, or How to Build the Future”
8	Peter F. Drucker (1985) “Management: Tasks, Responsibilities, Practices” , Harper Perennial
9	Kai-Fu Lee (2018) “AI Super-Powers: China, Silicon Valley and the New World Order” , Houghton Mifflin Harcourt
10	Herbert P.K. Chia (2017) “The Nature of Big Data” , Beijing United Publishing (In Chinese)
11	Alexander Osterwalder & Yves Pigneur (2010) “Business Model Generation : A Handbook for Visionaries, Game Changers, and Challengers” , Wiley
12	ICAC (2011) “Corruption Prevention Guide for Testing and Certification Industry”