SYE2066: PROFESSIONAL ENGINEERING PRACTICE

Effective Term
Semester A 2024/25

Part I Course Overview

Course Title
Professional Engineering Practice

Subject Code
SYE - Systems Engineering
Course Number
2066

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
Nil

Precursors
Nil

Equivalent Courses
ADSE2066 Professional Engineering Practice

Exclusive Courses
Nil

Part II Course Details

Abstract

In this course, students learn an over-arching coverage of the role of engineers with essential knowledge to be professional engineer in modern society. Students strengthen their assimilation of fundamental engineering and technical subject matters of the BEng in Intelligent Manufacturing Engineering major and their appreciation of modern engineering's technology, environmental and socio-economic factors (economic, ethics, etc.) implications.

With the increasing integration of the industrial fabrics of Hong Kong, Guangdong-Hong Kong-Macao Greater Bay Area, and Greater China, students will also learn the role of engineering related to advanced manufacturing, entrepreneurship, start-up management, professional services, as well as, innovation and technology disciplines.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe and apply basic engineering concepts and principles to analyze and improve simple manufacturing systems.	35	x		
2	Describe the role of an engineer in sustainable development, environmental protection, health and safety management, innovation and technology management in the manufacturing industry.	15	x		
3	Describe the legal responsibilities and ethical obligations of a professional engineer in modern society.	15	x		
4	Engage in staying abreast of contemporary issues in engineering.	10	x		
5	Communicate effectively the outcome of group work and individual assignment.	10	x	x	
6	Engage in life-long learning.	15	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 will engage in lectures, in-class exercises, in-class Q&A and discussions to attain CILOs 1-6.	1, 2, 3, 4, 5, 6	3 hours/week

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Case studies, mini-projects, homework sets	1, 2, 3, 4, 5, 6	45	

Continuous Assessment (%)
45

Examination (%)
55

Examination Duration (Hours)
2

Additional Information for ATs
For a student to pass the course, at least 30% of the maximum mark for the examination should be obtained.

Assessment Rubrics (AR)

Assessment Task
Coursework

Criterion
Achieve all MILOs by group work and individual assignments

Excellent (A+, A, A-)
High (overall score more than 80%)

Good (B+, B, B-)
Significant (overall score more than 60%)

Fair (C+, C, C-)
Moderate (overall score more than 40%)

Marginal (D)
Basic (overall score more than 30%)

Failure (F)
Not even reaching marginal levels (overall score less than 30%)

Assessment Task
Examination

Criterion
Achieve all MILOs by reflected by examination results

Excellent (A+, A, A-)
High (score more than 80%)

Good (B+, B, B-)
Significant (score more than 60%)

Fair (C+, C, C-)
Moderate (score more than 40%)

Marginal (D)

Basic (score more than 30%)

Failure (F)

Not even reaching marginal levels (score less than 30%)

Part III Other Information

Keyword Syllabus

- Industrial and advanced manufacturing environment of Hong Kong, China and the world
- Basic concepts and principles for process analysis in manufacturing systems.
- Engineers in society, private and public sectors - sustainability development, quality, safety and health, professional ethics and legal responsibilities
- Innovative and creative thinking. and their importance to life-long learning
- Engineers in society – Entrepreneurship, Start-up ecosystem, Environment protection and social responsibilities
- Current and future development of engineers in Intelligent Manufacturing Engineering discipline, and career prospect

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	Karen Gadd (2011) “TRIZ for Engineers: Enabling Inventive Problem Solving”, Wiley
2	Peter Thiel (2014) “Zero to One: Notes on Startups, or How to Build the Future”
3	Kai-Fu Lee (2018) “AI Super-Powers: China, Silicon Valley and the New World Order”, Houghton Mifflin Harcourt
4	Engineering peace and justice : the responsibility of engineers to society by P. Aarne Vesilind. New York ; London : Springer, 2010.
5	Alexander Osterwalder & Yves Pigneur (2010) “Business Model Generation : A Handbook for Visionaries, Game Changers, and Challengers”, Wiley
6	Ethics in science and engineering by James G. Speight and Russell Foote. Hoboken, N.J. : Wiley ; Salem, Mass. : Scrivener, c2011.
7	Factory Physics, 3rd Edition, Wallace Hopp and Mark Spearman, Waveland Press, 2011.