BME2066: PROFESSIONAL ENGINEERING PRACTICE

Effective Term
Semester B 2024/25

Part I Course Overview

Course Title
Professional Engineering Practice

Subject Code
BME - Biomedical Engineering
Course Number
2066

Academic Unit
Biomedical Engineering (BME)

College/School
College of Biomedicine (BD)

Course Duration
One Semester

Credit Units
3

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

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Normative 4-year degree students must complete a minimum of 72 CUs to be eligible
Advanced Standing I students must complete a minimum of 42 CUs to be eligible
Advanced Standing II students must complete a minimum of 21 CUs to be eligible

Precursors
Nil

Equivalent Courses
BME4066 Professional Engineering Practice

Exclusive Courses
Nil

Part II Course Details

Abstract

This course provides an over-arching coverage of the role of engineers in society. It strengthens students' assimilation of fundamental engineering and technical subject matters of a BEng programme and their appreciation of modern engineering's economic, political, environmental and ethical implications. With the increasing integration of the industrial fabrics of Hong Kong and Southern China, the course will also examine on the role of engineering in the past and future development of the biomedical manufacturing, biosafety, sustainability, and healthcare industry in Hong Kong but with a global and societal context.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Explain the impact of technology and engineering on the daily life, economy, and politics of today’ s society.		x	x	
2	Discuss the role of an engineer in environmental protection and health and safety in the workplace.		x	x	
3	Justify the legal responsibilities and ethical obligations of a professional engineer.		x	x	
4	Describe the role of engineering in the development of related industries in Hong Kong, China, and globally.			x	
5	Demonstrate effective group and individual communication skills.			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 develop the understanding of professional biomedical engineers. Students will participate in talks hosted by invited professional engineers, eminent industrialists and ICAC officers. Students will discuss with their peers each lecture topic via selected case studies.	1, 2, 3, 4	3 hrs/week for 13 weeks
2	Lab (Group Work)	Students will engage in case analyses and discussions of some medical devices.	1, 2, 3, 4, 5	3 hrs/week for 3 weeks

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Group Work	1, 2, 3, 4, 5	50	Proposal write-up, Case Analyses and Discussions + Presentation. All together each group work will be assessed 3 times during the stage of project formation, presentation and the final write-up.

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

For a student to pass the course, at least 30% of the maximum mark for both coursework and examination should be obtained.

Assessment Rubrics (AR)

Assessment Task

Group Work

Criterion

Ability to Identify and Balance between engineering development with broad spectrum of non-engineering issues including but not limited to cultural, professional, legal, social, economic, safety and health, and environmental aspects.

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
Examination

Criterion
- Ability to identify broad spectrum of non-engineering issues including but not limited to cultural, professional, legal, social, economic, safety and health, and environmental aspects.
- Ability to apply engineering ethics in engineering related works.
- Ability to balance between engineering ethics and competitiveness.

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
- Related industrial environment of Hong Kong, China and the world.
- Engineers in private practices and public sectors - safety and health, professional ethics and legal responsibilities.
- Innovative and creative design – patents and copyrights.
- Engineers in society – environment protection and social responsibilities.
- Role of Biomedical Engineering in creating a better and sustainable society

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	Charles E. Harris, Michael S. Pritchard & Michael J. Rabins, Engineering Ethics: Concepts and Cases, Belmont, California: Wadsworth, ISBN: 978-0495502791.
2	Charles B. Fleddermann, Engineering Ethics, Upper Saddle River: Prentice Hall, ISBN: 9780132145213.
3	Carl Mitcham & Shannon R. Duval, Engineer's Toolkit: A First Course in Engineering-Engineering Ethics, Upper Saddle River, N.J.: Prentice Hall, ISBN: 978-0805364361.