City University of Hong Kong
Course Syllabus

offered by
Department of Mechanical Engineering
with effect from Semester A 2019 / 2020

Part I Course Overview

Course Title:	Product Health, Safety, Environmental (HSE) Standards and Compliance
Course Code:	JC4058
Course Duration:	1 semester
Credit Units:	3 credits
Level:	B4
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites[#]: *(Course Code and Title)*	SEEM2039 Introduction to Total Quality Engineering
Precursors: *(Course Code and Title)*	MBE3061/MNE3061 Instrumentation and Testing Technologies **or** MBE3120/MNE3120 Measurement and Instrumentation, **or** SEEM3062 Quality Engineering I/SEEM3102 Quality Engineering
Equivalent Courses: *(Course Code and Title)*	Nil
Exclusive Courses: *(Course Code and Title)*	Nil

[#]Prerequisites which are not part of the Major Requirement are waived for students admitted with Advanced Standing.

Part II Course Details

1. Abstract

(A 150-word description about the course)

The aim of this course is to develop a broad understanding of the requirements of various national/international standards of product health, safety, and environmental (HSE) performance. Design principles and testing methodologies of ensuring their effective demonstration and continual compliances will be introduced.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	*A2*	*A3*
1.	**Identify** and **describe** the basic requirements of product health, safety and environmental performance, and their importance in international trade.		✓	✓	
2.	**Elaborate** and **apply** principles of designing product for health, safety and environmental compliance.		✓	✓	
3.	**Identify** and **outline** appropriate testing methods of assuring product conformance of health, safety and environmental requirements stipulated in national/ international and industry-specific standards.			✓	
4.	**Perform** and **report** simple safety and environmental testing of commercial products for regulatory compliance.			✓	
5.	**Describe** and **audit** the requirements and implementations of an integrated quality, health, safety and environmental management system.			✓	
** If weighting is assigned to CILOs, they should add up to 100%.*		N.A.			

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 self-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.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.					Hours/week (if applicable)
		1	2	3	4	5	
Lecture	Learning through teaching is primarily based on lectures. Mini-lectures and small-group exercises will be used to facilitate conceptual understanding of the rationale and requirements of various product health, safety and environmental, and management standards.	✓	✓	✓	✓	✓	2 hrs/week
Tutorial	The team-based laboratory exercises provide students with the opportunities to understand, perform and report simple safety and environmental testing of toys and electrical products for regulatory compliance. For examples : • health : nickel release BS EN 1811, trace metal migration ISO8124–3 • safety : toys flammability ISO8124–2, PCB flammability UL94 • environmental : cadmium content BS EN 1122, paint heavy metals ASTM F963-07	✓	✓	✓	✓	✓	3 hrs/week for 2 weeks
Laboratory Works and Report							3 hrs/week for 3 weeks

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.					Weighting*	Remarks
	1	2	3	4	5		
Continuous Assessment: 40%							
Test	✓	✓		✓	✓	10%	
Laboratory Reports		✓	✓	✓	✓	30%	3 reports to be submitted
Examination: 60% (duration: 2 hours)							
** The weightings should add up to 100%.*						100%	

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

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Fair (C+, C, C-)	Marginal (D)	Failure (F)
1. Test	Ability to describe the basic requirements, compliance testing and certification of product health, safety and environmental performance introduced in the lectures.	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Laboratory Reports	Ability to understand, perform and report the findings of product testing for regulatory compliance.	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Examination	Ability to demonstrate both conceptual understanding of the requirements stipulated in the international and industry-specific standards and the practical application of product health, safety, and environmental compliance methodologies and systems.	High	Significant	Moderate	Basic	Not even reaching marginal levels

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword Syllabus

(An indication of the key topics of the course.)

- Introduction to global product and management system standards and compliance requirements
- Design for safety and environment principles and practices
- Design for electrical safety such as CE Marking Directive 93/68/EEC
- Product life cycle and life cycle assessment
- WEEE, RoHS, EuP and REACH Directives
- Industry-specific product safety, health and environmental standards and testing methods
- ISO 14000 Environmental Management System
- Developing and Auditing Integrated Management Systems

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

1.	Eberhard Abele, Reiner Anderl and Herbert Birkhofer, Environmentally-Friendly Product Development, Springer, 2005.
2.	Jimmy Tzimenakis and Dave Holland, Electrical Product Safety, Newnes, 2000.
3.	Pranab Kr. Nag., The Management Systems : Quality, Environment, Health & Safety, Quest Publications, 2002.
4.	ISO 9000 Quality Management System, International Organization for Standardization (ISO).
5.	ISO 14000 Environmental Management System, International Organization for Standardization (ISO).
6.	Other relevant ISO, BS, EN, IEC and ASTM standards of product health, safety, and environmental compliance.

Online Resources:

Course Website available on the CANVAS throughout the semester.