City University of Hong Kong
Course Syllabus

offered by College/School/Department of Electrical Engineering
with effect from Semester A in 2020/2021

Part I Course Overview

Course Title:	Wireless Connectivity in Modern Society
Course Code:	GE1339
Course Duration:	One Semester (13 weeks)
Credit Units:	3
Level:	B1
Proposed Area: *(for GE courses only)*	☐ Arts and Humanities ☐ Study of Societies, Social and Business Organisations ☐ Science and Technology
Medium of Instruction:	English
Medium of Assessment:	English
Prerequisites: *(Course Code and Title)*	Nil
Precursors: *(Course Code and Title)*	Nil
Equivalent Courses: *(Course Code and Title)*	Nil
Exclusive Courses: *(Course Code and Title)*	Nil

Part II Course Details

1. Abstract

(about 150 words to describe the course content and types of learning activities)

Behaviors of sharing message, music, video, and information bring the high demand on broadband connectivity in our modern city. People in office, school, and public areas would like to keep active status and chat with others by the means of connecting to internet, 3G, 4G or LTE services on mobile phones, and any related communicating application programs on personal devices. In this course, students will recognize how the contemporary wireless technologies change our daily life communications. The range covered will include fundamental concepts and history of radio systems, communications, and network. The students will be assessed by case studies, quizzes, and project presentation to demonstrate their newly acquired knowledge. The course distributes an introductory element to enrich students' creativity, knowledge of technology transfer, and personal development.

This course aims to enable students to have a broader understanding of recent wireless technologies in our daily life. The students after taking the course will have the basic comprehension of the science and technologies related to various communication systems including satellite services, global navigation, mobile network, WiFi, RFID, Bluetooth and NFC. The student will learn the impact and influence of wireless technologies and related applications on modern society.

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.	Describe traditional communication systems and modern wireless systems		√	√	
2.	Identify general technologies for building up a communication system from large-scaled point-to-point applications, medium-sized broadcast, to small device short-ranged communications.		√	√	
3.	Evaluate general trends in tech products, applications, pricing and services to ethical issues.			√	√
4.	Analyse and compare the difference among the modern wireless systems. Explain the impact of the wireless technology on daily life.		√	√	√

** If weighting is assigned to CILOs, they should add up to 100%.*

 # Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

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	
Lectures	It is a large-class activity involving the entire class. The content of a specific topic related to CILO is to be delivered by the instructor. These will be mixed with broadcasts of selected clips from the wealth of online resources.	√	√	√	√	3 hrs/week
In class works	It includes case studies, short questions, and applications based on lecture or online materials.		√	√		
Group presentation	It is a small-group activity to let students present their knowledge and findings on assigned group-based tasks. Students are required to submit a report after completing the tasks.			√	√	

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		
Tests (min.: 2)	√	√	√	√	30%	Tests are based on lectures and daily life applications to strengthen students' understanding.
Assignments (min: 3)	√	√	√		10%	Short questions will be given in the lesion. The questions are related to lecture and daily life applications to strengthen students' understanding.
Project Presentation		√	√	√	10%	Students in groups will work on an assigned task for selected topics. This is to provide opportunity for student to strengthen and enhance their teamwork spirit, communication skills, and critical thinking.
Examination	√	√	√	√	50% (Duration: 2 hrs)	Examination is to assess students' learning on all the class materials.
					100%	

** The weightings should add up to 100%.*

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

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)
In class works	Achievement in CILO	High	Significant	Moderate	Basic	Not even reaching marginal levels
Quiz	Achievement in CILO	High	Significant	Moderate	Basic	Not even reaching marginal levels
Project Presentation	Achievement in CILO	High	Significant	Moderate	Basic	Not even reaching marginal levels
Project Report	Achievement in CILO	High	Significant	Moderate	Basic	Not even reaching marginal levels
Examination	Achievement in CILO	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

Cellular radio, GPS, WiFi, RFID, Bluetooth, Octopus-card system, and NFC (near-field communications).

Topics:

1. History of wireless communications
2. Revolution of data transfer from message, voice, image to video
3. Wireless communications and related applications
4. Short range communications
5. Long distance communications
6. High speed video transmission
7. Emerging wireless technology
8. Wireless in biomedical treatment
9. Wireless product designs
10. Future in wireless

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.)

1.	Nil
2.	

2.2 Additional Readings

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

1.	Jorge L. Olenewa, Guide to Wireless Communications, Third Edition, Course Technology, 2014.
2	William Webb, "Wireless Communications: The Future", *Wiley*, 2007.

Online Resources:

[1] "The business value of wireless technology": http://smallbusiness.chron.com/business-value-wireless-technology-904.html

[2] "Wireless technology will improve life quality": http://infpower.wordpress.com/

[3] "Timeline of radio": http://en.wikipedia.org/wiki/Timeline_of_radio

[4] "Wireless": http://en.wikipedia.org/wiki/Wireless

[5] "Evolution of mobile phones": http://www.hongkiat.com/blog/evolution-of-mobile-phones/

[6] "RFID": http://en.wikipedia.org/wiki/Radio-frequency_identification

[7] "The MIT Research Vault: 7 wireless technologies of the future": http://www.crn.com/slide-shows/networking/240009031/the-mit-research-vault-7-wireless-technologies-of-the-future.htm?pgno=1

Annex
(for GE courses only)

A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:

GE PILO	**Please indicate which CILO(s) is/are related to this PILO, if any** ***(can be more than one CILOs in each PILO)***
PILO 1: Demonstrate the capacity for self-directed learning	CILO 1 – 4[1]
PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology	CILO 1 – 4[2]
PILO 3: Demonstrate critical thinking skills	CILO 1 – 4[3]
PILO 4: Interpret information and numerical data	CILO 2 – 4[4]
PILO 5: Produce structured, well-organised and fluent text	
PILO 6: Demonstrate effective oral communication skills	CILO 1 – 4[5]
PILO 7: Demonstrate an ability to work effectively in a team	
PILO 8: Recognise important characteristics of their own culture(s) and at least one other culture, and their impact on global issues	
PILO 9: Value ethical and socially responsible actions	
PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation	CILO 2 – 4[6]

GE course leaders should cover the mandatory PILOs for the GE area (Area 1: Arts and Humanities; Area 2: Study of Societies, Social and Business Organisations; Area 3: Science and Technology) for which they have classified their course; for quality assurance purposes, they are advised to carefully consider if it is beneficial to claim any coverage of additional PILOs. General advice would be to restrict PILOs to only the essential ones. (Please refer to the curricular mapping of GE programme: http://www.cityu.edu.hk/edge/ge/faculty/curricular_mapping.htm.)

[1]PILO 1: The course is drafted in such a way to avoid the heavy use of discipline -specific and esoteric jargon. Basic concepts in each CILO are first introduced and students are thereafter

challenged to research and apply these concepts to come up with their own original assessments of key questions (which are broadly interdisciplinary) posted by the instructor. CILOs 1 – 4, taken as a whole, address knowledge domains that lie between disciplines; students will be pushed to form their own integrated view of holding these different perspectives together in an interconnected way.

[2]PILO 2: Having grasped the basic science related to an important material in this course, students will be challenged to see how the science of a product goes hand in hand with the both the business (CILOs 1 – 2) and sociological (CILOs 3 – 4) aspects surrounding it. Hence students will be exposed to methodologies of inquiry beyond science and technology to also include business and the social sciences.

[3]PILO 3: Following on from PILO 2, not only is the student exposed to the basic key questions posed by the social sciences, business sciences, and technology, but challenged to draw connections between them pursuant to achieving truly integrated learning.

[4]PILO 4: Students will learn to interpret information through each of home assignments, quizzes and group discussions. Particularly for the group projects based on CILOs 2 & 4 focusing on the relevance of wireless-technology trends and analyses on the development of high-tech corporations, students will learn to interpret numerical data. The student will acquire a grasp of the physical limitation in wireless systems in relation to the practical applications through the realistic data analyse (CILO 4).

[5]PILO 6: At the end of in-class discussions (ATs for CILOs 2, 3 & 4), each team will give an oral presentation of their collective findings. All group members will be expected to contribute during the discussion, a group representative will present the final findings to the rest of the classmates. In addition, a mini project will be assigned (ATs for CILOs 2 & 3), it is a group-based project. All group members will be expected to present their collective conclusions to the rest of the classmates.

[6]PILO 10: CILOs 1-3 are concerned with 3 distinct concepts – social and ethic impact of high technology, technology business (particular in wireless industry) growth analysis, the relationship between pricing trends and technical advancements. Selected real-life case studies given by the instructor will be shared with students. The student will learn how to make an original scholastic contribution, innovations, and inventions to become real products, systems, and business. The student will be guided on a path of discovering and learning towards reaching his own conclusions to important and current issues, imbuing a sensing of accomplishment.

B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.

Selected Assessment Task
Examination Papers