City University of Hong Kong
Course Syllabus

offered by Division of Building Science and Technology
with effect from Semester A 2018/19

Part I Course Overview

Course Title:	Building Electrical Science
Course Code:	BST12513
Course Duration:	1 semester
Credit Units:	3 credits
Level:	A1
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)*	BST11513 Electrical Science
Exclusive Courses: *(Course Code and Title)*	Nil

Part II Course Details

1. Abstract

(A 150-word description about the course)

This course aims to interpret the properties of basic electrical property in DC/AC circuits. Students are expected to analyse electric circuits by network theorems, the performance of A.C. electrical power supply and distribution systems by phasor approach and the operating performance of transformers and motors.

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.	interpret the properties of basic electrical property in DC/AC circuits.			✓	
2.	analyse electric circuits by network theorems.			✓	
3.	analyse the performance of A.C. electrical power supply and distribution systems by phasor approach.			✓	
4	analyse the operating performance of transformers and motors.			✓	
** If weighting is assigned to CILOs, they should add up to 100%.*		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	
Pre-Class Study*	A Pre-Class Study is a combination of a selected text book reading and a pre-seminar quiz which requires students to read relevant text book section and complete an online quiz before a class.	✓	✓	✓	✓	
Lecture (Average class size: around 50 students)	Lecture is an in-class activity in groups involving oral presentation by lecturers and discussion with students on a selected topic through illustrating exercises, real-life examples and question generation by the students and answering by peers or by the lecturer.	✓	✓	✓	✓	3 hrs/wk
Home Assignment*	A home assignment is a combination of case problems and/or calculation exercises (one is a group assignment and the other two are individual assignments)	✓	✓	✓	✓	

* This will not contribute to any contact hour.

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		
Continuous Assessment: 40 %						
Group Assignment	✓				10%	
2 x individual assignment	✓	✓	✓		20% (10% per assignment)	
Test		✓	✓	✓	10%	
Examination: 60 % (duration: 2.5 hrs, if applicable)						
** The weightings should add up to 100%.*					100%	

Note: A student must obtain a minimum mark of 35 in both coursework and examination components and an overall mark of 40 to pass the course.

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. Group assignment	Ability to discover and analyse the building application in electrical science.	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. Individual assignment	Ability to discover and analyse building electrical science.	High	Significant	Moderate	Basic	Not even reaching marginal levels
3. Test	Ability to analyse the electrical properties in DC/AC circuits.	High	Significant	Moderate	Basic	Not even reaching marginal levels
4. Examination	Ability to analyse the electrical properties in electrical science.	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.)

1. Electromagnetism: Faraday's law; Lenz's law; hysteresis loops; leakages; fringing and losses.
2. Network theorems: Kirchhoff's First and Second law, Thévenin's theorem, superposition theorem
3. A. C. circuit theories and analysis: induced electro-motive force; single-phase and three-phase circuits; phasor approach and power calculations.
4. Principle and operations of electrical equipment: single-phase and three-phase transformers; three-phase motors.

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.	Hughes Edward, *Hughes Electrical and Electronic Technology (9th ed).* Pearson Education Limited

2.2 Additional Readings

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

1.	Syed A. Nasar, Electric machines and Power Systems, Volume I, Electric machines, McGraw-Hill Series
2.	Colin D. Simpson, Introduction to Electrical Circuits and Machines, Prentice Hall
3.	Charles I. Hubert, Electric Circuits AC/DC An Integrated Approach, McGraw McGraw-Hill Series