**City University of Hong Kong**
**Course Syllabus**

**offered Division of Building Science & Technology**
**with effect from Semester A 2018/19**

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**Part I Course Overview**

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|---|---|
| **Course Title:** | Building Services |
| **Course Code**: | BST22611 |
| **Course Duration:** | 1 Semester |
| **Credit Units**: | 3 Credits |
| **Level**: | A2 |
| **Proposed Area:** *(for GE courses only)* | ☐ Arts and Humanities<br>☐ Study of Societies, Social and Business Organisations<br>☐ 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)* | BST21611 Building Services |
| **Exclusive Courses**: *(Course Code and Title)* | NIL |

## Part II Course Details

### 1. Abstract

*(A 150-word description about the course)*

This course aims to provide students with knowledge of building services systems in terms of supervision, design and applications in buildings.

### 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. | Understand and select common water supply, and above ground drainage systems for buildings. | 10% | ✓ | | |
| 2. | Evaluate the suitability of heating, ventilation and air-conditioning systems and master energy saving for various building types. | 35% | ✓ | | |
| 3. | Evaluate and apply fire services systems for various building types. | 20% | ✓ | | |
| 4. | Consider common electrical power distribution systems and analyse their application in buildings. | 20% | ✓ | | |
| 5. | Describe common vertical transportation systems in buildings. | 10% | ✓ | | |
| 6. | Realize the necessity of services coordination | 5% | ✓ | | |
| | | 100% | | | |

** 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 | 5 | 6 | |
| Lecture (Average class size: around 50 Students) | Lecture is major in-class teaching and learning activities in which lecturer would explain the selected topics by oral presentation, and would discuss with students through case problems and real-life examples | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 3 hr/wk |
| Study reports | Case problem for guided self-learning, and reflections of their understanding of the intended subjects. Students are required to submit one group and two individual study reports upon completion of the study/investigation. | | ✓ | | ✓ | | ✓ | |
| Test | To review students' ability to understand the intended subjects | ✓ | ✓ | ✓ | ✓ | ✓ | | |

## 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 | 6 | | |
| Continuous Assessment: 40% | | | | | | | | |
| Study reports | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 30% (10% per report) | A student must obtain a minimum mark of 35 in both coursework and examination and an overall mark of 40 to pass the course |
| Test | ✓ | ✓ | ✓ | ✓ | ✓ | | 10% | |
| Examination | ✓ | ✓ | ✓ | ✓ | ✓ | | 60% | |
| Examination: 60% (duration: 2.5 hours ) | | | | | | | | |
| ** The weightings should add up to 100%.* | | | | | | | 100% | |

## 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. Study reports | Capacity for self-directed learning to understand the principles of heating, ventilation, and air-conditioning system; principles of fire protection and plumbing systems; principles of distribution systems and to findings in an organized and systematic manner. | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| 2. Test | Capacity to understand and describe basic building services systems and applications | High | Significant | Moderate | Basic | Not even reaching marginal levels |
| 3. Examination | Capacity to compare various building services systems and to select appropriate systems for practical applications | 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.)*

Water Supply and Drainage Systems: Water supply to high-rise buildings. Cold and hot water systems. Soil waste and vent. Sanitary fittings.
Heating, Ventilating and Air-Conditioning Systems: Ventilation requirements. Mechanical ventilation. Refrigeration. Unitary, split and central air-conditioning systems. Heat pumps. Heat recovery.
Fire Services Systems: Fire protection requirements. Fire extinguishers. Hose reels and fire hydrant system. Sprinkler system. Automatic fire alarm detection system.
Electric Power Supply Systems: Electrical power supply in Hong Kong. Electrical power distribution system requirements in buildings.
Vertical Transportation Systems: Lifts and escalators: construction, building requirements, builder's work.
Services coordination: Building's work, site coordination, critical path, means of design and construction coordination

## 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.)*

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|---|---|
| 1. | Stein, B., Reynolds, J.S., McGuinness, W.J. (2005) Mechanical and Electrical Equipment for Buildings, Updated version. Hoboken, N.J.: Wiley |
| 2. | Hall, F. (1994) Building Services and Equipment, Volumes 1 to 3. Updated version, Essex: Longman |
| 3. | Chadderton, D.V. (2000) Building Services Engineering, Updated version, London, New York: E & FN Spon |
| 4. | Greeno, R. (1997) *Building Services, Technology and Design*, Updated version, Harlow, Essex: Addison Wesley Longman |

### 2.2 Additional Readings

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

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| 1. | Code of Practice for Energy Efficiency of Lighting Installations: http://www.emsd.gov.hk/emsd/e_download/pee/lightingcop_2007.pdf |
| 2. | Code of Practice for Energy Efficiency of Air Conditioning Installations: http://www.emsd.gov.hk/emsd/e_download/pee/accop_2007.pdf |
| 3. | Code of Practice for Energy Efficiency of Electrical Installations 2007: http://www.emsd.gov.hk/emsd/e_download/pee/eleccop_2007.pdf |
| 4. | Code of Practice for Energy Efficiency of Lift & Escalator Installations: http://www.emsd.gov.hk/emsd/e_download/pee/lift_esccop_2007.pdf |
| 5. | Handbook on Plumbing Installation: http://www.wsd.gov.hk/filemanager/en/content_150/HBonPIB.pdf |
| 6. | Codes of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment: http://www.hkfsd.gov.hk/home/eng/code.html |