Applied Learning (Senior Secondary Level)

2019-21 Cohort

Learning and Teaching

Subject Title : **Constructing Smart Cities**
Area of Studies : **Engineering and Production**
Course Provider : **School of Professional and Continuing Education, The University of Hong Kong**

In Constructing Smart Cities, student-centred learning and teaching activities are designed to enable students to understand fundamental theories and concepts, develop their generic skills, and address their career aspirations in the smart city development.

Different modes of activities are employed to provide students with a systematic understanding about the context (e.g. lectures on the overview of the Hong Kong smart city blue-print and smart building development) and eye-opening opportunities to experience the complexity of the context (e.g. visits to local smart buildings, workshops, sharing sessions and career talks by the related practitioners).

Students acquire an understanding of the requirements, fundamental knowledge and skills essential for further learning within the area through learning-by-practising opportunities in an authentic or near-authentic environment (e.g. workshops under simulated working environment with industry grade tooling).

Students are also encouraged to develop and apply conceptual, practical and reflective skills to demonstrate entrepreneurship and innovation (e.g. case studies to evaluate the impact of the smart city development on the local economy and analyse the operation of smart city and related requirements). Students are given opportunities to integrate the knowledge and skills acquired and consolidate their learning (e.g. in the projects, students investigated the authentic cases in smart city development and suggested solutions. Students are expected to make use of the knowledge acquired and present their findings in a systematic way. In the process, students apply practical skills at industrial standard, demonstrate their problem-solving skills through tackling smart city related issues with multi-disciplinary knowledge, and prepare reports and group presentation. During the project, students are also expected to demonstrate the positive values and attitudes required in the industry).

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Curriculum Pillars of Applied Learning in Context – Constructing Smart Cities

Upon completion of the subject, students should be able to:
- explain fundamental concepts and important attributes of smart cities;
- describe various conventional and advanced building technologies;
- integrate construction technologies with relevant information technologies for constructing smart cities;
- demonstrate problem-solving skills through tackling smart city related issues with multi-disciplinary knowledge;
- appreciate the values and contributions of building and construction in modern cities; and
- develop self-understanding for further studies and career development in the related field.

Through the specific contexts related to the subject, students have different learning opportunities, for example:

1. **Career-related Competencies**
   - understand the trend of local and global smart city development through on-site visits and lectures by industry practitioners;
   - explain the fundamental concepts and important attributes of smart cities; and
   - enhance understanding of industry competency requirements through practical exercises which are set according to the industry standard.

2. **Foundation Skills**
   - strengthen communication skills both in verbal and written forms through working on-site visits and project reports, presentation and role-play practice;
   - apply mathematical concepts and techniques on smart city development related tasks;
   - apply information technology skills through doing research and information collection for assignments and projects; and
   - use the latest available technology to produce multimedia documents.

3. **Thinking Skills**
   - integrate knowledge from different aspects including science, technology, engineering, mathematics in tackling smart city development related problems;
   - develop critical thinking skills and analytical skills through discussions on authentic smart city development cases which will stimulate students' thinking and further understanding of the competency required in the industry;
   - enhance thinking skills through participation in regular class activities including workshops, presentations and site visits; and
   - develop problem-solving and decision-making skills through project works which require information search and filtering, and results analysis and consolidation.

4. **People Skills**
   - develop team building skills through participating in the establishment and operation of self-directed work teams;
   - develop the concept of division of work through group projects and practical exercises in class; and
   - develop self-management skills through practice under simulated working environment where students are required to follow industry regulations and guidelines.

5. **Values and Attitudes**
- develop responsibility through understanding the high safety requirements in the building industry;
- develop the concept of related rights and obligations, and respect for safety of other people through experience sharing by lecturers and guest speakers from the industry; and
- develop self-confidence through successful completion of practical work with feedback by tutors.