

Group Project (2017-2018)

Theme: Green Building Issues



Aims

The aims of the group project are to:

- (a) Learn practical skills in a multidisciplinary setting on
 - group dialogue
 - teamwork
 - creative thinking
 - strategic planning
- (b) Apply principles and concepts learned in this course to real world problems.
- (c) Deepen understanding of green building and its applications.

Context

This project gives students the opportunity to explore and investigate green building issues of interest to them. You will be working in small groups, each of five to six (5 to 6) students, to select one important issue in green building design, construction and operation for academic study. The project involves critical examination of the selected green building issue and understanding of its impact and implications. Literature study, reference search, site visit, field measurements, surveys, etc. may be conducted to develop the information.

Each student group shall discuss and identify one green building issue for a particular situation or type of building (such as commercial, residential, institutional and industrial buildings) and carry out the study outside of class. The possible green building issues include but not limited to the followings:

- Green building jobs
- Green building government policies
- Life cycle design

- Benefits of green buildings
- Barriers to implement green building
- Environmental impacts
- Operation and maintenance
- Sustainable urban design
- Energy efficiency
- Passive design
- HVAC systems
- Energy efficient lighting
- Renewable energy
- Solar energy systems
- Wind energy systems
- Sustainable materials
- Embodied energy
- Water efficiency
- Rain water harvesting and recycling
- Grey water recycling
- Indoor environmental quality
- Indoor air quality
- Green building assessment
- Greenery and landscape
- Intelligent green building
- Smart buildings and smart city

Each student team should discuss the topic thoroughly and decide upon, by consensus, a suitable project title and content, drawing upon the strengths and experiences of members. More than one group may tackle the same issue, but given the unique composition of each group, it is expected that different outcomes will result. The project title should be submitted via the Moodle system of this course **before 10 Oct 2017 (Tue)**. Examples of project titles are given below.

- Green building government policies in Hong Kong
- Sustainable operation and maintenance of THEi Tsing Yi Campus
- Energy efficiency of VTC Halls of Residence (Tsing Yi)
- Application of solar energy systems in residential buildings in Hong Kong
- Embodied energy analysis of building materials in Hong Kong
- Rain water harvesting and recycling in high-rise residential buildings
- Indoor environmental quality of the lecture theatres at THEi Tsing Yi Campus
- Green roofs and vertical greening systems of the THEi Chai Wan Campus
- Smart building controls and management for university classrooms

Process

This project is an interactive exercise and requires you to connect your knowledge of green building to real world problems. You should try to identify, explain and evaluate the green building issue in an interesting manner. You may gather ideas from your own experience or from other students or people as to what sorts of conditions and requirements are important. You are encouraged to use the information, readings and ideas from your own discipline,

from this course and/or from other courses to inspire and assist with the present study. Keeping in mind the interdisciplinary nature of the green building issues, the project may have any number of components, but each must be part of an integrated whole.

Teams devise a division of labour so that individual team members each have specific tasks to perform. At the same time, team members work collectively and are jointly responsible for the overall project. To ensure productive cooperation, each student group should choose a facilitator who is responsible for organising team meetings, maintaining team communication, and coordinating team efforts. Coordination of group efforts is likely to be facilitated by seeking agreement and then recording who is responsible for what task (from responsibility for a particular sub-component, to interviewer, to report writer and project coordinator); and by establishing a time schedule that can be reviewed on a regular basis. You may choose the research methods most appropriate to the areas you were studying and the teams are expected to set their own timelines for researching, meeting, outlines, drafts, report writing, etc.

The project must have a conceptually and academically rigorous foundation and should contain an element of action in an effort to advance the conclusions of the study. Usually, the goal of the study is to assess a given situation and recommend actions, or to raise awareness and encourage behaviour change. You may use the study results to propose recommendations for specific changes or redesign in the current practices.

Submission

The results of the study should be presented in the form of a report with Powerpoint file format of not more than fifty (50) slides. The file should be neat and properly formatted, organised so that a reader with little time can find things readily. Proper credit and referencing should be provided to the information sources. Students making direct copy of the information in other publications (plagiarism), if found, will be disqualified.

As a general guideline, the following elements are typical for an effective Powerpoint report and will make the file clear and accessible to the readers.

- Title page (complete with group number, team name, authors' names, and other pertinent information).
- Table of contents (with clear headings and key words).
- Body of the report, with clear headings and subheadings.
- Visual aids (graphs, tables, figures, photos, etc.).
- Citations (style is up to you but be consistent) or acknowledgments.
- References list (use some standard style and stick with it).

The file submitted should not be more than 50 MB in size. Deadline for report submission (via Moodle): **before 5 Dec 2017 (Tue)**

Assessment

The submission of the group project consists of fifty (50) percent of the final course grade. The general criteria for its assessment are given below.

Project report submission (total 50 marks)

- Quality of the content (20 marks)

- Clarity of thought (10 marks)
- Teamwork and report organisation (10 marks)
- Innovation and creativity (5 marks)
- Written and graphical communication (5 marks)

The submission will be evaluated on synthesis of information during the course and from your own reading/study, and evidence that you have thought about the subject and the lecture topics in some depth. A clear structure and a logical argument are important and you should provide evidence of critical thinking, originality and effective writing.

References

- ASHRAE, 2013. *ASHRAE Greenguide: Design, Construction, and Operation of Sustainable Buildings*, 4th ed., American Society of Heating, Refrigerating and Air-Conditioning Engineers, Atlanta, GA. [VTC ebook via Books24x7]
- Ching, F. D. K. and Shapiro, I. M., 2014. *Green Building Illustrated*, Wiley, Hoboken.
- City of New York, 1999. *High Performance Building Guidelines*, City of New York Department of Design and Construction, New York.
<http://www.nyc.gov/html/ddc/downloads/pdf/guidelines.pdf>
- PTI, 1996. *Sustainable Building Technical Manual: Green Building Design, Construction and Operations*, Public Technology, Inc. (PTI), Washington, D.C.
<http://smartenergy.illinois.edu/pdf/archive/sustainablebuildingtechmanual.pdf>
- Vassigh, S., Özer, E. and Spiegelhalter, T., 2013. *Best Practices in Sustainable Building Design*, J. Ross Publishing, Inc., Plantation, Florida.

Web Links

- BEAM Plus Online Exhibition
<http://greenbuilding.hkgbc.org.hk/>
- HK Green Building Technology Net
<http://gbtech.emsd.gov.hk/>
- Hong Kong Green Building Council
<http://www.hkgbc.org.hk/>
- Teaching Kit: Sustainable Design for Buildings (ArchSD)
<http://www.archsd.gov.hk/archsd/html/teachingkits/tk1/>
- WBDG - The Whole Building Design Guide
<http://www.wbdg.org/>