

## MEBS6020 Sustainable Building Design

<http://ibse.hk/MEBS6020/>

### Assignment 02: Assessment of Sustainable Building Project (2023-2024)

The University of Hong Kong is planning to apply green building assessment and certification for the following building complex at the main campus. Two assessment methods are being considered including BEAM Plus and LEED. As the green building consultant of the project, you are required to study the feasibility and provide professional advice to the client on the assessment process and important requirements.

#### HKU Tsui Tsin Tong Building 香港大學徐展堂樓 (Bonham Road, Hong Kong)

Completed in 1996, Tsui Tsin Tong Building is a 60,000 sq.ft. (5,574 sq.m) redevelopment on a sloping, wedge-shaped site featuring academic offices and lecture rooms. Linked by a footbridge to the existing University Museum, the gallery is designed with brick-coloured wall tiles and white granite accents, recalling the historic campus buildings nearby, while contemporary in its architectural expression and use of materials.



Figure 1. Location map of HKU Tsui Tsin Tong Building (source: <http://hk.centamap.com/>)

#### Case Studies on Sustainable Buildings - HKU Tsui Tsin Tong Building

[http://ibse.hk/sbe/case\\_study/case/hk/ttsui/ttsui.htm](http://ibse.hk/sbe/case_study/case/hk/ttsui/ttsui.htm)

Project information from Nelson Chen Architects:

<https://www.nca.com.hk/#!/university-hong-kong-art-gallery-academic-office>

Floor plans of Tsui Tsin Tong Building <http://ibse.hk/MEBS6020/FPTTT.pdf>

You should examine the two assessment methods (BEAM Plus and LEED) and identify suitable system(s) for application with consideration of the assessment criteria, potential credit points, and strategy to improve the built environment and operational efficiency. You should evaluate the information requirements for the assessment process and suggest appropriate analysis methods or tools to develop the information. If needed, you may suggest improvement measures for enhancing the building environmental performance.

You should prepare a technical report of not more than 20 nos. of A4 pages to present the professional advice to the client in a concise and systematic way. The report shall address the following issues for effective implementation of the project. Other important issues may also be included.

- (a) Comparison of the two assessment methods (BEAM Plus and LEED) and identification of suitable system(s) for certification of the project.
- (b) Critical evaluation of the important issues and assessment criteria for the project.
- (c) Guidance on the assessment process, information requirements, and proposed target(s).
- (d) Advice on analysis methods and/or tools and suggestion on improvement measures for enhancing the building environmental performance.
- (e) Feasibility of achieving net zero carbon and strategy for decarbonization.

The report shall be submitted in electronic PDF format to the Moodle of MEBS6020. The assessment criteria of the report include quality of the content, organization, clarity of thought, and report writing skills. The report 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 is important and you should provide evidence of critical thinking, originality and effective writing.

Report submission (via Moodle): **on or before 2 August 2024 (Fri)**

### Useful References

- ASHRAE, 2023. *ANSI/ASHRAE Standard 228 -- Standard Method of Evaluating Zero Net Energy and Zero Net Carbon Building Performance*, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Atlanta, GA.
- ASHRAE 2023. *ASHRAE GreenGuide : Design, Construction, and Operation of Sustainable Buildings*, 6th ed., American Society of Heating, Refrigerating and Air-Conditioning Engineers, Atlanta, GA.
- HKGBC, 2021. *Hong Kong Smart Green Building Design Best Practice Guidebook*, Hong Kong Green Building Council Limited (HKGBC). [https://www.hkgbc.org.hk/eng/resources/publications/Files/HKGBC\\_Smart-Green-Building-Design-Best-Practice-Guidebook.pdf](https://www.hkgbc.org.hk/eng/resources/publications/Files/HKGBC_Smart-Green-Building-Design-Best-Practice-Guidebook.pdf)
- HKGBC & BSL, 2022. *BEAM Plus Existing Buildings Version 2.1 (2022.12) Selective Scheme*, Hong Kong Green Building Council (HKGBC) & BEAM Society Limited (BSL), Hong Kong.
- HKGBC & BSL, 2016a. *BEAM Plus Existing Buildings Version 2.0 (2016.03) Comprehensive Scheme*, Hong Kong Green Building Council (HKGBC) & BEAM Society Limited (BSL), Hong Kong.
- Jaffe S. B., Fleming R. M., Karlen M. & Roberts S. H., 2020. *Sustainable Design Basics: A Methodology for the Schematic Design of Sustainable Buildings*, John Wiley & Sons, Inc., Hoboken, NJ.
- Kibert C. J., 2016. *Sustainable Construction: Green Building Design and Delivery*, 4th ed., John Wiley & Sons, Hoboken, NJ.
- Kubba S., 2016. *LEED v4 Practices, Certification, and Accreditation Handbook*, Butterworth-Heinemann/Elsevier, Burlington, MA.

### Useful Websites

- BEAM Plus <https://www.hkgbc.org.hk/eng/beam-plus/introduction/>
- BEAM Plus Existing Buildings (EB) <https://eb.beamplus.org.hk/>
- BEAM Plus Online Exhibition <http://greenbuilding.hkgbc.org.hk/>
- LEED USGBC <http://www.usgbc.org/leed>
- LEED v4 Reference Guide for Building O&M <https://www.usgbc.org/guide/om>
- LEED v4 for Building Operations and Maintenance - current version <https://www.usgbc.org/resources/leed-v4-building-operations-and-maintenance-current-version>