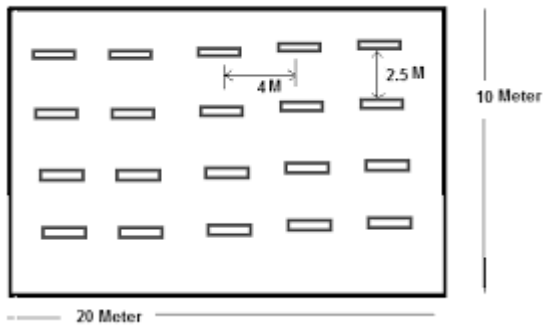
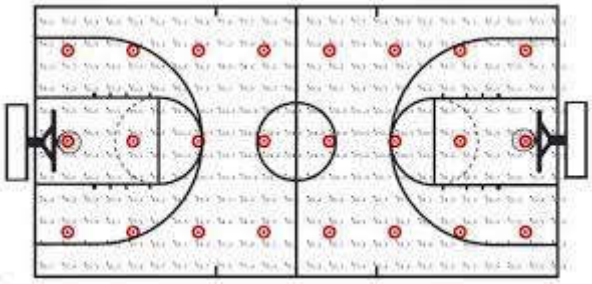
IBTM5680 Lighting Engineering

http://ibse.hk/IBTM5680/

Assignment 02 – Lighting Calculations and Analysis (2025-2026)





Lighting calculations have been the backbone of lighting designs for almost all lighting applications, indoor and outdoor. Good practice in lighting engineering requires the designer to predict lighting system performance using both simple and advanced methods.

Objective

To evaluate the lighting design practice and develop practical skills for lighting calculations and analysis.

Methodology

This assignment is intended to strengthen what you have learned during the lectures on lighting calculations and analysis, by applying the principles and knowledge in practical lighting design. Students will use the common lighting calculation methods and software tools to assess and analyse the lighting system performance in real life.

Each student shall select one indoor space and one outdoor space to perform the lighting calculations and analysis. It is recommended to choose spaces which are regular in shape and are not so complicated so that you can put more time and focus on evaluating the important parameters of lighting system performance.

Students may use the online software tools on the following websites or suggest other appropriate lighting software tools for the analysis. If necessary, suitable assumptions can be made for the input data and information.

- Lighting Layout Calculator Tool - Indoor & Outdoor https://www.tcpi.com/tcp-distributor-hub/lighting-layout-tool/
  - Luxiflux™ Brand – Online Tools https://lightinganalysts.com/software-products/web-tools/overview/
- Visual Design Tools (online) http://www.visual-3d.com/software/designtools.aspx
  - Training Videos: https://www.visual-3d.com/support/TrainingVideos/DesignTools.aspx
  - Tutorials https://www.visual-3d.com/support/tutorials.aspx
  - User's Guide https://www.visual-3d.com/help/visual_2012_help.htm

Report Submission

Each student shall prepare a technical report of not more than twenty (20) A4 pages to explain the findings of the analysis in a systematic and logical manner. The contents of the report shall address the following aspects. Other important issues may also be included.

(a) Basic information of the selected spaces (indoor and outdoor)
(b) Important assumptions for the input data and information
(c) Description of the lighting system(s), design criteria and design options
(d) Summary results of the lighting calculations and analysis
(e) Interpretations and comments on the analysis findings

The results of lighting calculations and analysis might be presented in graphical formats, summary tables and/or visualization. Other important lighting related calculations may be provided or demonstrated in the report.

The report shall be submitted in electronic PDF format. 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.

Useful References

IESNA, 2011. *The Lighting Handbook: Reference & Application*, 10th ed., Illuminating Engineering Society of North America, New York, N.Y.
Karlen M., Benya J. R. & Spangler C., 2012. *Lighting Design Basics*, 2nd Edition, Wiley, Hoboken, NJ.
Simons R. H. & Bean A.R., 2001. *Lighting Engineering: Applied Calculations*, Architectural Press, Oxford.
SLL, 2022. *The SLL Code for Lighting*, Society of Light and Lighting (SLL), London.
SLL, 2018. *The SLL Lighting Handbook*, Society of Light and Lighting (SLL), London.

Examples of Lighting Calculations

An example of calculating the number of indoor lighting fixtures https://electrical-engineering-portal.com/an-example-of-calculating-the-number-of-indoor-lighting-fixtures
Lighting Design Calculation in a Building – Step by Step http://www.electricaltechnology.org/2017/03/lighting-design-calculation-in-building.html
Area lighting Design Calculations - Part One http://www.electrical-knowhow.com/2013/01/area-lighting-design-calculations-part.html