UNIVERSITI TEKNOLOGI MARA

BCT483: ENVIRONMENTAL TECHNOLOGY

Course Name (English)	ENVIRONMENTAL TECHNOLOGY APPROVED
Course Code	BCT483
MQF Credit	3
Course Description	The course provides the student the understanding and study of the interrelationship between environmental issues and climatic or ecological building design. Understanding the simple quantitative and qualitative evaluation methods on human comfort condition for the tropics. Understanding of the various aspects of natural or passive buildings' environmental or indoor climatic control such as natural ventilation, day lighting, shading design, heat flow, energy, acoustic and noise control.
Transferable Skills	Knowledge, Practical skills, leadership, communication skills
Teaching Methodologies	Lectures, Lab Work, Tutorial
CLO	CLO1 Describe the fundamental knowledge of environmental science in building. CLO2 Perform skills to determine the effect of noise and lightings in building science and environment. CLO3 Demonstrate the effective leadership skills related to the impacts of environmental variables to the building science and environment. CLO4 Demonstrate effective communication in discussing the impacts of environmental variables to the building science and environment.
Pre-Requisite Courses	No course recommendations

Topics
1. 1. Climate - Elements of Climate / Classification of Tropical Climates 1.1) N/A
2. 2a. Climate - Site climate / micro climate 2.1) N/A
3. 2b. Climate - Climate deviation 3.1) N/A
4. 3. Thermal Environment and Heat Balance - Heat gain and heat loss in human body 4.1) N/A
5. 4a. Thermal Environment and Heat Balance - Human comfort factors 5.1) N/A
6. 4b. Thermal Environment and Heat Balance - Nature of heat 6.1) N/A
7. 5. Thermal Environment and Heat Balance - Heat transfer through building 7.1) N/A
8. 6. Natural ventilation - Air movement in and around building / Factors influence the air movement in the building 8.1) N/A
9. 7. Natural Ventilation - Air change rate through building 9.1) N/A
10. 8a. Lighting - Principle of lighting 10.1) N/A
11. 9a. Lighting - Natural lighting 11.1) N/A

12. 9b. Artificial lighting 12.1) N/A
13. 10a. Sound and Noise - Principle of sound 13.1) N/A
14. 10b. Sound and Noise - Type of Noise 14.1) N/A
15. 11a. Sound and Noise - Theory of sound transfer 15.1) N/A
16. 11b. Sound and Noise - Techniques of sound control 16.1) N/A
17. 12. Room acoustic - Theory of sound path in room 17.1) N/A
18. 13. Room acoustic - Building Legislation 18.1) N/A
19. 14. Room acoustic - Reverberation / General requirements 19.1) N/A
20. 15. Study week 20.1) N/A
21. 16. Final exam 21.1) N/A

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Case Study	Students are required to measure variables of weather condition like temperature, RH, wind speed (indoor and outdoor) and study the surrounding area of the building (topography, building orientation) and relate them to the building design.	20%	CLO3
Practical	Students' performance would be assessed based on their ability to conduct measurement of noise and lighting levels indoor and outdoor. Group lab report is also required.	20%	CLO2
Presentation	To present the impact of environmental variable (temperature, RH, wind speed) to the building design.	10%	CLO4
Test	Topic of test consists of i) heat gain and heat loss in human body ii) air change rate iii) room acoustic - building legislation	10%	CLO1

Reading List

Recommended Text

- **Paul F. 2006, *Research in Building Physics & Building Engineering*, Taylor & Francis Group**
- **Carmeliet, J. 2003, *Research in Building Physics*, A.A Balkema Publishers**
- **Brawn, G., Z., & Dekay, M. 2001, *Sun, Wind & Light: Architectural Design Strategies*, 2nd Edition Ed., John Wiley & Sons**

Article/Paper List

Recommended Article/Paper Resources

- **CAP., & SAM; Consumers' Association of Penang and Sahabat Alam Malaysia. 1996, State of the Malaysian environment, Statement and Conclusions of the CAP-SAM National Conference on "The State of the Malaysian Environment"**

Other References

This Course does not have any other resources