

Health in the Built Environment

EVDS 621 H(3-0)

Prof. Tang G. Lee (Course mgr) E-mail: lee@ucalgary.ca
Dr. Mark Iantkow, PhD. (Guest lecturer) E-mail: markian@shaw.ca
Classroom PF-2140, every Tuesdays 18:00-20:50
Office Hours by appointment. PF-3194

Winter 2018

Introduction

The built environment is often designed, built and maintained without regards for people with varying mental and physical attributes. This course will raise the student's awareness of indoor environments that affect health and well-being of all types of occupants that need to navigate and use the built environment. Indoor environmental conditions include acoustics, lighting, indoor air quality, wireless frequencies, etc. It also includes aspects of perception, safety, and environmental impacts and its mitigation or improvement. With increasing diversity of occupants with varying mental and physical abilities, along with age and illness, inclusive design and accommodations is expected.

We spend approximately 90% of our time in an indoor environment. Autonomic reactions to contaminants such as particulates, VOC's and moulds entering the body can result in fatigue, dizziness, headaches, and the inability to concentrate which, in turn, decreases a person's alertness and efficiency. A healthy indoor environment must therefore minimise those conditions that greatly affect the occupant's health and well-being so that occupants can function effectively and safely.

The course examines concepts of diversity, human health in an environmental context; historic approaches to health, and well-being. It will include case studies in indoor environmental quality and other conditions affecting occupant health; and strategies for the design and maintenance of healthy buildings.

Students will conduct an indoor environmental investigation to assess the conditions that may or may not affect occupant health and well-being. Any potential problems identified must be assessed and addressed. They must also develop realistic strategies to mitigate the problem in the building.

The course is useful for students in many disciplines, particularly those in Environmental Design, Medicine, Social Work, Engineering, and Law, etc. This course is also useful for practitioners and anyone who wishes to understand more about their own environment, either at school, in the workplace or at home.

Objectives

1. To acquire a general understanding of public health issues, safety, and related regulations and standards.
2. To understand how to accommodate occupants with diverse mental and physical abilities and physiological differences through inclusive, universal and biophilic design.
3. To understand the types of indoor environmental conditions such as sound, light, air contaminants and wireless communication radiations that can affect occupant health.
4. To introduce the student to the problems associated with building related illness caused by improper planning, building design, construction and maintenance.

5. To develop skills in examining indoor environmental quality problems in buildings through observation, analysis and tools.
6. To develop skills at identifying sources of air contaminants, its origin, and develop practical mitigating measures.

Teaching Approach

The purpose of this class is about how the design of the indoor environment affects occupant health, safety and accommodation for those with limitations. There will be stimulating discussions and presentations of case studies that will illustrate the consequence of not understand how building design, materials, mechanical systems, and building envelopes can affect occupants.

This is a lecture course with class discussions and videos. Assignments will demonstrate the student's understanding of building systems and its impact on occupant health and well-being. Class presentations will be evaluated on knowledge and rigour of indoor environmental quality investigations and developing solutions to address problems identified.

Means of Evaluation

The two reports must be properly researched, analysed and written with proper grammar, spelling and reference format. Class presentations are an integral part of acquiring and demonstrating knowledge and skills in this subject as well as sharing your findings to the class. Given that one of the instructor has sight limitations, your presentation will be marked on how your team accommodate this instructor. The final grade is based on the following:

Assignment #1: Biophilia and Universal Design.	35%
Team research paper + 20-min. class presentation + Q&A.	15%
Major team project: IEQ investigation (team).	35%
<i>A team investigation of a building to determine its environmental problems and develop potential remedies and design guideline.</i>	
<i>Team research paper + 20-min. class presentation + Q&A.</i>	<u>15%</u>
	Total 100%

Note: A passing grade in all assignments is required in order to pass the course as a whole.

Final grades will be reported as letter grades, with the final grade calculated according to the 4-point range.

All assignments will be evaluated by their letter grade equivalents as shown.

Registrar-scheduled Final Examination: No

Policy for Late Assignments

Assignments submitted after the deadline will be penalized with the loss of a grade (e.g.: A- to B+). For late submission after one week but not more than 2 weeks late, the loss will be two grades, e.g.: A- to B. Assignments will not be accepted after 3 weeks.

Grading Scale

Faculty shall use the following methods for reporting grades and for determining final grades. Final grades shall be reported as letter grades, with the grade point value as per column 2. Final grades shall be calculated according to the 4-point range in column 3. Should faculty members evaluate any individual exams or assignments by percentage grades, the equivalents shown in column 4 shall be used.

Grade	Grade Point Value	4-Point Range	Percent	Description
A+	4.00	4.00	95-100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	90-94.99	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	85-89.99	Very good performance
B+	3.30	3.15-3.49	80-84.99	Good performance
B	3.00	2.85-3.14	75-79.99	Satisfactory performance
B-	2.70	2.50-2.84	70-74.99	Minimum pass for students in the Faculty of Graduate Studies
C+	2.30	2.15-2.49	65-69.99	All final grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.
C	2.00	1.85-2.14	60-64.99	
C-	1.70	1.50-1.84	55-59.99	
D+	1.30	1.15-1.49	50-54.99	
D	1.00	0.50-1.14	45-49.99	
F	0.00	0-0.49	0-44.99	

Notes:

- A student who receives a "C+" or lower in any one course will be required to withdraw regardless of their grade point average (GPA) unless the program recommends otherwise. If the program permits the student to retake a failed course, the second grade will replace the initial grade in the calculation of the GPA, and both grades will appear on the transcript.

Readings

Biophilia, Accessibility, Inclusive and Universal Design.

Kellert, S. R., Heerwagen, J. H. & Mador, M. L. (Eds.) (2008). *Biophilic design: The theory, science and practice of bringing buildings to life*. Hoboken, NJ: John Wiley & Sons.

Mace, R. (1985). Universal design, barrier free environments for everyone. *Designers West*, November, 1985.

Nussbaumer, L. L. (2012). *Inclusive design, a universal need*. New York, NY: Fairchild.

Building Access Handbook, British Columbia, 2014

https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/guides/2014_building_access_handbook.pdf

Universal Design Handbook, City of Calgary, 2010

https://www.calgary.ca/CSPS/CNS/Documents/universal_design_handbook.pdf?noredirect=1

Visitability - CMHC

<https://www.cmhc-schl.gc.ca/odpub/pdf/68661.pdf>

<http://www.biomimicry.net/>

<http://humanspaces.com/>

<https://www.terrapinbrightgreen.com/reports/14-patterns/>

<https://www.hr.ubc.ca/healthy-ubc-newsletter/tag/biophilia/>

Indoor Environmental Quality

Lee, T.G., **Vital Signs** 1996 curriculum package and other handouts. Download from <http://www.mtpinnacle.com/pdfs/iaq.pdf>

Sears, M.E. (Ed.) **The Medical Perspective on Environmental Sensitivities**. Canadian Human Rights Commission, Government of Canada, Ottawa, April 2007. http://www.chrc-ccdp.gc.ca/sites/default/files/envsensitivity_en.pdf

Wilkie, C. Baker, D. **Accommodation for Environmental Sensitivities: Legal Perspective**. Canadian Human Rights Commission, Government of Canada, Ottawa, May 2007. http://www.chrc-ccdp.gc.ca/sites/default/files/legal_sensitivity_en_1.pdf

Marshall, L, et.al. **Environmental Sensitivities – Multiple Chemical Sensitivities Status Report**. Environmental Health Clinic: Women’s College Hospital, Toronto, June 2, 2011. <http://www.womenscollegehospital.ca/assets/legacy/wch/pdfs/ESMCSSStatusReportJune22011.pdf>

Relevant references provided in D2L.

Special Budgetary Requirements – Nil.

Notes:

1. Written work, term assignments and other course related work may only be submitted by e-mail if prior permission to do so has been obtained from the course instructor. Submissions must come from an official University of Calgary (ucalgary) email account.
2. It Academic Accommodations. Students who require an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to their Instructor or the designated contact person in EVDS, Jennifer Taillefer (jtaillef@ucalgary.ca). Students who require an accommodation unrelated to their coursework or the requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Vice-Provost (Student Experience). For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/

3. Plagiarism - Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Most commonly plagiarism exists when:(a) the work submitted or presented was done, in whole or in part, by an individual other than the one submitting or presenting the work (this includes having another impersonate the student or otherwise substituting the work of another for one's own in an examination or test),(b) parts of the work are taken from another source without reference to the original author,(c) the whole work (e.g., an essay) is copied from another source, and/or,(d) a student submits or presents work in one course which has also been submitted in another course(although it may be completely original with that student) without the knowledge of or prior agreement of the instructor involved. While it is recognized that scholarly work often involves reference to the ideas, data and conclusions of other scholars, intellectual honesty requires that such references be explicitly and clearly noted. Plagiarism is an extremely serious academic offence. It is recognized that clause (d) does not prevent a graduate student incorporating work previously done by him or her in a thesis. Any suspicion of plagiarism will be reported to the Dean, and dealt with as per the regulations in the University of Calgary Graduate Calendar.
4. Information regarding the Freedom of Information and Protection of Privacy Act (<http://www.ucalgary.ca/secretariat/privacy>) and how this impacts the receipt and delivery of course material
5. Emergency Evacuation/Assembly Points (<http://www.ucalgary.ca/emergencyplan/assemblypoints>)
6. Safewalk information (<http://www.ucalgary.ca/security/safewalk>)
7. Contact Info for: Student Union (<http://www.su.ucalgary.ca/page/affordability-accessibility/contact>); Graduate Student representative(<http://www.ucalgary.ca/gsa/>) and Student Ombudsman's Office (<http://www.su.ucalgary.ca/page/quality-education/academic-services/student-rights>).